



Center for  
Internet Security®

# CIS Microsoft Windows 8.1 Workstation Benchmark

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# Overview

This document provides prescriptive guidance for establishing a secure configuration posture for Microsoft Windows 8.1. To obtain the latest version of this guide, please visit <http://benchmarks.cisecurity.org>. If you have questions, comments, or have identified ways to improve this guide, please write us at [feedback@cisecurity.org](mailto:feedback@cisecurity.org).

## Intended Audience

This document is intended for system and application administrators, security specialists, auditors, help desk, and platform deployment personnel who plan to develop, deploy, assess, or secure solutions that incorporate Microsoft Windows 8.1.

## Consensus Guidance

This benchmark was created using a consensus review process comprised of subject matter experts. Consensus participants provide perspective from a diverse set of backgrounds including consulting, software development, audit and compliance, security research, operations, government, and legal.

Each CIS benchmark undergoes two phases of consensus review. The first phase occurs during initial benchmark development. During this phase, subject matter experts convene to discuss, create, and test working drafts of the benchmark. This discussion occurs until consensus has been reached on benchmark recommendations. The second phase begins after the benchmark has been published. During this phase, all feedback provided by the Internet community is reviewed by the consensus team for incorporation in the benchmark. If you are interested in participating in the consensus process, please visit <https://community.cisecurity.org>.

## Typographical Conventions

The following typographical conventions are used throughout this guide:

Convention	Meaning
<code>Stylized Monospace font</code>	Used for blocks of code, command, and script examples. Text should be interpreted exactly as presented.
Monospace font	Used for inline code, commands, or examples. Text should be interpreted exactly as presented.
< <i>italic font in brackets</i> >	Italic texts set in angle brackets denote a variable requiring substitution for a real value.
<i>Italic font</i>	Used to denote the title of a book, article, or other publication.
<b>Note</b>	Additional information or caveats

## Scoring Information

A scoring status indicates whether compliance with the given recommendation impacts the assessed target's benchmark score. The following scoring statuses are used in this benchmark:

### Scored

Failure to comply with "Scored" recommendations will decrease the final benchmark score. Compliance with "Scored" recommendations will increase the final benchmark score.

### Not Scored

Failure to comply with "Not Scored" recommendations will not decrease the final benchmark score. Compliance with "Not Scored" recommendations will not increase the final benchmark score.

## Profile Definitions

The following configuration profiles are defined by this Benchmark:

- **Level 1**

Items in this profile intend to:

- be practical and prudent;
- provide a clear security benefit; and
- not inhibit the utility of the technology beyond acceptable means.

- **Level 1 + BitLocker**

This profile extends the "Level 1" profile and includes BitLocker-related recommendations.

- **Level 2**

This profile extends the "Level 1" profile. Items in this profile exhibit one or more of the following characteristics:

- are intended for environments or use cases where security is paramount
- acts as defense in depth measure
- may negatively inhibit the utility or performance of the technology

- **Level 2 + BitLocker**

This profile extends the "Level 1 + BitLocker" profile. Items in this profile exhibit one or more of the following characteristics:

- are intended for environments or use cases where security is paramount
- acts as defense in depth measure
- may negatively inhibit the utility or performance of the technology

## Acknowledgements

This benchmark exemplifies the great things a community of users, vendors, and subject matter experts can accomplish through consensus collaboration. The CIS community thanks the entire consensus team with special recognition to the following individuals who contributed greatly to the creation of this guide:

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# Recommendations

## ***1 Account Policies***

This section contains recommendations for account policies.

### ***1.1 Password Policy***

This section contains recommendations for password policy.

#### ***1.1.1 (L1) Ensure 'Enforce password history' is set to '24 or more password(s)' (Scored)***

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting determines the number of renewed, unique passwords that have to be associated with a user account before you can reuse an old password. The value for this policy setting must be between 0 and 24 passwords. The default value for Windows Vista is 0 passwords, but the default setting in a domain is 24 passwords. To maintain the effectiveness of this policy setting, use the Minimum password age setting to prevent users from repeatedly changing their password.

The recommended state for this setting is: `24 or more password(s)`.



**Rationale:**

The longer a user uses the same password, the greater the chance that an attacker can determine the password through brute force attacks. Also, any accounts that may have been compromised will remain exploitable for as long as the password is left unchanged. If password changes are required but password reuse is not prevented, or if users continually reuse a small number of passwords, the effectiveness of a good password policy is greatly reduced.

If you specify a low number for this policy setting, users will be able to use the same small number of passwords repeatedly. If you do not also configure the Minimum password age setting, users might repeatedly change their passwords until they can reuse their original password.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to 24 or more password(s):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies>Password Policy\Enforce password history
```

**Impact:**

The major impact of this configuration is that users must create a new password every time they are required to change their old one. If users are required to change their passwords to new unique values, there is an increased risk of users who write their passwords somewhere so that they do not forget them. Another risk is that users may create passwords that change incrementally (for example, password01, password02, and so on) to facilitate memorization but make them easier to guess. Also, an excessively low value for the Minimum password age setting will likely increase administrative overhead, because users who forget their passwords might ask the help desk to reset them frequently.

**Default Value:**

24 passwords remembered on domain members. 0 passwords remembered on stand-alone workstations.

**References:**

1. CCE-35219-5

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### *1.1.2 (L1) Ensure 'Maximum password age' is set to '60 or fewer days, but not 0' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting defines how long a user can use their password before it expires.

Values for this policy setting range from 0 to 999 days. If you set the value to 0, the password will never expire.

Because attackers can crack passwords, the more frequently you change the password the less opportunity an attacker has to use a cracked password. However, the lower this value is set, the higher the potential for an increase in calls to help desk support due to users having to change their password or forgetting which password is current.

The recommended state for this setting is *60 or fewer days, but not 0*.

#### **Rationale:**

The longer a password exists the higher the likelihood that it will be compromised by a brute force attack, by an attacker gaining general knowledge about the user, or by the user sharing the password. Configuring the Maximum password age setting to 0 so that users are never required to change their passwords is a major security risk because that allows a compromised password to be used by the malicious user for as long as the valid user is authorized access.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to *60 or fewer days, but not 0*:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies>Password Policy\Maximum password age
```

**Impact:**

If the Maximum password age setting is too low, users are required to change their passwords very often. Such a configuration can reduce security in the organization, because users might write their passwords in an insecure location or lose them. If the value for this policy setting is too high, the level of security within an organization is reduced because it allows potential attackers more time in which to discover user passwords or to use compromised accounts.

**Default Value:**

42 days.

**References:**

1. CCE-34907-6

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### *1.1.3 (L1) Ensure 'Minimum password age' is set to '1 or more day(s)' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines the number of days that you must use a password before you can change it. The range of values for this policy setting is between 1 and 999 days. (You may also set the value to 0 to allow immediate password changes.) The default value for this setting is 0 days.

The recommended state for this setting is: `1 or more day(s)`.

#### **Rationale:**

Users may have favorite passwords that they like to use because they are easy to remember and they believe that their password choice is secure from compromise. Unfortunately, passwords are compromised and if an attacker is targeting a specific individual user account, with foreknowledge of data about that user, reuse of old passwords can cause a security breach. To address password reuse a combination of security settings is required. Using this policy setting with the Enforce password history setting prevents the easy reuse of old passwords. For example, if you configure the Enforce password history setting to ensure that users cannot reuse any of their last 12 passwords, they could change their password 13 times in a few minutes and reuse the password they started with, unless you also configure the Minimum password age setting to a number that is greater than 0. You must configure this policy setting to a number that is greater than 0 for the Enforce password history setting to be effective.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to 1 or more day(s):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies>Password Policy\Minimum password age
```

**Impact:**

If an administrator sets a password for a user but wants that user to change the password when the user first logs on, the administrator must select the User must change password at next logon check box, or the user will not be able to change the password until the next day.

**Default Value:**

1 day on domain members. 0 days on stand-alone workstations.

**References:**

1. CCE-35366-4

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### *1.1.4 (L1) Ensure 'Minimum password length' is set to '14 or more character(s)' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines the least number of characters that make up a password for a user account. There are many different theories about how to determine the best password length for an organization, but perhaps "pass phrase" is a better term than "password." In Microsoft Windows 2000 or later, pass phrases can be quite long and can include spaces. Therefore, a phrase such as "I want to drink a \$5 milkshake" is a valid pass phrase; it is a considerably stronger password than an 8 or 10 character string of random numbers and letters, and yet is easier to remember. Users must be educated about the proper selection and maintenance of passwords, especially with regard to password length.

The recommended state for this setting is: `14 or more character(s)`.

#### **Rationale:**

Types of password attacks include dictionary attacks (which attempt to use common words and phrases) and brute force attacks (which try every possible combination of characters). Also, attackers sometimes try to obtain the account database so they can use tools to discover the accounts and passwords.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `14 or more character(s)`:

Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies>Password Policy\Minimum password length
---

**Impact:**

Requirements for extremely long passwords can actually decrease the security of an organization, because users might leave the information in an insecure location or lose it. If very long passwords are required, mistyped passwords could cause account lockouts and increase the volume of help desk calls. If your organization has issues with forgotten passwords due to password length requirements, consider teaching your users about pass phrases, which are often easier to remember and, due to the larger number of character combinations, much harder to discover.

**Note:** Older versions of Windows such as Windows 98 and Windows NT 4.0 do not support passwords that are longer than 14 characters. Computers that run these older operating systems are unable to authenticate with computers or domains that use accounts that require long passwords.

**Default Value:**

7 characters on domain members. 0 characters on stand-alone workstations.

**References:**

1. CCE-33789-9

**Critical Controls:****5.7 User Accounts Shall Use Long Passwords**

Where multi-factor authentication is not supported, user accounts shall be required to use long passwords on the system (longer than 14 characters).

**16.2 All Accounts Have A Monitored Expiration Date**

Ensure that all accounts have an expiration date that is monitored and enforced.

**16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.



### *1.1.5 (L1) Ensure 'Password must meet complexity requirements' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting checks all new passwords to ensure that they meet basic requirements for strong passwords.

When this policy is enabled, passwords must meet the following minimum requirements: - Not contain the user's account name or parts of the user's full name that exceed two consecutive characters - Be at least six characters in length - Contain characters from three of the following four categories: - English uppercase characters (A through Z) - English lowercase characters (a through z) - Base 10 digits (0 through 9) - Non-alphabetic characters (for example, !, \$, #, %) - A catch-all category of any Unicode character that does not fall under the previous four categories. This fifth category can be regionally specific.

Each additional character in a password increases its complexity exponentially. For instance, a seven-character, all lower-case alphabetic password would have 26<sup>7</sup> (approximately 8 x 10<sup>9</sup> or 8 billion) possible combinations. At 1,000,000 attempts per second (a capability of many password-cracking utilities), it would only take 133 minutes to crack. A seven-character alphabetic password with case sensitivity has 52<sup>7</sup> combinations. A seven-character case-sensitive alphanumeric password without punctuation has 62<sup>7</sup> combinations. An eight-character password has 26<sup>8</sup> (or 2 x 10<sup>11</sup>) possible combinations. Although this might seem to be a large number, at 1,000,000 attempts per second it would take only 59 hours to try all possible passwords. Remember, these times will significantly increase for passwords that use ALT characters and other special keyboard characters such as "!" or "@". Proper use of the password settings can help make it difficult to mount a brute force attack.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Passwords that contain only alphanumeric characters are extremely easy to discover with several publicly available tools.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies>Password Policy>Password must meet complexity requirements
```

**Impact:**

If the default password complexity configuration is retained, additional help desk calls for locked-out accounts could occur because users might not be accustomed to passwords that contain non-alphabetic characters. However, all users should be able to comply with the complexity requirement with minimal difficulty.

If your organization has more stringent security requirements, you can create a custom version of the Passfilt.dll file that allows the use of arbitrarily complex password strength rules. For example, a custom password filter might require the use of non-upper row characters. (Upper row characters are those that require you to hold down the SHIFT key and press any of the digits between 1 and 0.) A custom password filter might also perform a dictionary check to verify that the proposed password does not contain common dictionary words or fragments.

Also, the use of ALT key character combinations can greatly enhance the complexity of a password. However, such stringent password requirements can result in unhappy users and an extremely busy help desk. Alternatively, your organization could consider a requirement for all administrator passwords to use ALT characters in the 01280159 range. (ALT characters outside of this range can represent standard alphanumeric characters that would not add additional complexity to the password.)

**Default Value:**

Enabled on domain members. Disabled on stand-alone workstations.

**References:**

1. CCE-33777-4

### 1.1.6 (L1) Ensure 'Store passwords using reversible encryption' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether the operating system stores passwords in a way that uses reversible encryption, which provides support for application protocols that require knowledge of the user's password for authentication purposes. Passwords that are stored with reversible encryption are essentially the same as plaintext versions of the passwords.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Enabling this policy setting allows the operating system to store passwords in a weaker format that is much more susceptible to compromise and weakens your system security.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies>Password Policy\Store passwords using reversible encryption
```

#### Impact:

If your organization uses either the CHAP authentication protocol through remote access or IAS services or Digest Authentication in IIS, you must configure this policy setting to Enabled. This setting is extremely dangerous to apply through Group Policy on a user-by-user basis, because it requires the appropriate user account object to be opened in Active Directory Users and Computers.

**Default Value:**

Disabled.

**References:**

1. CCE-35370-6

**Critical Controls:****16.14 Encrypt/Hash All Authentication Files And Monitor Their Access**

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

**16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

## **1.2 Account Lockout Policy**

This section contains recommendations for account lockout policy.

### **1.2.1 (L1) Ensure 'Account lockout duration' is set to '15 or more minute(s)' (Scored)**

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines the length of time that must pass before a locked account is unlocked and a user can try to log on again. The setting does this by specifying the number of minutes a locked out account will remain unavailable. If the value for this policy setting is configured to 0, locked out accounts will remain locked out until an administrator manually unlocks them.

Although it might seem like a good idea to configure the value for this policy setting to a high value, such a configuration will likely increase the number of calls that the help desk receives to unlock accounts locked by mistake. Users should be aware of the length of time a lock remains in place, so that they realize they only need to call the help desk if they have an extremely urgent need to regain access to their computer.

The recommended state for this setting is: `15 or more minute(s)`.

#### **Rationale:**

A denial of service (DoS) condition can be created if an attacker abuses the Account lockout threshold and repeatedly attempts to log on with a specific account. Once you configure the Account lockout threshold setting, the account will be locked out after the specified number of failed attempts. If you configure the Account lockout duration setting to 0, then the account will remain locked out until an administrator unlocks it manually.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to 15 or more minute(s):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies\Account Lockout Policy\Account lockout duration
```

## Impact:

Although it may seem like a good idea to configure this policy setting to never automatically unlock an account, such a configuration can increase the number of requests that your organization's help desk receives to unlock accounts that were locked by mistake.

## Default Value:

None, because this policy setting only has meaning when an Account lockout threshold is specified. When an Account lockout threshold is configured, Windows automatically suggests a value of 30 minutes.

## References:

1. CCE-35409-2

## Critical Controls:

### 16 Account Monitoring and Control

Account Monitoring and Control

#### 16.7 Configure Account Lockouts

Use and configure account lockouts such that after a set number of failed login attempts the account is locked for a standard period of time.

## 1.2.2 (L1) Ensure 'Account lockout threshold' is set to '10 or fewer invalid logon attempt(s), but not 0' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines the number of failed logon attempts before the account is locked. Setting this policy to 0 does not conform with the benchmark as doing so disables the account lockout threshold.

The recommended state for this setting is: 10 or fewer invalid logon attempt(s), but not 0.

### Rationale:

Setting an account lockout threshold reduces the likelihood that an online password brute force attack will be successful. Setting the account lockout threshold too low introduces risk of increased accidental lockouts and/or a malicious actor intentionally locking out accounts.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to 10 or fewer invalid login attempt(s), but not 0:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies\Account Lockout Policy\Account lockout threshold
```

**Impact:**

If this policy setting is enabled, a locked-out account will not be usable until it is reset by an administrator or until the account lockout duration expires. This setting may generate additional help desk calls.

If you enforce this setting an attacker could cause a denial of service condition by deliberately generating failed logons for multiple user, therefore you should also configure the Account Lockout Duration to a relatively low value.

If you configure the Account Lockout Threshold to 0, there is a possibility that an attacker's attempt to discover passwords with a brute force password attack might go undetected if a robust audit mechanism is not in place.

**Default Value:**

0 failed logon attempts.

**References:**

1. CCE-33728-7

**Critical Controls:****16 Account Monitoring and Control**

Account Monitoring and Control

**16.7 Configure Account Lockouts**

Use and configure account lockouts such that after a set number of failed login attempts the account is locked for a standard period of time.



### *1.2.3 (L1) Ensure 'Reset account lockout counter after' is set to '15 or more minute(s)' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines the length of time before the Account lockout threshold resets to zero. The default value for this policy setting is Not Defined. If the Account lockout threshold is defined, this reset time must be less than or equal to the value for the Account lockout duration setting.

If you leave this policy setting at its default value or configure the value to an interval that is too long, your environment could be vulnerable to a DoS attack. An attacker could maliciously perform a number of failed logon attempts on all users in the organization, which will lock out their accounts. If no policy were determined to reset the account lockout, it would be a manual task for administrators. Conversely, if a reasonable time value is configured for this policy setting, users would be locked out for a set period until all of the accounts are unlocked automatically.

The recommended state for this setting is: `15 or more minute(s)`.

#### **Rationale:**

Users can accidentally lock themselves out of their accounts if they mistype their password multiple times. To reduce the chance of such accidental lockouts, the Reset account lockout counter after setting determines the number of minutes that must elapse before the counter that tracks failed logon attempts and triggers lockouts is reset to 0.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to 15 or more minute(s):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Account Policies\Account Lockout Policy\Reset account lockout counter after
```

## Impact:

If you do not configure this policy setting or if the value is configured to an interval that is too long, a DoS attack could occur. An attacker could maliciously attempt to log on to each user's account numerous times and lock out their accounts as described in the preceding paragraphs. If you do not configure the Reset account lockout counter after setting, administrators would have to manually unlock all accounts. If you configure this policy setting to a reasonable value the users would be locked out for some period, after which their accounts would unlock automatically. Be sure that you notify users of the values used for this policy setting so that they will wait for the lockout timer to expire before they call the help desk about their inability to log on.

## Default Value:

None, because this policy setting only has meaning when an Account lockout threshold is specified. When an Account lockout threshold is configured, Windows automatically suggests a value of 30 minutes.

## References:

1. CCE-35408-4

## Critical Controls:

### 16 Account Monitoring and Control

Account Monitoring and Control

#### 16.7 Configure Account Lockouts

Use and configure account lockouts such that after a set number of failed login attempts the account is locked for a standard period of time.

## **2 Local Policies**

This section contains recommendations for local policies.

### **2.1 Audit Policy**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **2.2 User Rights Assignment**

This section contains recommendations for user rights assignments.

#### **2.2.1 (L1) Ensure 'Access Credential Manager as a trusted caller' is set to 'No One' (Scored)**

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This security setting is used by Credential Manager during Backup and Restore. No accounts should have this user right, as it is only assigned to Winlogon. Users' saved credentials might be compromised if this user right is assigned to other entities.

The recommended state for this setting is: No One.

##### **Rationale:**

If an account is given this right the user of the account may create an application that calls into Credential Manager and is returned the credentials for another user.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Access Credential Manager as a trusted caller
```

**Impact:**

None - this is the default configuration.

**Default Value:**

No one.

**References:**

1. CCE-35457-1

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.2 (L1) Ensure 'Access this computer from the network' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows other users on the network to connect to the computer and is required by various network protocols that include Server Message Block (SMB)-based protocols, NetBIOS, Common Internet File System (CIFS), and Component Object Model Plus (COM+).

The recommended state for this setting is: `Administrators`.

### Rationale:

Users who can connect from their computer to the network can access resources on target computers for which they have permission. For example, the Access this computer from the network user right is required for users to connect to shared printers and folders. If this user right is assigned to the Everyone group, then anyone in the group will be able to read the files in those shared folders. However, this situation is unlikely for new installations of Windows Server 2003 with Service Pack 1 (SP1), because the default share and NTFS permissions in Windows Server 2003 do not include the Everyone group. This vulnerability may have a higher level of risk for computers that you upgrade from Windows NT 4.0 or Windows 2000, because the default permissions for these operating systems are not as restrictive as the default permissions in Windows Server 2003.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Access this computer from the network
```

**Impact:**

If you remove the Access this computer from the network user right on domain controllers for all users, no one will be able to log on to the domain or use network resources. If you remove this user right on member servers, users will not be able to connect to those servers through the network. Successful negotiation of IPsec connections requires that the initiating machine has this right, therefore it is recommended that it be assigned to the Users group. If you have installed optional components such as ASP.NET or Internet Information Services (IIS), you may need to assign this user right to additional accounts that are required by those components. It is important to verify that authorized users are assigned this user right for the computers they need to access the network.

**Default Value:**

Administrators, Backup Operators, Users, Everyone.

**References:**

1. CCE-32928-4

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services

### 2.2.3 (L1) Ensure 'Act as part of the operating system' is set to 'No One' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting allows a process to assume the identity of any user and thus gain access to the resources that the user is authorized to access.

The recommended state for this setting is: No One.

#### **Rationale:**

The Act as part of the operating system user right is extremely powerful. Anyone with this user right can take complete control of the computer and erase evidence of their activities.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Act as part of the operating system
```

#### **Impact:**

There should be little or no impact because the Act as part of the operating system user right is rarely needed by any accounts other than the Local System account.

#### **Default Value:**

No one.

#### **References:**

1. CCE-35403-5

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.



## 2.2.4 (L1) Ensure 'Adjust memory quotas for a process' is set to 'Administrators, LOCAL SERVICE, NETWORK SERVICE' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows a user to adjust the maximum amount of memory that is available to a process. The ability to adjust memory quotas is useful for system tuning, but it can be abused. In the wrong hands, it could be used to launch a denial of service (DoS) attack.

The recommended state for this setting is: Administrators, LOCAL SERVICE, NETWORK SERVICE.

### Rationale:

A user with the Adjust memory quotas for a process privilege can reduce the amount of memory that is available to any process, which could cause business-critical network applications to become slow or to fail. In the wrong hands, this privilege could be used to start a denial of service (DoS) attack.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Administrators, LOCAL SERVICE, NETWORK SERVICE:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Adjust memory quotas for a process
```

**Impact:**

Organizations that have not restricted users to roles with limited privileges will find it difficult to impose this countermeasure. Also, if you have installed optional components such as ASP.NET or IIS, you may need to assign the Adjust memory quotas for a process user right to additional accounts that are required by those components. Otherwise, this countermeasure should have no impact on most computers. If this user right is necessary for a user account, it can be assigned to a local computer account instead of a domain account.

**Default Value:**

Administrators, LOCAL SERVICE, NETWORK SERVICE.

**References:**

1. CCE-35490-2

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.5 (L1) Ensure 'Allow log on locally' is set to 'Administrators, Users' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users can interactively log on to computers in your environment. Logons that are initiated by pressing the CTRL+ALT+DEL key sequence on the client computer keyboard require this user right. Users who attempt to log on through Terminal Services or IIS also require this user right.

The Guest account is assigned this user right by default. Although this account is disabled by default, it's recommended that you enable this setting through Group Policy. However, this user right should generally be restricted to the Administrators and Users groups. Assign this user right to the Backup Operators group if your organization requires that they have this capability.

The recommended state for this setting is: `Administrators, Users`.

### Rationale:

Any account with the Allow log on locally user right can log on at the console of the computer. If you do not restrict this user right to legitimate users who need to be able to log on to the console of the computer, unauthorized users could download and run malicious software to elevate their privileges.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators, Users`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Allow log on locally
```

**Impact:**

If you remove these default groups, you could limit the abilities of users who are assigned to specific administrative roles in your environment. You should confirm that delegated activities will not be adversely affected by any changes that you make to the Allow log on locally user rights assignments.

**Default Value:**

Administrators, Backup Operators, Power Users, Users, Guest.

**References:**

1. CCE-35640-2

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.6 (L1) Ensure 'Allow log on through Remote Desktop Services' is set to 'Administrators, Remote Desktop Users' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users or groups have the right to log on as a Terminal Services client. Remote desktop users require this user right. If your organization uses Remote Assistance as part of its help desk strategy, create a group and assign it this user right through Group Policy. If the help desk in your organization does not use Remote Assistance, assign this user right only to the Administrators group or use the restricted groups feature to ensure that no user accounts are part of the Remote Desktop Users group.

Restrict this user right to the Administrators group, and possibly the Remote Desktop Users group, to prevent unwanted users from gaining access to computers on your network by means of the Remote Assistance feature.

The recommended state for this setting is: `Administrators, Remote Desktop Users`

### Rationale:

Any account with the Allow log on through Terminal Services user right can log on to the remote console of the computer. If you do not restrict this user right to legitimate users who need to log on to the console of the computer, unauthorized users could download and run malicious software to elevate their privileges.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Administrators, Remote Desktop Users:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Allow log on through Remote Desktop Services
```

**Impact:**

Removal of the Allow log on through Terminal Services user right from other groups or membership changes in these default groups could limit the abilities of users who perform specific administrative roles in your environment. You should confirm that delegated activities will not be adversely affected.

**Default Value:**

Administrators, Remote Desktop Users.

**References:**

1. CCE-33035-7

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.7 (L1) Ensure 'Back up files and directories' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to circumvent file and directory permissions to back up the system. This user right is enabled only when an application (such as NTBACKUP) attempts to access a file or directory through the NTFS file system backup application programming interface (API). Otherwise, the assigned file and directory permissions apply.

The recommended state for this setting is: `Administrators`.

### Rationale:

Users who are able to back up data from a computer could take the backup media to a non-domain computer on which they have administrative privileges and restore the data. They could take ownership of the files and view any unencrypted data that is contained within the backup set.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`.

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Back up files and directories
```

### Impact:

Changes in the membership of the groups that have the Back up files and directories user right could limit the abilities of users who are assigned to specific administrative roles in your environment. You should confirm that authorized backup administrators are still able to perform backup operations.

**Default Value:**

Administrators, Backup Operators.

**References:**

1. CCE-35699-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.



## 2.2.8 (L1) Ensure 'Change the system time' is set to 'Administrators, LOCAL SERVICE' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users and groups can change the time and date on the internal clock of the computers in your environment. Users who are assigned this user right can affect the appearance of event logs. When a computer's time setting is changed, logged events reflect the new time, not the actual time that the events occurred.

When configuring a user right in the SCM enter a comma delimited list of accounts. Accounts can be either local or located in Active Directory, they can be groups, users, or computers.

**Note:** Discrepancies between the time on the local computer and on the domain controllers in your environment may cause problems for the Kerberos authentication protocol, which could make it impossible for users to log on to the domain or obtain authorization to access domain resources after they are logged on. Also, problems will occur when Group Policy is applied to client computers if the system time is not synchronized with the domain controllers.

The recommended state for this setting is: `Administrators, LOCAL SERVICE`.

## **Rationale:**

Users who can change the time on a computer could cause several problems. For example, time stamps on event log entries could be made inaccurate, time stamps on files and folders that are created or modified could be incorrect, and computers that belong to a domain may not be able to authenticate themselves or users who try to log on to the domain from them. Also, because the Kerberos authentication protocol requires that the requestor and authenticator have their clocks synchronized within an administrator-defined skew period, an attacker who changes a computer's time may cause that computer to be unable to obtain or grant Kerberos tickets.

The risk from these types of events is mitigated on most domain controllers, member servers, and end-user computers because the Windows Time service automatically synchronizes time with domain controllers in the following ways:

- All client desktop computers and member servers use the authenticating domain controller as their inbound time partner.
- All domain controllers in a domain nominate the primary domain controller (PDC) emulator operations master as their inbound time partner.
- All PDC emulator operations masters follow the hierarchy of domains in the selection of their inbound time partner.
- The PDC emulator operations master at the root of the domain is authoritative for the organization. Therefore it is recommended that you configure this computer to synchronize with a reliable external time server.

This vulnerability becomes much more serious if an attacker is able to change the system time and then stop the Windows Time service or reconfigure it to synchronize with a time server that is not accurate.

## **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## **Remediation:**

To establish the recommended configuration via GP, set the following UI path to

Administrators, LOCAL SERVICE:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Change the system time
```

**Impact:**

There should be no impact, because time synchronization for most organizations should be fully automated for all computers that belong to the domain. Computers that do not belong to the domain should be configured to synchronize with an external source.

**Default Value:**

Administrators, LOCAL SERVICE.

**References:**

1. CCE-33094-4

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.9 (L1) Ensure 'Change the time zone' is set to 'Administrators, LOCAL SERVICE, Users' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting determines which users can change the time zone of the computer. This ability holds no great danger for the computer and may be useful for mobile workers.

The recommended state for this setting is: `Administrators, LOCAL SERVICE, Users`.

### Rationale:

Changing the time zone represents little vulnerability because the system time is not affected. This setting merely enables users to display their preferred time zone while being synchronized with domain controllers in different time zones.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators, LOCAL SERVICE, Users`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Change the time zone
```

### Impact:

None - this is the default configuration.

### Default Value:

`Administrators, Users`.

**References:**

1. CCE-33431-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.10 (L1) Ensure 'Create a pagefile' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to change the size of the pagefile. By making the pagefile extremely large or extremely small, an attacker could easily affect the performance of a compromised computer.

The recommended state for this setting is: `Administrators`.

### Rationale:

Users who can change the page file size could make it extremely small or move the file to a highly fragmented storage volume, which could cause reduced computer performance.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Create a pagefile
```

### Impact:

None - this is the default configuration.

### Default Value:

`Administrators`.

### References:

1. CCE-33051-4

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.11 (L1) Ensure 'Create a token object' is set to 'No One' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows a process to create an access token, which may provide elevated rights to access sensitive data.

The recommended state for this setting is: No One.

### Rationale:

A user account that is given this user right has complete control over the system and can lead to the system being compromised. It is highly recommended that you do not assign any user accounts this right.

The operating system examines a user's access token to determine the level of the user's privileges. Access tokens are built when users log on to the local computer or connect to a remote computer over a network. When you revoke a privilege, the change is immediately recorded, but the change is not reflected in the user's access token until the next time the user logs on or connects. Users with the ability to create or modify tokens can change the level of access for any currently logged on account. They could escalate their own privileges or create a DoS condition.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Create a token object
```

### Impact:

None - this is the default configuration.



**Default Value:**

No one.

**References:**

1. CCE-33779-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.12 (L1) Ensure 'Create global objects' is set to 'Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines whether users can create global objects that are available to all sessions. Users can still create objects that are specific to their own session if they do not have this user right.

Users who can create global objects could affect processes that run under other users' sessions. This capability could lead to a variety of problems, such as application failure or data corruption.

The recommended state for this setting is: Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE.

### Rationale:

Users who can create global objects could affect Windows services and processes that run under other user or system accounts. This capability could lead to a variety of problems, such as application failure, data corruption and elevation of privilege.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Create global objects
```

### Impact:

None - this is the default configuration.

**Default Value:**

Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE.

**References:**

1. CCE-33095-1

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.2.13 (L1) Ensure 'Create permanent shared objects' is set to 'No One' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This user right is useful to kernel-mode components that extend the object namespace. However, components that run in kernel mode have this user right inherently. Therefore, it is typically not necessary to specifically assign this user right.

The recommended state for this setting is: No One.

#### **Rationale:**

Users who have the Create permanent shared objects user right could create new shared objects and expose sensitive data to the network.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Create permanent shared objects
```

#### **Impact:**

None - this is the default configuration.

#### **Default Value:**

No one.

#### **References:**

1. CCE-33780-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.14 (L1) Configure 'Create symbolic links' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users can create symbolic links. In Windows Vista, existing NTFS file system objects, such as files and folders, can be accessed by referring to a new kind of file system object called a symbolic link. A symbolic link is a pointer (much like a shortcut or .lnk file) to another file system object, which can be a file, folder, shortcut or another symbolic link. The difference between a shortcut and a symbolic link is that a shortcut only works from within the Windows shell. To other programs and applications, shortcuts are just another file, whereas with symbolic links, the concept of a shortcut is implemented as a feature of the NTFS file system.

Symbolic links can potentially expose security vulnerabilities in applications that are not designed to use them. For this reason, the privilege for creating symbolic links should only be assigned to trusted users. By default, only Administrators can create symbolic links.

The recommended state for this setting is: Administrators and (when the *Hyper-V* feature is installed) NT VIRTUAL MACHINE\Virtual Machines.

### Rationale:

Users who have the Create Symbolic Links user right could inadvertently or maliciously expose your system to symbolic link attacks. Symbolic link attacks can be used to change the permissions on a file, to corrupt data, to destroy data, or as a Denial of Service attack.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To implement the recommended configuration state, configure the following UI path:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Create symbolic links
```

**Impact:**

In most cases there will be no impact because this is the default configuration, however, on Windows Workstations with the Hyper-V feature installed this user right should also be granted to the special group "Virtual Machines" otherwise you will not be able to create new virtual machines.

**Default Value:**

Administrators.

**References:**

1. CCE-33053-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.15 (L1) Ensure 'Debug programs' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which user accounts will have the right to attach a debugger to any process or to the kernel, which provides complete access to sensitive and critical operating system components. Developers who are debugging their own applications do not need to be assigned this user right; however, developers who are debugging new system components will need it.

The recommended state for this setting is: `Administrators`.

### Rationale:

The Debug programs user right can be exploited to capture sensitive computer information from system memory, or to access and modify kernel or application structures. Some attack tools exploit this user right to extract hashed passwords and other private security information, or to insert rootkit code. By default, the Debug programs user right is assigned only to administrators, which helps to mitigate the risk from this vulnerability.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Debug programs
```



**Impact:**

If you revoke this user right, no one will be able to debug programs. However, typical circumstances rarely require this capability on production computers. If a problem arises that requires an application to be debugged on a production server, you can move the server to a different OU temporarily and assign the Debug programs user right to a separate Group Policy for that OU.

The service account that is used for the cluster service needs the Debug programs privilege; if it does not have it, Windows Clustering will fail. For additional information about how to configure Windows Clustering in conjunction with computer hardening, see Microsoft Knowledge Base article 891597: [How to apply more restrictive security settings on a Windows Server 2003-based cluster server](#).

Tools that are used to manage processes will be unable to affect processes that are not owned by the person who runs the tools. For example, the Windows Server 2003 Resource Kit tool Kill.exe requires this user right for administrators to terminate processes that they did not start.

**Default Value:**

Administrators.

**References:**

1. CCE-33157-9

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.16 (L1) Ensure 'Deny access to this computer from the network' to include 'Guests, Local account' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting prohibits users from connecting to a computer from across the network, which would allow users to access and potentially modify data remotely. In high security environments, there should be no need for remote users to access data on a computer. Instead, file sharing should be accomplished through the use of network servers.

The recommended state for this setting is to include: `Guests, Local account`.

**Caution:** Configuring a standalone (non-domain-joined) workstation as described above may result in an inability to remotely administer the workstation.

### Rationale:

Users who can log on to the computer over the network can enumerate lists of account names, group names, and shared resources. Users with permission to access shared folders and files can connect over the network and possibly view or modify data.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to include `Guests, Local account`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Deny access to this computer from the network
```

**Impact:**

If you configure the Deny access to this computer from the network user right for other groups, you could limit the abilities of users who are assigned to specific administrative roles in your environment. You should verify that delegated tasks will not be negatively affected.

**Default Value:**

Guest.

**References:**

1. CCE-34173-5

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.17 (L1) Ensure 'Deny log on as a batch job' to include 'Guests' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which accounts will not be able to log on to the computer as a batch job. A batch job is not a batch (.bat) file, but rather a batch-queue facility. Accounts that use the Task Scheduler to schedule jobs need this user right.

The **Deny log on as a batch job** user right overrides the **Log on as a batch job** user right, which could be used to allow accounts to schedule jobs that consume excessive system resources. Such an occurrence could cause a DoS condition. Failure to assign this user right to the recommended accounts can be a security risk.

The recommended state for this setting is to include: `Guests`.

### Rationale:

Accounts that have the Deny log on as a batch job user right could be used to schedule jobs that could consume excessive computer resources and cause a DoS condition.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to include `Guests`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Deny log on as a batch job
```

**Impact:**

If you assign the Deny log on as a batch job user right to other accounts, you could deny users who are assigned to specific administrative roles the ability to perform their required job activities. You should confirm that delegated tasks will not be affected adversely.

For example, if you assign this user right to the IWAM\_(ComputerName) account, the MSM Management Point will fail. On a newly installed computer that runs Windows Server 2003 this account does not belong to the Guests group, but on a computer that was upgraded from Windows 2000 this account is a member of the Guests group. Therefore, it is important that you understand which accounts belong to any groups that you assign the Deny log on as a batch job user right.

**Default Value:**

No one.

**References:**

1. CCE-35461-3

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.18 (L1) Ensure 'Deny log on as a service' to include 'Guests' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This security setting determines which service accounts are prevented from registering a process as a service. This policy setting supersedes the **Log on as a service** policy setting if an account is subject to both policies.

The recommended state for this setting is to include: `Guests`.

**Note:** This security setting does not apply to the System, Local Service, or Network Service accounts.

### Rationale:

Accounts that can log on as a service could be used to configure and start new unauthorized services, such as a keylogger or other malicious software. The benefit of the specified countermeasure is somewhat reduced by the fact that only users with administrative privileges can install and configure services, and an attacker who has already attained that level of access could configure the service to run with the System account.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to include `Guests`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Deny log on as a service
```

**Impact:**

If you assign the Deny log on as a service user right to specific accounts, services may not be able to start and a DoS condition could result.

**Default Value:**

No one.

**References:**

1. CCE-35404-3

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.19 (L1) Ensure 'Deny log on locally' to include 'Guests' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This security setting determines which users are prevented from logging on at the computer. This policy setting supersedes the **Allow log on locally** policy setting if an account is subject to both policies.

**Important:** If you apply this security policy to the Everyone group, no one will be able to log on locally.

The recommended state for this setting is to include: `Guests`.

### Rationale:

Any account with the ability to log on locally could be used to log on at the console of the computer. If this user right is not restricted to legitimate users who need to log on to the console of the computer, unauthorized users might download and run malicious software that elevates their privileges.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to include `Guests`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Deny log on locally
```



**Impact:**

If you assign the Deny log on locally user right to additional accounts, you could limit the abilities of users who are assigned to specific roles in your environment. However, this user right should explicitly be assigned to the ASPNET account on computers that run IIS 6.0. You should confirm that delegated activities will not be adversely affected.

**Default Value:**

No one.

**References:**

1. CCE-35293-0

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.20 (L1) Ensure 'Deny log on through Remote Desktop Services' to include 'Guests, Local account' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines whether users can log on as Terminal Services clients. After the baseline workstation is joined to a domain environment, there is no need to use local accounts to access the workstation from the network. Domain accounts can access the server for administration and end-user processing.

The recommended state for this setting is to include: `Guests, Local account`.

**Caution:** Configuring a standalone (non-domain-joined) workstation as described above may result in an inability to remotely administer the workstation.

### Rationale:

Any account with the right to log on through Terminal Services could be used to log on to the remote console of the computer. If this user right is not restricted to legitimate users who need to log on to the console of the computer, unauthorized users might download and run malicious software that elevates their privileges.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to include `Guests, Local account`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Deny log on through Remote Desktop Services
```

**Impact:**

If you assign the Deny log on through Terminal Services user right to other groups, you could limit the abilities of users who are assigned to specific administrative roles in your environment. Accounts that have this user right will be unable to connect to the computer through either Terminal Services or Remote Assistance. You should confirm that delegated tasks will not be negatively impacted.

**Default Value:**

No one.

**References:**

1. CCE-33787-3

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.21 (L1) Ensure 'Enable computer and user accounts to be trusted for delegation' is set to 'No One' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to change the Trusted for Delegation setting on a computer object in Active Directory. Abuse of this privilege could allow unauthorized users to impersonate other users on the network.

The recommended state for this setting is: No One.

### Rationale:

Misuse of the Enable computer and user accounts to be trusted for delegation user right could allow unauthorized users to impersonate other users on the network. An attacker could exploit this privilege to gain access to network resources and make it difficult to determine what has happened after a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Enable computer and user accounts to be trusted for delegation
```

### Impact:

None - this is the default configuration.

### Default Value:

No one.

**References:**

1. CCE-33778-2

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.22 (L1) Ensure 'Force shutdown from a remote system' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to shut down Windows Vista-based computers from remote locations on the network. Anyone who has been assigned this user right can cause a denial of service (DoS) condition, which would make the computer unavailable to service user requests. Therefore, it is recommended that only highly trusted administrators be assigned this user right.

The recommended state for this setting is: `Administrators`.

### Rationale:

Any user who can shut down a computer could cause a DoS condition to occur. Therefore, this user right should be tightly restricted.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Force shutdown from a remote system
```

### Impact:

If you remove the Force shutdown from a remote system user right from the Server Operator group you could limit the abilities of users who are assigned to specific administrative roles in your environment. You should confirm that delegated activities will not be adversely affected.

**Default Value:**

Administrators.

**References:**

1. CCE-33715-4

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.23 (L1) Ensure 'Generate security audits' is set to 'LOCAL SERVICE, NETWORK SERVICE' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users or processes can generate audit records in the Security log.

The recommended state for this setting is: LOCAL SERVICE, NETWORK SERVICE.

### Rationale:

An attacker could use this capability to create a large number of audited events, which would make it more difficult for a system administrator to locate any illicit activity. Also, if the event log is configured to overwrite events as needed, any evidence of unauthorized activities could be overwritten by a large number of unrelated events.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to LOCAL SERVICE, NETWORK SERVICE:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Generate security audits
```

### Impact:

On most computers, this is the default configuration and there will be no negative impact. However, if you have installed *Web Server (IIS)*, you will need to allow the IIS application pool(s) to be granted this User Right Assignment.



**Default Value:**

LOCAL SERVICE, NETWORK SERVICE.

**References:**

1. CCE-35363-1

**Critical Controls:**

16 Account Monitoring and Control

Account Monitoring and Control

## 2.2.24 (L1) Ensure 'Impersonate a client after authentication' is set to 'Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

The policy setting allows programs that run on behalf of a user to impersonate that user (or another specified account) so that they can act on behalf of the user. If this user right is required for this kind of impersonation, an unauthorized user will not be able to convince a client to connect—for example, by remote procedure call (RPC) or named pipes—to a service that they have created to impersonate that client, which could elevate the unauthorized user's permissions to administrative or system levels.

Services that are started by the Service Control Manager have the built-in Service group added by default to their access tokens. COM servers that are started by the COM infrastructure and configured to run under a specific account also have the Service group added to their access tokens. As a result, these processes are assigned this user right when they are started.

Also, a user can impersonate an access token if any of the following conditions exist: - The access token that is being impersonated is for this user. - The user, in this logon session, logged on to the network with explicit credentials to create the access token. - The requested level is less than Impersonate, such as Anonymous or Identify.

An attacker with the Impersonate a client after authentication user right could create a service, trick a client to make them connect to the service, and then impersonate that client to elevate the attacker's level of access to that of the client.

The recommended state for this setting is: Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE.

### Rationale:

An attacker with the Impersonate a client after authentication user right could create a service, trick a client to make them connect to the service, and then impersonate that client to elevate the attacker's level of access to that of the client.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Impersonate a client after authentication
```

**Impact:**

In most cases this configuration will have no impact. If you have installed *Web Server (IIS)*, you will need to also assign the user right to IIS\_IUSRS.

**Default Value:**

Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE.

**References:**

1. CCE-34021-6

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.25 (L1) Ensure 'Increase scheduling priority' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines whether users can increase the base priority class of a process. (It is not a privileged operation to increase relative priority within a priority class.) This user right is not required by administrative tools that are supplied with the operating system but might be required by software development tools.

The recommended state for this setting is: `Administrators`.

### Rationale:

A user who is assigned this user right could increase the scheduling priority of a process to Real-Time, which would leave little processing time for all other processes and could lead to a DoS condition.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to

`Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Increase scheduling priority
```

### Impact:

None - this is the default configuration.

### Default Value:

`Administrators`.

**References:**

1. CCE-35178-3

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.26 (L1) Ensure 'Load and unload device drivers' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to dynamically load a new device driver on a system. An attacker could potentially use this capability to install malicious code that appears to be a device driver. This user right is required for users to add local printers or printer drivers in Windows Vista.

The recommended state for this setting is: `Administrators`.

### Rationale:

Device drivers run as highly privileged code. A user who has the Load and unload device drivers user right could unintentionally install malicious code that masquerades as a device driver. Administrators should exercise greater care and install only drivers with verified digital signatures.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Load and unload device drivers
```

### Impact:

If you remove the Load and unload device drivers user right from the Print Operators group or other accounts you could limit the abilities of users who are assigned to specific administrative roles in your environment. You should ensure that delegated tasks will not be negatively affected.

**Default Value:**

Administrators.

**References:**

1. CCE-34903-5

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.27 (L1) Ensure 'Lock pages in memory' is set to 'No One' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows a process to keep data in physical memory, which prevents the system from paging the data to virtual memory on disk. If this user right is assigned, significant degradation of system performance can occur.

The recommended state for this setting is: No One.

### Rationale:

Users with the Lock pages in memory user right could assign physical memory to several processes, which could leave little or no RAM for other processes and result in a DoS condition.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Lock pages in memory
```

### Impact:

None - this is the default configuration.

### Default Value:

No one.

### References:

1. CCE-33807-9



**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.28 (L2) Ensure 'Log on as a batch job' is set to 'Administrators' (Scored)

### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

### **Description:**

This policy setting allows accounts to log on using the task scheduler service. Because the task scheduler is often used for administrative purposes, it may be needed in enterprise environments. However, its use should be restricted in high security environments to prevent misuse of system resources or to prevent attackers from using the right to launch malicious code after gaining user level access to a computer.

When configuring a user right in the SCM enter a comma delimited list of accounts. Accounts can be either local or located in Active Directory, they can be groups, users, or computers.

The recommended state for this setting is: `Administrators`.

### **Rationale:**

The Log on as a batch job user right presents a low-risk vulnerability. For most organizations, the default settings are sufficient.

### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### **Remediation:**

To implement the recommended configuration state, set the following Group Policy setting to `Administrators`:

```
Computer Configuration\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Log on as a batch job
```

**Impact:**

If you configure the Log on as a batch job setting through domain-based Group Policies, the computer will not be able to assign the user right to accounts that are used for scheduled jobs in the Task Scheduler. If you install optional components such as ASP.NET or IIS, you might need to assign this user right to additional accounts that are required by those components. For example, IIS requires assignment of this user right to the IIS\_WPG group and the IUSR\_(ComputerName), ASPNET, and IWAM\_(ComputerName) accounts. If this user right is not assigned to this group and these accounts, IIS will be unable to run some COM objects that are necessary for proper functionality.

**Default Value:**

Administrators, Backup Operators.

**References:**

1. CCE-33432-6

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.29 (L2) Ensure 'Log on as a service' is set to 'No One' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting allows accounts to launch network services or to register a process as a service running on the system. This user right should be restricted on any computer in a high security environment, but because many applications may require this privilege, it should be carefully evaluated and tested before configuring it in an enterprise environment. On Windows Vista-based computers, no users or groups have this privilege by default.

When configuring a user right in the SCM enter a comma delimited list of accounts. Accounts can be either local or located in Active Directory, they can be groups, users, or computers.

The recommended state for this setting is: No One.

### Rationale:

Log on as a service is a powerful user right because it allows accounts to launch network services or services that run continuously on a computer, even when no one is logged on to the console. The risk is reduced by the fact that only users with administrative privileges can install and configure services. An attacker who has already attained that level of access could configure the service to run with the Local System account.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To implement the recommended configuration state, set the following Group Policy setting to No One:

```
Computer Configuration\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Log on as a service
```

**Impact:**

On most computers, this is the default configuration and there will be no negative impact. However, if you have installed optional components such as ASP.NET or IIS, you may need to assign the Log on as a service user right to additional accounts that are required by those components. IIS requires that this user right be explicitly granted to the ASPNET user account.

**Default Value:**

No one.

**References:**

1. CCE-33731-1

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.30 (L1) Ensure 'Manage auditing and security log' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users can change the auditing options for files and directories and clear the Security log.

The recommended state for this setting is: Administrators.

### Rationale:

The ability to manage the Security event log is a powerful user right and it should be closely guarded. Anyone with this user right can clear the Security log to erase important evidence of unauthorized activity.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Administrators:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Manage auditing and security log
```

### Impact:

None - this is the default configuration.

### Default Value:

Administrators.

**References:**

1. CCE-35275-7

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.31 (L1) Ensure 'Modify an object label' is set to 'No One' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This privilege determines which user accounts can modify the integrity label of objects, such as files, registry keys, or processes owned by other users. Processes running under a user account can modify the label of an object owned by that user to a lower level without this privilege.

The recommended state for this setting is: No One.

### Rationale:

By modifying the integrity label of an object owned by another user a malicious user may cause them to execute code at a higher level of privilege than intended.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to No One:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Modify an object label
```

### Impact:

None - this is the default configuration.

### Default Value:

No one.

### References:

1. CCE-34913-4



**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.2.32 (L1) Ensure 'Modify firmware environment values' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to configure the system-wide environment variables that affect hardware configuration. This information is typically stored in the Last Known Good Configuration. Modification of these values and could lead to a hardware failure that would result in a denial of service condition.

The recommended state for this setting is: `Administrators`.

### Rationale:

Anyone who is assigned the Modify firmware environment values user right could configure the settings of a hardware component to cause it to fail, which could lead to data corruption or a DoS condition.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Modify firmware environment values
```

### Impact:

None - this is the default configuration.

### Default Value:

`Administrators`.

**References:**

1. CCE-35183-3

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.2.33 (L1) Ensure 'Perform volume maintenance tasks' is set to 'Administrators' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting allows users to manage the system's volume or disk configuration, which could allow a user to delete a volume and cause data loss as well as a denial-of-service condition.

The recommended state for this setting is: `Administrators`.

#### **Rationale:**

A user who is assigned the Perform volume maintenance tasks user right could delete a volume, which could result in the loss of data or a DoS condition.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Perform volume maintenance tasks
```

#### **Impact:**

None - this is the default configuration.

#### **Default Value:**

`Administrators`.

**References:**

1. CCE-35369-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.34 (L1) Ensure 'Profile single process' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users can use tools to monitor the performance of non-system processes. Typically, you do not need to configure this user right to use the Microsoft Management Console (MMC) Performance snap-in. However, you do need this user right if System Monitor is configured to collect data using Windows Management Instrumentation (WMI). Restricting the Profile single process user right prevents intruders from gaining additional information that could be used to mount an attack on the system.

The recommended state for this setting is: `Administrators`.

### Rationale:

The Profile single process user right presents a moderate vulnerability. An attacker with this user right could monitor a computer's performance to help identify critical processes that they might wish to attack directly. The attacker may also be able to determine what processes run on the computer so that they could identify countermeasures that they may need to avoid, such as antivirus software, an intrusion-detection system, or which other users are logged on to a computer.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Profile single process
```

**Impact:**

If you remove the Profile single process user right from the Power Users group or other accounts, you could limit the abilities of users who are assigned to specific administrative roles in your environment. You should ensure that delegated tasks will not be negatively affected.

**Default Value:**

Administrators, Power Users.

**References:**

1. CCE-35000-9

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.35 (L1) Ensure 'Profile system performance' is set to 'Administrators, NT SERVICE\WdiServiceHost' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to use tools to view the performance of different system processes, which could be abused to allow attackers to determine a system's active processes and provide insight into the potential attack surface of the computer.

The recommended state for this setting is: Administrators, NT SERVICE\WdiServiceHost.

### Rationale:

The Profile system performance user right poses a moderate vulnerability. Attackers with this user right could monitor a computer's performance to help identify critical processes that they might wish to attack directly. Attackers may also be able to determine what processes are active on the computer so that they could identify countermeasures that they may need to avoid, such as antivirus software or an intrusion detection system.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Administrators, NT SERVICE\WdiServiceHost:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Profile system performance
```

### Impact:

None - this is the default configuration.



**Default Value:**

Administrators, NT SERVICE\WdiServiceHost.

**References:**

1. CCE-35001-7

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.36 (L1) Ensure 'Replace a process level token' is set to 'LOCAL SERVICE, NETWORK SERVICE' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows one process or service to start another service or process with a different security access token, which can be used to modify the security access token of that sub-process and result in the escalation of privileges.

The recommended state for this setting is: LOCAL SERVICE, NETWORK SERVICE.

### Rationale:

User with the Replace a process level token privilege are able to start processes as other users whose credentials they know. They could use this method to hide their unauthorized actions on the computer. (On Windows 2000-based computers, use of the Replace a process level token user right also requires the user to have the Adjust memory quotas for a process user right that is discussed earlier in this section.)

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to LOCAL SERVICE, NETWORK SERVICE:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Replace a process level token
```

### Impact:

On most computers, this is the default configuration and there will be no negative impact. However, if you have installed *Web Server (IIS)*, you will need to allow the IIS application pool(s) to be granted this User Right Assignment.

**Default Value:**

LOCAL SERVICE, NETWORK SERVICE.

**References:**

1. CCE-35003-3

**Critical Controls:**

16 Account Monitoring and Control

Account Monitoring and Control

## 2.2.37 (L1) Ensure 'Restore files and directories' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users can bypass file, directory, registry, and other persistent object permissions when restoring backed up files and directories on computers that run Windows Vista in your environment. This user right also determines which users can set valid security principals as object owners; it is similar to the Back up files and directories user right.

The recommended state for this setting is: `Administrators`.

### Rationale:

An attacker with the Restore files and directories user right could restore sensitive data to a computer and overwrite data that is more recent, which could lead to loss of important data, data corruption, or a denial of service. Attackers could overwrite executable files that are used by legitimate administrators or system services with versions that include malicious software to grant themselves elevated privileges, compromise data, or install backdoors for continued access to the computer.

**Note:** Even if the following countermeasure is configured, an attacker could still restore data to a computer in a domain that is controlled by the attacker. Therefore, it is critical that organizations carefully protect the media that are used to back up data.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Administrators:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Restore files and directories
```

**Impact:**

If you remove the Restore files and directories user right from the Backup Operators group and other accounts you could make it impossible for users who have been delegated specific tasks to perform those tasks. You should verify that this change won't negatively affect the ability of your organization's personnel to do their jobs.

**Default Value:**

Administrators, Backup Operators.

**References:**

1. CCE-35067-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.38 (L1) Ensure 'Shut down the system' is set to 'Administrators, Users' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting determines which users who are logged on locally to the computers in your environment can shut down the operating system with the Shut Down command. Misuse of this user right can result in a denial of service condition.

The recommended state for this setting is: `Administrators, Users`.

### Rationale:

The ability to shut down a workstation should be available generally to Administrators and authorized Users of that workstation, but not permitted for guests or unauthorized users - in order to prevent a Denial of Service attack.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Administrators, Users`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Shut down the system
```

### Impact:

The impact of removing these default groups from the Shut down the system user right could limit the delegated abilities of assigned roles in your environment. You should confirm that delegated activities will not be adversely affected.

**Default Value:**

Administrators, Backup Operators, Users.

**References:**

1. CCE-35004-1

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.2.39 (L1) Ensure 'Take ownership of files or other objects' is set to 'Administrators' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows users to take ownership of files, folders, registry keys, processes, or threads. This user right bypasses any permissions that are in place to protect objects to give ownership to the specified user.

The recommended state for this setting is: `Administrators`.

### Rationale:

Any users with the Take ownership of files or other objects user right can take control of any object, regardless of the permissions on that object, and then make any changes they wish to that object. Such changes could result in exposure of data, corruption of data, or a DoS condition.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to

`Administrators`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\User Rights Assignment\Take ownership of files or other objects
```

### Impact:

None - this is the default configuration.

### Default Value:

`Administrators`.



**References:**

1. CCE-35009-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 2.3 Security Options

This section contains recommendations for security options.

### 2.3.1 Accounts

This section contains recommendations related to default accounts.

#### 2.3.1.1 (L1) Ensure 'Accounts: Administrator account status' is set to 'Disabled' (Scored)

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting enables or disables the Administrator account during normal operation. When a computer is booted into safe mode, the Administrator account is always enabled, regardless of how this setting is configured. Note that this setting will have no impact when applied to the domain controller organizational unit via group policy because domain controllers have no local account database. It can be configured at the domain level via group policy, similar to account lockout and password policy settings.

The recommended state for this setting is: `Disabled`.

##### **Rationale:**

In some organizations, it can be a daunting management challenge to maintain a regular schedule for periodic password changes for local accounts. Therefore, you may want to disable the built-in Administrator account instead of relying on regular password changes to protect it from attack. Another reason to disable this built-in account is that it cannot be locked out no matter how many failed logons it accrues, which makes it a prime target for brute force attacks that attempt to guess passwords. Also, this account has a well-known security identifier (SID) and there are third-party tools that allow authentication by using the SID rather than the account name. This capability means that even if you rename the Administrator account, an attacker could launch a brute force attack by using the SID to log on.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Accounts: Administrator account status
```

**Impact:**

Maintenance issues can arise under certain circumstances if you disable the Administrator account. For example, if the secure channel between a member computer and the domain controller fails in a domain environment for any reason and there is no other local Administrator account, you must restart in safe mode to fix the problem that broke the secure channel.

If the current Administrator password does not meet the password requirements, you will not be able to re-enable the Administrator account after it is disabled. If this situation occurs, another member of the Administrators group must set the password on the Administrator account with the Local Users and Groups tool.

**Default Value:**

Disabled.

**References:**

1. CCE-33511-7

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.3.1.2 (L1) Ensure 'Accounts: Block Microsoft accounts' is set to 'Users can't add or log on with Microsoft accounts' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting prevents users from adding new Microsoft accounts on this computer.

The recommended state for this setting is: `Users can't add or log on with Microsoft accounts`.

#### Rationale:

Organizations that want to effectively implement identity management policies and maintain firm control of what accounts are used to log onto their computers will probably want to block Microsoft accounts. Organizations may also need to block Microsoft accounts in order to meet the requirements of compliance standards that apply to their information systems.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
NoConnectedUser
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Users can't add or log on with Microsoft accounts`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Accounts: Block Microsoft accounts
```

#### Impact:

Users will not be able to log onto the computer with their Microsoft account.

**Default Value:**

Users are able to use Microsoft accounts with Windows.

**References:**

1. CCE-35487-8

**Critical Controls:**

16 Account Monitoring and Control

Account Monitoring and Control

### 2.3.1.3 (L1) Ensure 'Accounts: Guest account status' is set to 'Disabled' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines whether the Guest account is enabled or disabled. The Guest account allows unauthenticated network users to gain access to the system.

The recommended state for this setting is: `Disabled`.

**Note:** This setting will have no impact when applied to the domain controller organizational unit via group policy because domain controllers have no local account database. It can be configured at the domain level via group policy, similar to account lockout and password policy settings.

#### **Rationale:**

The default Guest account allows unauthenticated network users to log on as Guest with no password. These unauthorized users could access any resources that are accessible to the Guest account over the network. This capability means that any network shares with permissions that allow access to the Guest account, the Guests group, or the Everyone group will be accessible over the network, which could lead to the exposure or corruption of data.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Accounts: Guest account status
---

**Impact:**

All network users will need to authenticate before they can access shared resources. If you disable the Guest account and the Network Access: Sharing and Security Model option is set to Guest Only, network logons, such as those performed by the Microsoft Network Server (SMB Service), will fail. This policy setting should have little impact on most organizations because it is the default setting in Microsoft Windows 2000, Windows XP, and Windows Server™ 2003.

**Default Value:**

Disabled.

**References:**

1. CCE-33949-9

**Critical Controls:****16.1 Perform Regular Account Reviews**

Review all system accounts and disable any account that cannot be associated with a business process and owner.

### *2.3.1.4 (L1) Ensure 'Accounts: Limit local account use of blank passwords to console logon only' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines whether local accounts that are not password protected can be used to log on from locations other than the physical computer console. If you enable this policy setting, local accounts that have blank passwords will not be able to log on to the network from remote client computers. Such accounts will only be able to log on at the keyboard of the computer.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Blank passwords are a serious threat to computer security and should be forbidden through both organizational policy and suitable technical measures. In fact, the default settings for Active Directory domains require complex passwords of at least seven characters. However, if users with the ability to create new accounts bypass your domain-based password policies, they could create accounts with blank passwords. For example, a user could build a stand-alone computer, create one or more accounts with blank passwords, and then join the computer to the domain. The local accounts with blank passwords would still function. Anyone who knows the name of one of these unprotected accounts could then use it to log on.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:LimitBlankPasswordUse
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Accounts: Limit local account use of blank  
passwords to console logon only
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled.

**References:**

1. CCE-32929-2

**Critical Controls:**

16 Account Monitoring and Control

Account Monitoring and Control

### 2.3.1.5 (L1) Configure 'Accounts: Rename administrator account' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

The built-in local administrator account is a well-known account name that attackers will target. It is recommended to choose another name for this account, and to avoid names that denote administrative or elevated access accounts. Be sure to also change the default description for the local administrator (through the Computer Management console).

#### **Rationale:**

The Administrator account exists on all computers that run the Windows 2000 or later operating systems. If you rename this account, it is slightly more difficult for unauthorized persons to guess this privileged user name and password combination.

The built-in Administrator account cannot be locked out, regardless of how many times an attacker might use a bad password. This capability makes the Administrator account a popular target for brute force attacks that attempt to guess passwords. The value of this countermeasure is lessened because this account has a well-known SID, and there are third-party tools that allow authentication by using the SID rather than the account name. Therefore, even if you rename the Administrator account, an attacker could launch a brute force attack by using the SID to log on.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, configure the following UI path:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Accounts: Rename administrator account
```

**Impact:**

You will have to inform users who are authorized to use this account of the new account name. (The guidance for this setting assumes that the Administrator account was not disabled, which was recommended earlier in this chapter.)

**Default Value:**

Administrator.

**References:**

1. CCE-33034-0

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.1.6 (L1) Configure 'Accounts: Rename guest account' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

The built-in local guest account is another well-known name to attackers. It is recommended to rename this account to something that does not indicate its purpose. Even if you disable this account, which is recommended, ensure that you rename it for added security.

#### **Rationale:**

The Guest account exists on all computers that run the Windows 2000 or later operating systems. If you rename this account, it is slightly more difficult for unauthorized persons to guess this privileged user name and password combination.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, configure the following UI path:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Accounts: Rename guest account
```

#### **Impact:**

There should be little impact, because the Guest account is disabled by default.

#### **Default Value:**

Guest.

#### **References:**

1. CCE-35488-6

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.3.2 Audit

This section contains recommendations related to auditing controls.

*2.3.2.1 (L1) Ensure 'Audit: Force audit policy subcategory settings (Windows Vista or later) to override audit policy category settings' is set to 'Enabled' (Scored)*

### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

### **Description:**

This policy setting allows administrators to enable the more precise auditing capabilities present in Windows Vista.

The Audit Policy settings available in Windows Server 2003 Active Directory do not yet contain settings for managing the new auditing subcategories. To properly apply the auditing policies prescribed in this baseline, the Audit: Force audit policy subcategory settings (Windows Vista or later) to override audit policy category settings setting needs to be configured to Enabled.

The recommended state for this setting is: `Enabled`.

**Important:** Be very cautious about audit settings that can generate a large volume of traffic. For example, if you enable either success or failure auditing for all of the Privilege Use subcategories, the high volume of audit events generated can make it difficult to find other types of entries in the Security log. Such a configuration could also have a significant impact on system performance.

### **Rationale:**

Prior to the introduction of auditing subcategories in Windows Vista, it was difficult to track events at a per-system or per-user level. The larger event categories created too many events and the key information that needed to be audited was difficult to find.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:SCENoApplyLegacyAuditPolicy
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Audit: Force audit policy subcategory settings (Windows Vista or later) to override audit policy category settings
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (Advanced Audit Policy Configuration settings will be used for auditing configuration, and legacy Audit Policy configuration settings will be ignored.)

**References:**

1. CCE-35533-9

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

### 2.3.2.2 (L1) Ensure 'Audit: Shut down system immediately if unable to log security audits' is set to 'Disabled' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines whether the system shuts down if it is unable to log Security events. It is a requirement for Trusted Computer System Evaluation Criteria (TCSEC)-C2 and Common Criteria certification to prevent auditable events from occurring if the audit system is unable to log them. Microsoft has chosen to meet this requirement by halting the system and displaying a stop message if the auditing system experiences a failure. When this policy setting is enabled, the system will be shut down if a security audit cannot be logged for any reason.

If the Audit: Shut down system immediately if unable to log security audits setting is enabled, unplanned system failures can occur. The administrative burden can be significant, especially if you also configure the Retention method for the Security log to Do not overwrite events (clear log manually). This configuration causes a repudiation threat (a backup operator could deny that they backed up or restored data) to become a denial of service (DoS) vulnerability, because a server could be forced to shut down if it is overwhelmed with logon events and other security events that are written to the Security log. Also, because the shutdown is not graceful, it is possible that irreparable damage to the operating system, applications, or data could result. Although the NTFS file system guarantees its integrity when an ungraceful computer shutdown occurs, it cannot guarantee that every data file for every application will still be in a usable form when the computer restarts.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

If the computer is unable to record events to the Security log, critical evidence or important troubleshooting information may not be available for review after a security incident. Also, an attacker could potentially generate a large volume of Security log events to purposely force a computer shutdown.



**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:CrashOnAuditFail
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Audit: Shut down system immediately if unable to log security audits
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled.

**References:**

1. CCE-33046-4

**Critical Controls:**

6 Maintenance, Monitoring, and Analysis of Audit Logs  
Maintenance, Monitoring, and Analysis of Audit Logs

**2.3.3 DCOM**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 2.3.4 Devices

This section contains recommendations related to managing devices.

### 2.3.4.1 (L1) Ensure 'Devices: Allowed to format and eject removable media' is set to 'Administrators and Interactive Users' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines who is allowed to format and eject removable NTFS media. You can use this policy setting to prevent unauthorized users from removing data on one computer to access it on another computer on which they have local administrator privileges.

The recommended state for this setting is: `Administrators and Interactive Users`.

#### Rationale:

Users may be able to move data on removable disks to a different computer where they have administrative privileges. The user could then take ownership of any file, grant themselves full control, and view or modify any file. The fact that most removable storage devices will eject media by pressing a mechanical button diminishes the advantage of this policy setting.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon:AllocateDASD
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Administrators and Interactive Users:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Devices: Allowed to format and eject removable media
```

**Impact:**

None - the default value is Administrators only. Administrators and Interactive Users will be able to format and eject removable NTFS media.

**Default Value:**

Administrators. (Only Administrators will be able to format and eject removable NTFS media.)

**References:**

1. CCE-34355-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.3.4.2 (L2) Ensure 'Devices: Prevent users from installing printer drivers' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

For a computer to print to a shared printer, the driver for that shared printer must be installed on the local computer. This security setting determines who is allowed to install a printer driver as part of connecting to a shared printer.

The recommended state for this setting is: `Enabled`.

**Note:** This setting does not affect the ability to add a local printer. This setting does not affect Administrators.

#### Rationale:

It may be appropriate in some organizations to allow users to install printer drivers on their own workstations. However, in a high security environment, you should allow only Administrators, not users, to do this, because printer driver installation may unintentionally cause the computer to become less stable. A malicious user could install inappropriate printer drivers in a deliberate attempt to damage the computer, or a user might accidentally install malicious software that masquerades as a printer driver. It is feasible for an attacker to disguise a Trojan horse program as a printer driver. The program may appear to users as if they must use it to print, but such a program could unleash malicious code on your computer network.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print\Providers\LanMan  
Print Services\Servers:AddPrinterDrivers
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Devices: Prevent users from installing printer drivers
```

## Impact:

Only Administrators will be able to install a printer driver as part of connecting to a shared printer. The ability to add a local printer will not be affected.

## Default Value:

Disabled. (Any user can install a printer driver as part of connecting to a shared printer.)

## References:

1. CCE-33958-0

## Critical Controls:

### 5.1 Minimize And Sparingly Use Administrative Privileges

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## ***2.3.5 Domain controller***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 2.3.6 Domain member

This section contains recommendations related to domain membership.

### 2.3.6.1 (L1) Ensure 'Domain member: Digitally encrypt or sign secure channel data (always)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether all secure channel traffic that is initiated by the domain member must be signed or encrypted.

The recommended state for this setting is: `Enabled`.

#### Rationale:

When a computer joins a domain, a computer account is created. After it joins the domain, the computer uses the password for that account to create a secure channel with the domain controller for its domain every time that it restarts. Requests that are sent on the secure channel are authenticated—and sensitive information such as passwords are encrypted—but the channel is not integrity-checked, and not all information is encrypted.

Digital encryption and signing of the secure channel is a good idea where it is supported. The secure channel protects domain credentials as they are sent to the domain controller.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters:RequireSignOrSeal
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Domain member: Digitally encrypt or sign secure channel data (always)
```

## Impact:

None - this is the default configuration. However, only Windows NT 4.0 with Service Pack 6a (SP6a) and subsequent versions of the Windows operating system support digital encryption and signing of the secure channel. Windows 98 Second Edition clients do not support it unless they have the Dsclient installed. Therefore, you cannot enable the Domain member: Digitally encrypt or sign secure channel data (always) setting on domain controllers that support Windows 98 clients as members of the domain. Potential impacts can include the following:

- The ability to create or delete trust relationships with clients running versions of Windows earlier than Windows NT 4.0 with SP6a will be disabled.
- Logons from clients running versions of Windows earlier than Windows NT 4.0 with SP6a will be disabled.
- The ability to authenticate other domains' users from a domain controller running a version of Windows earlier than Windows NT 4.0 with SP6a in a trusted domain will be disabled.

You can enable this policy setting after you eliminate all Windows 9x clients from the domain and upgrade all Windows NT 4.0 servers and domain controllers from trusted/trusting domains to Windows NT 4.0 with SP6a.

## Default Value:

Enabled. (All secure channel data must be signed or encrypted.)

## References:

1. CCE-34892-0

## Critical Controls:

13 Data Protection

Data Protection

### 2.3.6.2 (L1) Ensure 'Domain member: Digitally encrypt secure channel data (when possible)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether a domain member should attempt to negotiate encryption for all secure channel traffic that it initiates.

The recommended state for this setting is: `Enabled`.

#### Rationale:

When a computer joins a domain, a computer account is created. After it joins the domain, the computer uses the password for that account to create a secure channel with the domain controller for its domain every time that it restarts. Requests that are sent on the secure channel are authenticated—and sensitive information such as passwords are encrypted—but the channel is not integrity-checked, and not all information is encrypted.

Digital encryption and signing of the secure channel is a good idea where it is supported. The secure channel protects domain credentials as they are sent to the domain controller.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters:SealSecureChannel
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Domain member: Digitally encrypt secure channel data (when possible)
```



**Impact:**

None - this is the default configuration. However, only Windows NT 4.0 Service Pack 6a (SP6a) and subsequent versions of the Windows operating system support digital encryption and signing of the secure channel. Windows 98 Second Edition clients do not support it unless they have the Dsclient installed.

**Default Value:**

Enabled. (The domain member will request encryption of all secure channel traffic.)

**References:**

1. CCE-35273-2

**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.6.3 (L1) Ensure 'Domain member: Digitally sign secure channel data (when possible)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether a domain member should attempt to negotiate whether all secure channel traffic that it initiates must be digitally signed. Digital signatures protect the traffic from being modified by anyone who captures the data as it traverses the network.

The recommended state for this setting is: `Enabled`.

#### Rationale:

When a computer joins a domain, a computer account is created. After it joins the domain, the computer uses the password for that account to create a secure channel with the domain controller for its domain every time that it restarts. Requests that are sent on the secure channel are authenticated—and sensitive information such as passwords are encrypted—but the channel is not integrity-checked, and not all information is encrypted.

Digital encryption and signing of the secure channel is a good idea where it is supported. The secure channel protects domain credentials as they are sent to the domain controller.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters:SignSecureChannel
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Domain member: Digitally sign secure channel data (when possible)
```

**Impact:**

None - this is the default configuration. However, only Windows NT 4.0 with Service Pack 6a (SP6a) and subsequent versions of the Windows operating system support digital encryption and signing of the secure channel. Windows 98 Second Edition clients do not support it unless they have the Dsclient installed.

**Default Value:**

Enabled. (The domain member will request digital signing of all secure channel traffic.)

**References:**

1. CCE-34893-8

**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.6.4 (L1) Ensure 'Domain member: Disable machine account password changes' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether a domain member can periodically change its computer account password. Computers that cannot automatically change their account passwords are potentially vulnerable, because an attacker might be able to determine the password for the system's domain account.

The recommended state for this setting is: Disabled.

#### Rationale:

The default configuration for Windows Server 2003-based computers that belong to a domain is that they are automatically required to change the passwords for their accounts every 30 days. If you disable this policy setting, computers that run Windows Server 2003 will retain the same passwords as their computer accounts. Computers that are no longer able to automatically change their account password are at risk from an attacker who could determine the password for the computer's domain account.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters:DisablePasswordChange
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Domain member: Disable machine account password changes
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The domain member can change its computer account password as specified by the *Domain Member: Maximum machine account password age* setting (Rule 2.3.6.5), which by default is every 30 days.)

**References:**

1. CCE-34986-0

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.6.5 (L1) Ensure 'Domain member: Maximum machine account password age' is set to '30 or fewer days, but not 0' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines the maximum allowable age for a computer account password. By default, domain members automatically change their domain passwords every 30 days. If you increase this interval significantly so that the computers no longer change their passwords, an attacker would have more time to undertake a brute force attack against one of the computer accounts.

The recommended state for this setting is: `30 or fewer days, but not 0`.

**Note:** A value of `0` does not conform to the benchmark as it disables maximum password age.

#### Rationale:

In Active Directory-based domains, each computer has an account and password just like every user. By default, the domain members automatically change their domain password every 30 days. If you increase this interval significantly, or set it to `0` so that the computers no longer change their passwords, an attacker will have more time to undertake a brute force attack to guess the password of one or more computer accounts.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `30 or fewer days, but not 0`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Domain member: Maximum machine account password age
```

**Impact:**

None - this is the default configuration.

**Default Value:**

30 days.

**References:**

1. CCE-34894-6

**Critical Controls:**

16 Account Monitoring and Control

Account Monitoring and Control

### 2.3.6.6 (L1) Ensure 'Domain member: Require strong (Windows 2000 or later) session key' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

When this policy setting is enabled, a secure channel can only be established with domain controllers that are capable of encrypting secure channel data with a strong (128-bit) session key.

To enable this policy setting, all domain controllers in the domain must be able to encrypt secure channel data with a strong key, which means all domain controllers must be running Microsoft Windows 2000 or later.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Session keys that are used to establish secure channel communications between domain controllers and member computers are much stronger in Windows 2000 than they were in previous Microsoft operating systems. Whenever possible, you should take advantage of these stronger session keys to help protect secure channel communications from attacks that attempt to hijack network sessions and eavesdropping. (Eavesdropping is a form of hacking in which network data is read or altered in transit. The data can be modified to hide or change the sender, or be redirected.)

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters:RequireStrongKey
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Domain member: Require strong (Windows 2000 or later) session key
```

**Impact:**

None - this is the default configuration. However, computers will not be able to join Windows NT 4.0 domains, and trusts between Active Directory domains and Windows NT-style domains may not work properly.

**Default Value:**

Enabled. (The secure channel will not be established unless 128-bit encryption can be performed.)

**References:**

1. CCE-35177-5

**Critical Controls:**

13 Data Protection

Data Protection

## 2.3.7 Interactive logon

This section contains recommendations related to interactive logons.

### 2.3.7.1 (L1) Ensure 'Interactive logon: Do not display last user name' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether the account name of the last user to log on to the client computers in your organization will be displayed in each computer's respective Windows logon screen. Enable this policy setting to prevent intruders from collecting account names visually from the screens of desktop or laptop computers in your organization.

The recommended state for this setting is: `Enabled`.

#### Rationale:

An attacker with access to the console (for example, someone with physical access or someone who is able to connect to the server through Terminal Services) could view the name of the last user who logged on to the server. The attacker could then try to guess the password, use a dictionary, or use a brute-force attack to try and log on.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:  
DontDisplayLastUserName
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Interactive logon: Do not display last user name
```

**Impact:**

The name of the last user to successfully log on is not be displayed in the Windows logon screen.

**Default Value:**

Disabled. (The name of the last user to log on is displayed in the Windows logon screen.)

**References:**

1. CCE-34898-7

**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.7.2 (L1) Ensure 'Interactive logon: Do not require CTRL+ALT+DEL' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether users must press CTRL+ALT+DEL before they log on.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Microsoft developed this feature to make it easier for users with certain types of physical impairments to log on to computers that run Windows. If users are not required to press CTRL+ALT+DEL, they are susceptible to attacks that attempt to intercept their passwords. If CTRL+ALT+DEL is required before logon, user passwords are communicated by means of a trusted path.

An attacker could install a Trojan horse program that looks like the standard Windows logon dialog box and capture the user's password. The attacker would then be able to log on to the compromised account with whatever level of privilege that user has.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
DisableCAD
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Interactive logon: Do not require CTRL+ALT+DEL
```

**Impact:**

Users must press CTRL+ALT+DEL before they log on to Windows unless they use a smart card for Windows logon. A smart card is a tamper-proof device that stores security information.

**Default Value:**

On Windows 8 or later: Enabled. On Windows 7 or earlier: Disabled.

**References:**

1. CCE-35099-1

**Critical Controls:**

8 Malware Defenses

Malware Defenses

### 2.3.7.3 (BL) Ensure 'Interactive logon: Machine account lockout threshold' is set to '10 or fewer invalid logon attempts, but not 0' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

This security setting determines the number of failed logon attempts that causes the machine to be locked out.

Failed password attempts against workstations or member servers that have been locked using either CTRL+ALT+DELETE or password protected screen savers counts as failed logon attempts.

The machine lockout policy is enforced only on those machines that have BitLocker enabled for protecting OS volumes. Please ensure that appropriate recovery password backup policies are enabled.

The recommended state for this setting is: 10 or fewer invalid logon attempts, but not 0.

**Note:** A value of 0 does not conform to the benchmark as it disables the machine account lockout threshold. Values from 1 to 3 will be interpreted as 4.

#### Rationale:

If a machine is lost or stolen, or if an insider threat attempts a brute force password attack against the computer, it is important to ensure that BitLocker will lock the computer and therefore prevent a successful attack.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
MaxDevicePasswordFailedAttempts
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to 10 or fewer invalid logon attempts, but not 0:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Interactive logon: Machine account lockout threshold
```

**Impact:**

Users will be able to mistype their password several times, but the machine account will be locked out if a brute force password attack occurs. A locked out machine can only be recovered by providing the BitLocker recovery key at the console.

**Default Value:**

0 invalid logon attempts. (The machine will never lock out.)

**References:**

1. CCE-34899-5

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

**16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### 2.3.7.4 (L1) Ensure 'Interactive logon: Machine inactivity limit' is set to '900 or fewer second(s), but not 0' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Windows notices inactivity of a logon session, and if the amount of inactive time exceeds the inactivity limit, then the screen saver will run, locking the session.

The recommended state for this setting is: 900 or fewer second(s), but not 0.

**Note:** A value of 0 does not conform to the benchmark as it disables the machine inactivity limit.

#### Rationale:

If a user forgets to lock their computer when they walk away it's possible that a passerby will hijack it.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:  
InactivityTimeoutSecs
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to 900 or fewer seconds, but not 0:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Interactive logon: Machine inactivity limit
```

#### Impact:

The screen saver will automatically activate when the computer has been unattended for the amount of time specified. The impact should be minimal since the screen saver is enabled by default.



**Default Value:**

0 seconds. (There is no inactivity limit).

**References:**

1. CCE-34900-1

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### 2.3.7.5 (L1) Configure 'Interactive logon: Message text for users attempting to log on' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting specifies a text message that displays to users when they log on. Set the following group policy to a value that is consistent with the security and operational requirements of your organization.

#### Rationale:

Displaying a warning message before logon may help prevent an attack by warning the attacker about the consequences of their misconduct before it happens. It may also help to reinforce corporate policy by notifying employees of the appropriate policy during the logon process. This text is often used for legal reasons—for example, to warn users about the ramifications of misusing company information or to warn them that their actions may be audited.

**Note:** Any warning that you display should first be approved by your organization's legal and human resources representatives.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
LegalNoticeText
```

#### Remediation:

To establish the recommended configuration via GP, configure the following UI path to a value that is consistent with the security and operational requirements of your organization:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Interactive logon: Message text for users
attempting to log on
```

**Impact:**

Users will have to acknowledge a dialog box containing the configured text before they can log on to the computer.

**Note:** Windows Vista and Windows XP Professional support logon banners that can exceed 512 characters in length and that can also contain carriage-return line-feed sequences. However, Windows 2000-based clients cannot interpret and display these messages. You must use a Windows 2000-based computer to create a logon message policy that applies to Windows 2000-based computers.

**Default Value:**

No message.

**References:**

1. CCE-35064-5

### 2.3.7.6 (L1) Configure 'Interactive logon: Message title for users attempting to log on' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting specifies the text displayed in the title bar of the window that users see when they log on to the system. Configure this setting in a manner that is consistent with the security and operational requirements of your organization.

#### Rationale:

Displaying a warning message before logon may help prevent an attack by warning the attacker about the consequences of their misconduct before it happens. It may also help to reinforce corporate policy by notifying employees of the appropriate policy during the logon process.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
LegalNoticeCaption
```

#### Remediation:

To establish the recommended configuration via GP, configure the following UI path to a value that is consistent with the security and operational requirements of your organization:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Interactive logon: Message title for users
attempting to log on
```

#### Impact:

Users will have to acknowledge a dialog box with the configured title before they can log on to the computer.

**Default Value:**

No message.

**References:**

1. CCE-35179-1

### 2.3.7.7 (L2) Ensure 'Interactive logon: Number of previous logons to cache (in case domain controller is not available)' is set to '4 or fewer logon(s)' (Scored)

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting determines whether a user can log on to a Windows domain using cached account information. Logon information for domain accounts can be cached locally to allow users to log on even if a domain controller cannot be contacted. This policy setting determines the number of unique users for whom logon information is cached locally. If this value is set to 0, the logon cache feature is disabled. An attacker who is able to access the file system of the server could locate this cached information and use a brute force attack to determine user passwords.

The recommended state for this setting is: `4 or fewer logon(s)`.

#### **Rationale:**

The number that is assigned to this policy setting indicates the number of users whose logon information the computer will cache locally. If the number is set to 4, then the computer caches logon information for 4 users. When a 5th user logs on to the computer, the server overwrites the oldest cached logon session.

Users who access the computer console will have their logon credentials cached on that computer. An attacker who is able to access the file system of the computer could locate this cached information and use a brute force attack to attempt to determine user passwords. To mitigate this type of attack, Windows encrypts the information and obscures its physical location.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon:CachedLogonsCount
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to 4 or fewer logon(s):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Interactive logon: Number of previous logons to cache (in case domain controller is not available)
```

## Impact:

Users will be unable to log on to any computers if there is no domain controller available to authenticate them. Organizations may want to configure this value to 2 for end-user computers, especially for mobile users. A configuration value of 2 means that the user's logon information will still be in the cache, even if a member of the IT department has recently logged on to their computer to perform system maintenance. This method allows users to log on to their computers when they are not connected to the organization's network.

## Default Value:

10 logons.

## References:

1. CCE-34901-9

## Critical Controls:

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.7.8 (L1) Ensure 'Interactive logon: Prompt user to change password before expiration' is set to 'between 5 and 14 days' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines how far in advance users are warned that their password will expire. It is recommended that you configure this policy setting to at least 5 days but no more than 14 days to sufficiently warn users when their passwords will expire.

The recommended state for this setting is: `between 5 and 14 days`.

#### Rationale:

Users will need to be warned that their passwords are going to expire, or they may inadvertently be locked out of the computer when their passwords expire. This condition could lead to confusion for users who access the network locally, or make it impossible for users to access your organization's network through dial-up or virtual private network (VPN) connections.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon>PasswordExpiryWarning
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to a value between 5 and 14 days:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Interactive logon: Prompt user to change password  
before expiration
```



**Impact:**

Users will see a dialog box prompt to change their password each time that they log on to the domain when their password is configured to expire between 5 and 14 days.

**Default Value:**

5 days.

**References:**

1. CCE-35274-0

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.7.9 (L1) Ensure 'Interactive logon: Smart card removal behavior' is set to 'Lock Workstation' or higher (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines what happens when the smart card for a logged-on user is removed from the smart card reader.

The recommended state for this setting is: `Lock Workstation`. Configuring this setting to `Force Logoff` or `Disconnect if a Remote Desktop Services session` also conforms with the benchmark.

#### Rationale:

Users sometimes forget to lock their workstations when they are away from them, allowing the possibility for malicious users to access their computers. If smart cards are used for authentication, the computer should automatically lock itself when the card is removed to ensure that only the user with the smart card is accessing resources using those credentials.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed, noting that values of `Force Logoff` or `Disconnect if a Remote Desktop Services session` are also acceptable settings. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon:ScRemoveOption
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Lock Workstation`(or, if applicable for your environment, `Force Logoff` or `Disconnect if a Remote Desktop Services session`):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Interactive logon: Smart card removal behavior
```

**Impact:**

If you select `Lock Workstation`, the workstation is locked when the smart card is removed, allowing users to leave the area, take their smart card with them, and still maintain a protected session.

If you select `Force Logoff`, users are automatically logged off when their smart card is removed.

If you select `Disconnect if a Remote Desktop Services session`, removal of the smart card disconnects the session without logging the users off. This allows the user to insert the smart card and resume the session later, or at another smart card reader-equipped computer, without having to log on again. If the session is local, this policy will function identically to `Lock Workstation`.

Enforcing this setting on computers used by people who must log onto multiple computers in order to perform their duties could be frustrating and lower productivity. For example, if network administrators are limited to a single account but need to log into several computers simultaneously in order to effectively manage the network enforcing this setting will limit them to logging onto one computer at a time. For these reasons it is recommended that this setting only be enforced on workstations used for purposes commonly associated with typical users such as document creation and email.

**Default Value:**

No action.

**References:**

1. CCE-34988-6

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

## 2.3.8 Microsoft network client

This section contains recommendations related to configuring the Microsoft network client.

### 2.3.8.1 (L1) Ensure 'Microsoft network client: Digitally sign communications (always)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether packet signing is required by the SMB client component.

**Note:** When Windows Vista-based computers have this policy setting enabled and they connect to file or print shares on remote servers, it is important that the setting is synchronized with its companion setting, **Microsoft network server: Digitally sign communications (always)**, on those servers. For more information about these settings, see the "Microsoft network client and server: Digitally sign communications (four related settings)" section in Chapter 5 of the Threats and Countermeasures guide.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Session hijacking uses tools that allow attackers who have access to the same network as the client or server to interrupt, end, or steal a session in progress. Attackers can potentially intercept and modify unsigned SMB packets and then modify the traffic and forward it so that the server might perform undesirable actions. Alternatively, the attacker could pose as the server or client after legitimate authentication and gain unauthorized access to data.

SMB is the resource sharing protocol that is supported by many Windows operating systems. It is the basis of NetBIOS and many other protocols. SMB signatures authenticate both users and the servers that host the data. If either side fails the authentication process, data transmission will not take place.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanmanWorkstation\Parameters:RequireSecuritySignature
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network client: Digitally sign communications (always)
```

## Impact:

The Microsoft network client will not communicate with a Microsoft network server unless that server agrees to perform SMB packet signing.

The Windows 2000 Server, Windows 2000 Professional, Windows Server 2003, Windows XP Professional and Windows Vista implementations of the SMB file and print sharing protocol support mutual authentication, which prevents session hijacking attacks and supports message authentication to prevent man-in-the-middle attacks. SMB signing provides this authentication by placing a digital signature into each SMB, which is then verified by both the client and the server.

Implementation of SMB signing may negatively affect performance, because each packet needs to be signed and verified. If these settings are enabled on a server that is performing multiple roles, such as a small business server that is serving as a domain controller, file server, print server, and application server performance may be substantially slowed. Additionally, if you configure computers to ignore all unsigned SMB communications, older applications and operating systems will not be able to connect. However, if you completely disable all SMB signing, computers will be vulnerable to session hijacking attacks.

When SMB signing policies are enabled on domain controllers running Windows Server 2003 and member computers running Windows Vista SP1 or Windows Server 2008 group policy processing will fail. A hotfix is available from Microsoft that resolves this issue; see Microsoft Knowledge Base article 950876 for more details: [Group Policy settings are not applied on member computers that are running Windows Server 2008 or Windows Vista SP1 when certain SMB signing policies are enabled.](#)

**Default Value:**

Disabled. (SMB packet signing is negotiated between the client and server.)

**References:**

1. CCE-35222-9

**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.8.2 (L1) Ensure 'Microsoft network client: Digitally sign communications (if server agrees)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether the SMB client will attempt to negotiate SMB packet signing.

**Note:** Enabling this policy setting on SMB clients on your network makes them fully effective for packet signing with all clients and servers in your environment.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Session hijacking uses tools that allow attackers who have access to the same network as the client or server to interrupt, end, or steal a session in progress. Attackers can potentially intercept and modify unsigned SMB packets and then modify the traffic and forward it so that the server might perform undesirable actions. Alternatively, the attacker could pose as the server or client after legitimate authentication and gain unauthorized access to data.

SMB is the resource sharing protocol that is supported by many Windows operating systems. It is the basis of NetBIOS and many other protocols. SMB signatures authenticate both users and the servers that host the data. If either side fails the authentication process, data transmission will not take place.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanmanWorkstation\Parameters:EnableSecuritySignature
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network client: Digitally sign communications (if server agrees)
```

## Impact:

None - this is the default behavior.

The Windows 2000 Server, Windows 2000 Professional, Windows Server 2003, Windows XP Professional and Windows Vista implementations of the SMB file and print sharing protocol support mutual authentication, which prevents session hijacking attacks and supports message authentication to prevent man-in-the-middle attacks. SMB signing provides this authentication by placing a digital signature into each SMB, which is then verified by both the client and the server.

Implementation of SMB signing may negatively affect performance, because each packet needs to be signed and verified. If these settings are enabled on a server that is performing multiple roles, such as a small business server that is serving as a domain controller, file server, print server, and application server performance may be substantially slowed. Additionally, if you configure computers to ignore all unsigned SMB communications, older applications and operating systems will not be able to connect. However, if you completely disable all SMB signing, computers will be vulnerable to session hijacking attacks.

When SMB signing policies are enabled on domain controllers running Windows Server 2003 and member computers running Windows Vista SP1 or Windows Server 2008 group policy processing will fail. A hotfix is available from Microsoft that resolves this issue; see Microsoft Knowledge Base article 950876 for more details: [Group Policy settings are not applied on member computers that are running Windows Server 2008 or Windows Vista SP1 when certain SMB signing policies are enabled.](#)

## Default Value:

Enabled. (The Microsoft network client will ask the server to perform SMB packet signing upon session setup. If packet signing has been enabled on the server, packet signing will be negotiated.)

## References:

1. CCE-34908-4



**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.8.3 (L1) Ensure 'Microsoft network client: Send unencrypted password to third-party SMB servers' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether the SMB redirector will send plaintext passwords during authentication to third-party SMB servers that do not support password encryption.

It is recommended that you disable this policy setting unless there is a strong business case to enable it. If this policy setting is enabled, unencrypted passwords will be allowed across the network.

The recommended state for this setting is: `Disabled`.

#### Rationale:

If you enable this policy setting, the server can transmit passwords in plaintext across the network to other computers that offer SMB services, which is a significant security risk. These other computers may not use any of the SMB security mechanisms that are included with Windows Server 2003.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanmanWorkstation\Parameters:EnablePlainTextPassword
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network client: Send unencrypted password to third-party SMB servers
```

**Impact:**

None - this is the default configuration.

Some very old applications and operating systems such as MS-DOS, Windows for Workgroups 3.11, and Windows 95a may not be able to communicate with the servers in your organization by means of the SMB protocol.

**Default Value:**

Disabled. (Plaintext passwords will not be sent during authentication to third-party SMB servers that do not support password encryption.)

**References:**

1. CCE-33717-0

**Critical Controls:**

13 Data Protection

Data Protection

## 2.3.9 Microsoft network server

This section contains recommendations related to configuring the Microsoft network server.

### 2.3.9.1 (L1) Ensure 'Microsoft network server: Amount of idle time required before suspending session' is set to '15 or fewer minute(s), but not 0' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to specify the amount of continuous idle time that must pass in an SMB session before the session is suspended because of inactivity. Administrators can use this policy setting to control when a computer suspends an inactive SMB session. If client activity resumes, the session is automatically reestablished.

A value of 0 appears to allow sessions to persist indefinitely. The maximum value is 99999, which is over 69 days; in effect, this value disables the setting.

The recommended state for this setting is: `15 or fewer minute(s), but not 0.`

#### Rationale:

Each SMB session consumes server resources, and numerous null sessions will slow the server or possibly cause it to fail. An attacker could repeatedly establish SMB sessions until the server's SMB services become slow or unresponsive.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:  
AutoDisconnect
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to 15 or fewer minute(s), but not 0:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network server: Amount of idle time required before suspending session
```

**Impact:**

There will be little impact because SMB sessions will be re-established automatically if the client resumes activity.

**Default Value:**

15 minutes.

**References:**

1. CCE-34909-2

**Critical Controls:**

3 Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers

Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers

### 2.3.9.2 (L1) Ensure 'Microsoft network server: Digitally sign communications (always)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether packet signing is required by the SMB server component. Enable this policy setting in a mixed environment to prevent downstream clients from using the workstation as a network server.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Session hijacking uses tools that allow attackers who have access to the same network as the client or server to interrupt, end, or steal a session in progress. Attackers can potentially intercept and modify unsigned SMB packets and then modify the traffic and forward it so that the server might perform undesirable actions. Alternatively, the attacker could pose as the server or client after legitimate authentication and gain unauthorized access to data.

SMB is the resource sharing protocol that is supported by many Windows operating systems. It is the basis of NetBIOS and many other protocols. SMB signatures authenticate both users and the servers that host the data. If either side fails the authentication process, data transmission will not take place.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:
RequireSecuritySignature
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network server: Digitally sign communications (always)
```

## Impact:

The Microsoft network server will not communicate with a Microsoft network client unless that client agrees to perform SMB packet signing.

The Windows 2000 Server, Windows 2000 Professional, Windows Server 2003, Windows XP Professional and Windows Vista implementations of the SMB file and print sharing protocol support mutual authentication, which prevents session hijacking attacks and supports message authentication to prevent man-in-the-middle attacks. SMB signing provides this authentication by placing a digital signature into each SMB, which is then verified by both the client and the server.

Implementation of SMB signing may negatively affect performance, because each packet needs to be signed and verified. If these settings are enabled on a server that is performing multiple roles, such as a small business server that is serving as a domain controller, file server, print server, and application server performance may be substantially slowed. Additionally, if you configure computers to ignore all unsigned SMB communications, older applications and operating systems will not be able to connect. However, if you completely disable all SMB signing, computers will be vulnerable to session hijacking attacks.

When SMB signing policies are enabled on domain controllers running Windows Server 2003 and member computers running Windows Vista SP1 or Windows Server 2008 group policy processing will fail. A hotfix is available from Microsoft that resolves this issue; see Microsoft Knowledge Base article 950876 for more details: [Group Policy settings are not applied on member computers that are running Windows Server 2008 or Windows Vista SP1 when certain SMB signing policies are enabled.](#)

## Default Value:

Disabled. (SMB packet signing is negotiated between the client and server.)

## References:

1. CCE-35065-2

**Critical Controls:**

13 Data Protection

Data Protection



### 2.3.9.3 (L1) Ensure 'Microsoft network server: Digitally sign communications (if client agrees)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether the SMB server will negotiate SMB packet signing with clients that request it. If no signing request comes from the client, a connection will be allowed without a signature if the **Microsoft network server: Digitally sign communications (always)** setting is not enabled.

**Note:** Enable this policy setting on SMB clients on your network to make them fully effective for packet signing with all clients and servers in your environment.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Session hijacking uses tools that allow attackers who have access to the same network as the client or server to interrupt, end, or steal a session in progress. Attackers can potentially intercept and modify unsigned SMB packets and then modify the traffic and forward it so that the server might perform undesirable actions. Alternatively, the attacker could pose as the server or client after legitimate authentication and gain unauthorized access to data.

SMB is the resource sharing protocol that is supported by many Windows operating systems. It is the basis of NetBIOS and many other protocols. SMB signatures authenticate both users and the servers that host the data. If either side fails the authentication process, data transmission will not take place.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:  
EnableSecuritySignature
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network server: Digitally sign communications (if client agrees)
```

## Impact:

The Microsoft network server will negotiate SMB packet signing as requested by the client. That is, if packet signing has been enabled on the client, packet signing will be negotiated.

The Windows 2000 Server, Windows 2000 Professional, Windows Server 2003, Windows XP Professional and Windows Vista implementations of the SMB file and print sharing protocol support mutual authentication, which prevents session hijacking attacks and supports message authentication to prevent man-in-the-middle attacks. SMB signing provides this authentication by placing a digital signature into each SMB, which is then verified by both the client and the server.

Implementation of SMB signing may negatively affect performance, because each packet needs to be signed and verified. If these settings are enabled on a server that is performing multiple roles, such as a small business server that is serving as a domain controller, file server, print server, and application server performance may be substantially slowed. Additionally, if you configure computers to ignore all unsigned SMB communications, older applications and operating systems will not be able to connect. However, if you completely disable all SMB signing, computers will be vulnerable to session hijacking attacks.

When SMB signing policies are enabled on domain controllers running Windows Server 2003 and member computers running Windows Vista SP1 or Windows Server 2008 group policy processing will fail. A hotfix is available from Microsoft that resolves this issue; see Microsoft Knowledge Base article 950876 for more details: [Group Policy settings are not applied on member computers that are running Windows Server 2008 or Windows Vista SP1 when certain SMB signing policies are enabled.](#)

## Default Value:

Disabled. (The SMB client will never negotiate SMB packet signing.)

## References:

1. CCE-35182-5

**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.9.4 (L1) Ensure 'Microsoft network server: Disconnect clients when logon hours expire' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This security setting determines whether to disconnect users who are connected to the local computer outside their user account's valid logon hours. This setting affects the Server Message Block (SMB) component. If you enable this policy setting you should also enable **Network security: Force logoff when logon hours expire** (Rule 2.3.11.6).

If your organization configures logon hours for users, this policy setting is necessary to ensure they are effective.

The recommended state for this setting is: `Enabled`.

#### Rationale:

If your organization configures logon hours for users, then it makes sense to enable this policy setting. Otherwise, users who should not have access to network resources outside of their logon hours may actually be able to continue to use those resources with sessions that were established during allowed hours.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:  
EnableForcedLogoff
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Microsoft network server: Disconnect clients when  
logon hours expire
```

**Impact:**

None - this is the default configuration. If logon hours are not used in your organization, this policy setting will have no impact. If logon hours are used, existing user sessions will be forcibly terminated when their logon hours expire.

**Default Value:**

Enabled. (Client sessions with the SMB service are forcibly disconnected when the client's logon hours expire.)

**References:**

1. CCE-34911-8

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.9.5 (L1) Ensure 'Microsoft network server: Server SPN target name validation level' is set to 'Accept if provided by client' or higher (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls the level of validation a computer with shared folders or printers (the server) performs on the service principal name (SPN) that is provided by the client computer when it establishes a session using the server message block (SMB) protocol.

The server message block (SMB) protocol provides the basis for file and print sharing and other networking operations, such as remote Windows administration. The SMB protocol supports validating the SMB server service principal name (SPN) within the authentication blob provided by a SMB client to prevent a class of attacks against SMB servers referred to as SMB relay attacks. This setting will affect both SMB1 and SMB2.

The recommended state for this setting is: `Accept if provided by client`. Configuring this setting to `Required from client` also conforms to the benchmark.

#### Rationale:

The identity of a computer can be spoofed to gain unauthorized access to network resources.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:  
SMBServerNameHardeningLevel
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Accept if provided by client` (configuring to `Required from client` also conforms to the benchmark):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Microsoft network server: Server SPN target name validation level
```

## Impact:

All Windows operating systems support both a client-side SMB component and a server-side SMB component. This setting affects the server SMB behavior, and its implementation should be carefully evaluated and tested to prevent disruptions to file and print serving capabilities.

If configured to `Accept if provided by client`, the SMB server will accept and validate the SPN provided by the SMB client and allow a session to be established if it matches the SMB server's list of SPN's for itself. If the SPN does NOT match, the session request for that SMB client will be denied.

If configured to `Required from client`, the SMB client MUST send a SPN name in session setup, and the SPN name provided MUST match the SMB server that is being requested to establish a connection. If no SPN is provided by client, or the SPN provided does not match, the session is denied.

## Default Value:

Off. (The SPN is not required or validated by the SMB server from a SMB client.)

## References:

1. CCE-35299-7

## Critical Controls:

14 Controlled Access Based on the Need to Know  
Controlled Access Based on the Need to Know

## 2.3.10 Network access

This section contains recommendations related to network access.

### 2.3.10.1 (L1) Ensure 'Network access: Allow anonymous SID/Name translation' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether an anonymous user can request security identifier (SID) attributes for another user, or use a SID to obtain its corresponding user name.

The recommended state for this setting is: `Disabled`.

#### Rationale:

If this policy setting is enabled, a user with local access could use the well-known Administrator's SID to learn the real name of the built-in Administrator account, even if it has been renamed. That person could then use the account name to initiate a password guessing attack.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network access: Allow anonymous SID/Name translation
```

#### Impact:

None - this is the default configuration.



**Default Value:**

Disabled. (An anonymous user cannot request the SID attribute for another user.)

**References:**

1. CCE-34914-2

**Critical Controls:**

13 Data Protection

Data Protection

### 2.3.10.2 (L1) Ensure 'Network access: Do not allow anonymous enumeration of SAM accounts' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls the ability of anonymous users to enumerate the accounts in the Security Accounts Manager (SAM). If you enable this policy setting, users with anonymous connections will not be able to enumerate domain account user names on the systems in your environment. This policy setting also allows additional restrictions on anonymous connections.

The recommended state for this setting is: `Enabled`.

**Note:** This policy has no effect on domain controllers.

#### Rationale:

An unauthorized user could anonymously list account names and use the information to attempt to guess passwords or perform social engineering attacks. (Social engineering attacks try to deceive users in some way to obtain passwords or some form of security information.)

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:RestrictAnonymousSAM
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network access: Do not allow anonymous enumeration of SAM accounts
```

**Impact:**

None - this is the default configuration. It will be impossible to establish trusts with Windows NT 4.0-based domains. Also, client computers that run older versions of the Windows operating system such as Windows NT 3.51 and Windows 95 will experience problems when they try to use resources on the server.

**Default Value:**

Enabled. (Do not allow anonymous enumeration of SAM accounts. This option replaces Everyone with Authenticated Users in the security permissions for resources.)

**References:**

1. CCE-34631-2

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.10.3 (L1) Ensure 'Network access: Do not allow anonymous enumeration of SAM accounts and shares' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls the ability of anonymous users to enumerate SAM accounts as well as shares. If you enable this policy setting, anonymous users will not be able to enumerate domain account user names and network share names on the systems in your environment.

The recommended state for this setting is: `Enabled`.

**Note:** This policy has no effect on domain controllers.

#### Rationale:

An unauthorized user could anonymously list account names and shared resources and use the information to attempt to guess passwords or perform social engineering attacks. (Social engineering attacks try to deceive users in some way to obtain passwords or some form of security information.)

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:RestrictAnonymous
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network access: Do not allow anonymous enumeration of SAM accounts and shares
```

**Impact:**

It will be impossible to establish trusts with Windows NT 4.0-based domains. Also, client computers that run older versions of the Windows operating system such as Windows NT 3.51 and Windows 95 will experience problems when they try to use resources on the server. Users who access file and print servers anonymously will be unable to list the shared network resources on those servers; the users will have to authenticate before they can view the lists of shared folders and printers. However, even with this policy setting enabled, anonymous users will have access to resources with permissions that explicitly include the built-in group, `ANONYMOUS LOGON`.

**Default Value:**

Disabled. (Allow anonymous enumeration of SAM accounts and shares. No additional permissions can be assigned by the administrator for anonymous connections to the computer. Anonymous connections will rely on default permissions.)

**References:**

1. CCE-34723-7

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### *2.3.10.4 (L1) Ensure 'Network access: Do not allow storage of passwords and credentials for network authentication' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines whether Credential Manager (formerly called Stored User Names and Passwords) saves passwords or credentials for later use when it gains domain authentication.

The recommended state for this setting is: `Enabled`.

**Note:** Changes to this setting will not take effect until Windows is restarted.

#### **Rationale:**

Passwords that are cached can be accessed by the user when logged on to the computer. Although this information may sound obvious, a problem can arise if the user unknowingly executes hostile code that reads the passwords and forwards them to another, unauthorized user.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:DisableDomainCreds
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network access: Do not allow storage of passwords and credentials for network authentication
```

**Impact:**

Credential Manager will not store passwords and credentials on the computer. Users will be forced to enter passwords whenever they log on to their Passport account or other network resources that aren't accessible to their domain account. Testing has shown that clients running Windows Vista or Windows Server 2008 will be unable to connect to Distributed File System (DFS) shares in untrusted domains. Enabling this setting also makes it impossible to specify alternate credentials for scheduled tasks, this can cause a variety of problems. For example, some third party backup products will no longer work. This policy setting should have no impact on users who access network resources that are configured to allow access with their Active Directory-based domain account.

**Default Value:**

Disabled. (Credential Manager will store passwords and credentials on the computer for later use for domain authentication.)

**References:**

1. CCE-33718-8

**Critical Controls:****16.14 Encrypt/Hash All Authentication Files And Monitor Their Access**

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

### 2.3.10.5 (L1) Ensure 'Network access: Let Everyone permissions apply to anonymous users' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines what additional permissions are assigned for anonymous connections to the computer.

The recommended state for this setting is: `Disabled`.

#### Rationale:

An unauthorized user could anonymously list account names and shared resources and use the information to attempt to guess passwords, perform social engineering attacks, or launch DoS attacks.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:EveryoneIncludesAnonymous
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network access: Let Everyone permissions apply to anonymous users
```

#### Impact:

None - this is the default configuration.



**Default Value:**

Disabled. (Anonymous users can only access those resources for which the built-in group ANONYMOUS LOGON has been explicitly given permission.)

**References:**

1. CCE-35367-2

**Critical Controls:**

14 Controlled Access Based on the Need to Know

Controlled Access Based on the Need to Know

16 Account Monitoring and Control

Account Monitoring and Control

### 2.3.10.6 (L1) Ensure 'Network access: Named Pipes that can be accessed anonymously' is set to 'None' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines which communication sessions, or pipes, will have attributes and permissions that allow anonymous access.

The recommended state for this setting is: <blank> (i.e. None).

#### Rationale:

Limiting named pipes that can be accessed anonymously will reduce the attack surface of the system.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:  
NullSessionPipes
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to <blank> (i.e. None):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Network access: Named Pipes that can be accessed  
anonymously
```

#### Impact:

This configuration will disable null session access over named pipes, and applications that rely on this feature or on unauthenticated access to named pipes will no longer function.

**Default Value:**

None.

**References:**

1. CCE-34965-4

**Critical Controls:****14.1 Implement Network Segmentation Based On Information Class**

Segment the network based on the label or classification level of the information stored on the servers. Locate all sensitive information on separated VLANS with firewall filtering to ensure that only authorized individuals are only able to communicate with systems necessary to fulfill their specific responsibilities.

### 2.3.10.7 (L1) Ensure 'Network access: Remotely accessible registry paths' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines which registry paths will be accessible over the network, regardless of the users or groups listed in the access control list (ACL) of the `winreg` registry key.

**Note:** This setting does not exist in Windows XP. There was a setting with that name in Windows XP, but it is called "Network access: Remotely accessible registry paths and sub-paths" in Windows Server 2003, Windows Vista, and Windows Server 2008.

**Note:** When you configure this setting you specify a list of one or more objects. The delimiter used when entering the list is a line feed or carriage return, that is, type the first object on the list, press the Enter button, type the next object, press Enter again, etc. The setting value is stored as a comma-delimited list in group policy security templates. It is also rendered as a comma-delimited list in Group Policy Editor's display pane and the Resultant Set of Policy console. It is recorded in the registry as a line-feed delimited list in a `REG_MULTI_SZ` value.

The recommended state for this setting is:

```
System\CurrentControlSet\Control\ProductOptions  
System\CurrentControlSet\Control\Server Applications  
Software\Microsoft\Windows NT\CurrentVersion
```

#### Rationale:

The registry is a database that contains computer configuration information, and much of the information is sensitive. An attacker could use this information to facilitate unauthorized activities. To reduce the risk of such an attack, suitable ACLs are assigned throughout the registry to help protect it from access by unauthorized users.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SecurePipeServers\Winreg\AllowedExactPaths:Machine
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to:

```
System\CurrentControlSet\Control\ProductOptions  
System\CurrentControlSet\Control\Server Applications  
SOFTWARE\Microsoft\Windows NT\CurrentVersion
```

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Network access: Remotely accessible registry paths
```

## Impact:

None - this is the default configuration. However, if you remove the default registry paths from the list of accessible ones, remote management tools such as the Microsoft Baseline Security Analyzer and Microsoft Systems Management Server could fail, as they require remote access to the registry to properly monitor and manage computers.

**Note:** If you want to allow remote access, you must also enable the Remote Registry service.

## Default Value:

```
System\CurrentControlSet\Control\ProductOptions  
System\CurrentControlSet\Control\Server Applications  
Software\Microsoft\Windows NT\CurrentVersion
```

## References:

1. CCE-33976-2

## Critical Controls:

14 Controlled Access Based on the Need to Know  
Controlled Access Based on the Need to Know

16 Account Monitoring and Control  
Account Monitoring and Control

### 2.3.10.8 (L1) Ensure 'Network access: Remotely accessible registry paths and sub-paths' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines which registry paths and sub-paths will be accessible over the network, regardless of the users or groups listed in the access control list (ACL) of the `winreg` registry key.

**Note:** In Windows XP this setting is called "Network access: Remotely accessible registry paths," the setting with that same name in Windows Vista, Windows Server 2008, and Windows Server 2003 does not exist in Windows XP.

**Note #2:** When you configure this setting you specify a list of one or more objects. The delimiter used when entering the list is a line feed or carriage return, that is, type the first object on the list, press the Enter button, type the next object, press Enter again, etc. The setting value is stored as a comma-delimited list in group policy security templates. It is also rendered as a comma-delimited list in Group Policy Editor's display pane and the Resultant Set of Policy console. It is recorded in the registry as a line-feed delimited list in a `REG_MULTI_SZ` value.

The recommended state for this setting is:

```
System\CurrentControlSet\Control\Print\Printers
System\CurrentControlSet\Services\Eventlog
Software\Microsoft\OLAP Server
Software\Microsoft\Windows NT\CurrentVersion\Print
Software\Microsoft\Windows NT\CurrentVersion\Windows
System\CurrentControlSet\Control\ContentIndex
System\CurrentControlSet\Control\Terminal Server
System\CurrentControlSet\Control\Terminal Server\UserConfig
System\CurrentControlSet\Control\Terminal Server\DefaultUserConfiguration
Software\Microsoft\Windows NT\CurrentVersion\Perflib
System\CurrentControlSet\Services\SysmonLog
```

## Rationale:

The registry contains sensitive computer configuration information that could be used by an attacker to facilitate unauthorized activities. The fact that the default ACLs assigned throughout the registry are fairly restrictive and help to protect the registry from access by unauthorized users reduces the risk of such an attack.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SecurePipeServers\Winreg\
AllowedPaths:Machine
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to:

```
System\CurrentControlSet\Control\Print\Printers
System\CurrentControlSet\Services\Eventlog
SOFTWARE\Microsoft\OLAP Server
SOFTWARE\Microsoft\Windows NT\CurrentVersion\Print
SOFTWARE\Microsoft\Windows NT\CurrentVersion\Windows
System\CurrentControlSet\Control\ContentIndex
System\CurrentControlSet\Control\Terminal Server
System\CurrentControlSet\Control\Terminal Server\UserConfig
System\CurrentControlSet\Control\Terminal Server\DefaultUserConfiguration
SOFTWARE\Microsoft\Windows NT\CurrentVersion\Perflib
System\CurrentControlSet\Services\SysmonLog
```

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Network access: Remotely accessible registry paths
and sub-paths
```

## Impact:

None - this is the default configuration. However, if you remove the default registry paths from the list of accessible ones, remote management tools such as the Microsoft Baseline Security Analyzer and Microsoft Systems Management Server could fail, as they require remote access to the registry to properly monitor and manage computers.

**Note:** If you want to allow remote access, you must also enable the Remote Registry service.

**Default Value:**

System\CurrentControlSet\Control\Print\Printers  
System\CurrentControlSet\Services\Eventlog  
Software\Microsoft\OLAP Server  
Software\Microsoft\Windows NT\CurrentVersion\Print  
Software\Microsoft\Windows NT\CurrentVersion\Windows  
System\CurrentControlSet\Control\ContentIndex  
System\CurrentControlSet\Control\Terminal Server  
System\CurrentControlSet\Control\Terminal Server\UserConfig  
System\CurrentControlSet\Control\Terminal Server\DefaultUserConfiguration  
Software\Microsoft\Windows NT\CurrentVersion\Perflib  
System\CurrentControlSet\Services\SysmonLog

**References:**

1. CCE-35300-3

**Critical Controls:**

14 Controlled Access Based on the Need to Know

Controlled Access Based on the Need to Know

16 Account Monitoring and Control

Account Monitoring and Control



### 2.3.10.9 (L1) Ensure 'Network access: Restrict anonymous access to Named Pipes and Shares' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

When enabled, this policy setting restricts anonymous access to only those shares and pipes that are named in the `Network access: Named pipes that can be accessed anonymously` and `Network access: Shares that can be accessed anonymously` settings. This policy setting controls null session access to shares on your computers by adding `RestrictNullSessAccess` with the value 1 in the

`HKEY\LOCAL\MACHINE\System\CurrentControlSet\Services\LanManServer\Parameters`

registry key. This registry value toggles null session shares on or off to control whether the server service restricts unauthenticated clients' access to named resources.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Null sessions are a weakness that can be exploited through shares (including the default shares) on computers in your environment.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:
RestrictNullSessAccess
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Network access: Restrict anonymous access to Named
Pipes and Shares
```

## Impact:

None - this is the default configuration. If you choose to enable this setting and are supporting Windows NT 4.0 domains, you should check if any of the named pipes are required to maintain trust relationships between the domains, and then add the pipe to the

**Network access: Named pipes that can be accessed anonymously** list:

- COMNAP: SNA session access
- COMNODE: SNA session access
- SQL\QUERY: SQL instance access
- SPOOLSS: Spooler service
- LLSRPC: License Logging service
- NETLOGON: Net Logon service
- LSARPC: LSA access
- SAMR: Remote access to SAM objects
- BROWSER: Computer Browser service

Previous to the release of Windows Server 2003 with Service Pack 1 (SP1) these named pipes were allowed anonymous access by default, but with the increased hardening in Windows Server 2003 with SP1 these pipes must be explicitly added if needed.

## Default Value:

Enabled. (Anonymous access is restricted to shares and pipes listed in the `Network access: Named pipes that can be accessed anonymously` and `Network access: Shares that can be accessed anonymously` settings.)

## References:

1. CCE-33563-8

## Critical Controls:

14 Controlled Access Based on the Need to Know

Controlled Access Based on the Need to Know

16 Account Monitoring and Control

Account Monitoring and Control

### 2.3.10.10 (L1) Ensure 'Network access: Shares that can be accessed anonymously' is set to 'None' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines which network shares can be accessed by anonymous users. The default configuration for this policy setting has little effect because all users have to be authenticated before they can access shared resources on the server.

The recommended state for this setting is: <blank> (i.e. None).

#### Rationale:

It is very dangerous to allow any values in this setting. Any shares that are listed can be accessed by any network user, which could lead to the exposure or corruption of sensitive data.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:  
NullSessionShares
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to <blank> (i.e. None):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Network access: Shares that can be accessed  
anonymously
```

#### Impact:

None - this is the default configuration.

**Default Value:**

None. (Only authenticated users will have access to all shared resources on the server.)

**References:**

1. CCE-34651-0

**Critical Controls:**

14 Controlled Access Based on the Need to Know

Controlled Access Based on the Need to Know

16 Account Monitoring and Control

Account Monitoring and Control

### 2.3.10.11 (L1) Ensure 'Network access: Sharing and security model for local accounts' is set to 'Classic - local users authenticate as themselves' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines how network logons that use local accounts are authenticated. The Classic option allows precise control over access to resources, including the ability to assign different types of access to different users for the same resource. The Guest only option allows you to treat all users equally. In this context, all users authenticate as Guest only to receive the same access level to a given resource.

The recommended state for this setting is: `Classic - local users authenticate as themselves`.

**Note:** This setting does not affect interactive logons that are performed remotely by using such services as Telnet or Remote Desktop Services (formerly called Terminal Services).

#### **Rationale:**

With the Guest only model, any user who can authenticate to your computer over the network does so with guest privileges, which probably means that they will not have write access to shared resources on that computer. Although this restriction does increase security, it makes it more difficult for authorized users to access shared resources on those computers because ACLs on those resources must include access control entries (ACEs) for the Guest account. With the Classic model, local accounts should be password protected. Otherwise, if Guest access is enabled, anyone can use those user accounts to access shared system resources.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:ForceGuest
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Classic - local users authenticate as themselves:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network access: Sharing and security model for local accounts
```

## Impact:

None - this is the default configuration for domain-joined computers.

## Default Value:

On domain-joined computers: Classic - local users authenticate as themselves. (Network logons that use local account credentials authenticate by using those credentials.)

On stand-alone computers: Guest only - local users authenticate as Guest. (Network logons that use local accounts are automatically mapped to the Guest account.)

## References:

1. CCE-33719-6

## Critical Controls:

14 Controlled Access Based on the Need to Know  
Controlled Access Based on the Need to Know

16 Account Monitoring and Control  
Account Monitoring and Control

## 2.3.11 Network security

This section contains recommendations related to network security.

### 2.3.11.1 (L1) Ensure 'Network security: Allow Local System to use computer identity for NTLM' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether Local System services that use Negotiate when reverting to NTLM authentication can use the computer identity. This policy is supported on at least Windows 7 or Windows Server 2008 R2.

The recommended state for this setting is: `Enabled`.

#### Rationale:

When connecting to computers running versions of Windows earlier than Windows Vista or Windows Server 2008, services running as Local System and using SPNEGO (Negotiate) that revert to NTLM use the computer identity. In Windows 7, if you are connecting to a computer running Windows Server 2008 or Windows Vista, then a system service uses either the computer identity or a NULL session. When connecting with a NULL session, a system-generated session key is created, which provides no protection but allows applications to sign and encrypt data without errors. When connecting with the computer identity, both signing and encryption is supported in order to provide data protection.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:UseMachineId
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Network security: Allow Local System to use  
computer identity for NTLM
```

## Impact:

Services running as Local System that use Negotiate when reverting to NTLM authentication will use the computer identity. This might cause some authentication requests between Windows operating systems to fail and log an error.

## Default Value:

Disabled. (Services running as Local System that use Negotiate when reverting to NTLM authentication will authenticate anonymously.)

## References:

1. CCE-33141-3

## Critical Controls:

14 Controlled Access Based on the Need to Know

Controlled Access Based on the Need to Know

16 Account Monitoring and Control

Account Monitoring and Control



### 2.3.11.2 (L1) Ensure 'Network security: Allow LocalSystem NULL session fallback' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether NTLM is allowed to fall back to a NULL session when used with LocalSystem.

The recommended state for this setting is: Disabled.

#### Rationale:

NULL sessions are less secure because by definition they are unauthenticated.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\MSV1_0:AllowNullSessionFallback
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network security: Allow LocalSystem NULL session fallback
```

#### Impact:

None - this is the default configuration. Any applications that require NULL sessions for LocalSystem will not work as designed.

#### Default Value:

Disabled. (NTLM will not be permitted to fall back to a NULL session when used with LocalSystem.)

**References:**

1. CCE-35410-0

**Critical Controls:**

14 Controlled Access Based on the Need to Know  
Controlled Access Based on the Need to Know

### *2.3.11.3 (L1) Ensure 'Network Security: Allow PKU2U authentication requests to this computer to use online identities' is set to 'Disabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This setting determines if online identities are able to authenticate to this computer.

The Public Key Cryptography Based User-to-User (PKU2U) protocol introduced in Windows 7 and Windows Server 2008 R2 is implemented as a security support provider (SSP). The SSP enables peer-to-peer authentication, particularly through the Windows 7 media and file sharing feature called Homegroup, which permits sharing between computers that are not members of a domain.

With PKU2U, a new extension was introduced to the Negotiate authentication package, `Spnego.dll`. In previous versions of Windows, Negotiate decided whether to use Kerberos or NTLM for authentication. The extension SSP for Negotiate, `Negoexts.dll`, which is treated as an authentication protocol by Windows, supports Microsoft SSPs including PKU2U.

When computers are configured to accept authentication requests by using online IDs, `Negoexts.dll` calls the PKU2U SSP on the computer that is used to log on. The PKU2U SSP obtains a local certificate and exchanges the policy between the peer computers. When validated on the peer computer, the certificate within the metadata is sent to the logon peer for validation and associates the user's certificate to a security token and the logon process completes.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

The PKU2U protocol is a peer-to-peer authentication protocol - authentication should be managed centrally in most managed networks.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\pku2u:AllowOnlineID
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network Security: Allow PKU2U authentication requests to this computer to use online identities
```

**Impact:**

None - this is the default configuration for domain-joined computers.

**Default Value:**

Disabled. (Online identities will not to be allowed to authenticate to a domain-joined machine in Windows 7 and later.)

**References:**

1. CCE-35411-8

**Critical Controls:****16.9 Configure Account Access Centrally**

Configure access for all accounts through a centralized point of authentication, for example Active Directory or LDAP. Configure network and security devices for centralized authentication as well.

### 2.3.11.4 (L1) Ensure 'Network Security: Configure encryption types allowed for Kerberos' is set to 'RC4\_HMAC\_MD5, AES128\_HMAC\_SHA1, AES256\_HMAC\_SHA1, Future encryption types' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to set the encryption types that Kerberos is allowed to use.

The recommended state for this setting is: RC4\_HMAC\_MD5, AES128\_HMAC\_SHA1, AES256\_HMAC\_SHA1, Future encryption types.

#### Rationale:

The strength of each encryption algorithm varies from one to the next, choosing stronger algorithms will reduce the risk of compromise however doing so may cause issues when the computer attempts to authenticate with systems that do not support them.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\Kerberos\Parameters:SupportedEncryptionTypes
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to RC4\_HMAC\_MD5, AES128\_HMAC\_SHA1, AES256\_HMAC\_SHA1, Future encryption types:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network Security: Configure encryption types allowed for Kerberos
```

**Impact:**

None - this is the default configuration. If not selected, the encryption type will not be allowed. This setting may affect compatibility with client computers or services and applications. Multiple selections are permitted. **Note:** Windows Vista and below allow DES for Kerberos by default, but later OS versions do not.

**Default Value:**

RC4\_HMAC\_MD5, AES128\_HMAC\_SHA1, AES256\_HMAC\_SHA1, Future encryption types.

**References:**

1. CCE-35786-3

**Critical Controls:****16.14 Encrypt/Hash All Authentication Files And Monitor Their Access**

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

### 2.3.11.5 (L1) Ensure 'Network security: Do not store LAN Manager hash value on next password change' is set to 'Enabled' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting determines whether the LAN Manager (LM) hash value for the new password is stored when the password is changed. The LM hash is relatively weak and prone to attack compared to the cryptographically stronger Microsoft Windows NT hash. Since LM hashes are stored on the local computer in the security database, passwords can then be easily compromised if the database is attacked.

**Note:** Older operating systems and some third-party applications may fail when this policy setting is enabled. Also, note that the password will need to be changed on all accounts after you enable this setting to gain the proper benefit.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

The SAM file can be targeted by attackers who seek access to username and password hashes. Such attacks use special tools to crack passwords, which can then be used to impersonate users and gain access to resources on your network. These types of attacks will not be prevented if you enable this policy setting, but it will be much more difficult for these types of attacks to succeed.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:NoLMHash
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\Network security: Do not store LAN Manager hash  
value on next password change
```

**Impact:**

None - this is the default configuration. Earlier operating systems such as Windows 95, Windows 98, and Windows ME as well as some third-party applications will fail.

**Default Value:**

Enabled. (LAN Manager hash values are not stored when passwords are changed.)

**References:**

1. CCE-35225-2

**Critical Controls:****16.14 Encrypt/Hash All Authentication Files And Monitor Their Access**

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.



### 2.3.11.6 (L1) Ensure 'Network security: Force logoff when logon hours expire' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether to disconnect users who are connected to the local computer outside their user account's valid logon hours. This setting affects the Server Message Block (SMB) component. If you enable this policy setting you should also enable **Microsoft network server: Disconnect clients when logon hours expire** (Rule 2.3.9.4).

The recommended state for this setting is: `Enabled`.

#### Rationale:

If this setting is disabled, a user could remain connected to the computer outside of their allotted logon hours.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanManServer\Parameters:
EnableForcedLogOff
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`.

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\Network security: Force logoff when logon hours
expire
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Enabled. (When a user's logon time expires, client sessions with the SMB server will be forcibly disconnected. The user will be unable to log on to the computer until their next scheduled access time commences.)

**References:**

1. CCE-34993-6

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### *2.3.11.7 (L1) Ensure 'Network security: LAN Manager authentication level' is set to 'Send NTLMv2 response only. Refuse LM & NTLM' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

LAN Manager (LM) was a family of early Microsoft client/server software (predating Windows NT) that allowed users to link personal computers together on a single network. LM network capabilities included transparent file and print sharing, user security features, and network administration tools. In Active Directory domains, the Kerberos protocol is the default authentication protocol. However, if the Kerberos protocol is not negotiated for some reason, Active Directory will use LM, NTLM, or NTLMv2. LAN Manager authentication includes the LM, NTLM, and NTLM version 2 (NTLMv2) variants, and is the protocol that is used to authenticate all Windows clients when they perform the following operations:

- Join a domain
- Authenticate between Active Directory forests
- Authenticate to down-level domains
- Authenticate to computers that do not run Windows 2000, Windows Server 2003, or Windows XP
- Authenticate to computers that are not in the domain

The Network security: LAN Manager authentication level setting determines which challenge/response authentication protocol is used for network logons. This choice affects the level of authentication protocol used by clients, the level of session security negotiated, and the level of authentication accepted by servers.

The recommended state for this setting is: `Send NTLMv2 response only. Refuse LM & NTLM.`

## Rationale:

Windows 2000 and Windows XP clients were configured by default to send LM and NTLM authentication responses (Windows 95-based and Windows 98-based clients only send LM). The default settings in OSes predating Windows Vista / Windows Server 2008 (non-R2) allowed all clients to authenticate with servers and use their resources. However, this meant that LM responses - the weakest form of authentication response - were sent over the network, and it was potentially possible for attackers to sniff that traffic to more easily reproduce the user's password.

The Windows 95, Windows 98, and Windows NT operating systems cannot use the Kerberos version 5 protocol for authentication. For this reason, in a Windows Server 2003 domain, these computers authenticate by default with both the LM and NTLM protocols for network authentication. You can enforce a more secure authentication protocol for Windows 95, Windows 98, and Windows NT by using NTLMv2. For the logon process, NTLMv2 uses a secure channel to protect the authentication process. Even if you use NTLMv2 for earlier clients and servers, Windows-based clients and servers that are members of the domain will use the Kerberos authentication protocol to authenticate with Windows Server 2003 or higher domain controllers. For these reasons, it is strongly preferred to restrict the use of LM & NTLM (non-v2) as much as possible.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:LmCompatibilityLevel
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to: Send NTLMv2 response only. Refuse LM & NTLM:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network security: LAN Manager authentication level
```

**Impact:**

Clients use NTLMv2 authentication only and use NTLMv2 session security if the server supports it; domain controllers refuse LM and NTLM (accept only NTLMv2 authentication). Clients that do not support NTLMv2 authentication will not be able to authenticate in the domain and access domain resources by using LM and NTLM.

**Note:** For information about a hotfix to ensure that this setting works in networks that include Windows NT 4.0-based computers along with Windows 2000, Windows XP, and Windows Server 2003-based computers, see Microsoft Knowledge Base article 305379: [Authentication Problems in Windows 2000 with NTLM 2 Levels Above 2 in a Windows NT 4.0 Domain](#).

**Default Value:**

Send NTLMv2 response only. (Clients use NTLMv2 authentication only and use NTLMv2 session security if the server supports it; domain controllers accept LM, NTLM & NTLMv2 authentication.)

**References:**

1. CCE-35302-9

**Critical Controls:**

13 [Data Protection](#)

Data Protection

### 2.3.11.8 (L1) Ensure 'Network security: LDAP client signing requirements' is set to 'Negotiate signing' or higher (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines the level of data signing that is requested on behalf of clients that issue LDAP BIND requests.

**Note:** This policy setting does not have any impact on LDAP simple bind (`ldap_simple_bind`) or LDAP simple bind through SSL (`ldap_simple_bind_s`). No Microsoft LDAP clients that are included with Windows XP Professional use `ldap_simple_bind` or `ldap_simple_bind_s` to communicate with a domain controller.

The recommended state for this setting is: `Negotiate signing`. Configuring this setting to `Require signing` also conforms with the benchmark.

#### Rationale:

Unsigned network traffic is susceptible to man-in-the-middle attacks in which an intruder captures the packets between the client and server, modifies them, and then forwards them to the server. For an LDAP server, this susceptibility means that an attacker could cause a server to make decisions that are based on false or altered data from the LDAP queries. To lower this risk in your network, you can implement strong physical security measures to protect the network infrastructure. Also, you can make all types of man-in-the-middle attacks extremely difficult if you require digital signatures on all network packets by means of IPsec authentication headers.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LDAP:LDAPClientIntegrity
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Negotiate signing`(configuring to `Require signing` also conforms with the benchmark):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network security: LDAP client signing requirements
```

## Impact:

None - this is the default configuration. However, if you choose instead to configure the server to *require* LDAP signatures then you must also configure the client. If you do not configure the client it will not be able to communicate with the server, which could cause many features to fail, including user authentication, Group Policy, and logon scripts, because the caller will be told that the LDAP BIND command request failed.

## Default Value:

Negotiate signing. (If Transport Layer Security/Secure Sockets Layer (TLS/SSL) has not been started, the LDAP BIND request is initiated with the LDAP data signing option set in addition to the caller-specified options. If TLS/SSL has been started, the LDAP BIND request is initiated with the caller-specified options.)

## References:

1. CCE-33802-0

## Critical Controls:

13 Data Protection  
Data Protection

### 2.3.11.9 (L1) Ensure 'Network security: Minimum session security for NTLM SSP based (including secure RPC) clients' is set to 'Require NTLMv2 session security, Require 128-bit encryption' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines which behaviors are allowed by clients for applications using the NTLM Security Support Provider (SSP). The SSP Interface (SSPI) is used by applications that need authentication services. The setting does not modify how the authentication sequence works but instead require certain behaviors in applications that use the SSPI.

The recommended state for this setting is: `Require NTLMv2 session security, Require 128-bit encryption`.

**Note:** These values are dependent on the *Network security: LAN Manager Authentication Level* (rule 2.3.11.7) security setting value.

#### Rationale:

You can enable both options for this policy setting to help protect network traffic that uses the NTLM Security Support Provider (NTLM SSP) from being exposed or tampered with by an attacker who has gained access to the same network. In other words, these options help protect against man-in-the-middle attacks.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\MSV1_0:NTLMMinClientSec
```



## Remediation:

To establish the recommended configuration via GP, set the following UI path to Require NTLMv2 session security, Require 128-bit encryption:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network security: Minimum session security for NTLM SSP based (including secure RPC) clients
```

## Impact:

NTLM connections will fail if NTLMv2 protocol and strong encryption (128-bit) are not **both** negotiated. Client applications that are enforcing these settings will be unable to communicate with older servers that do not support them. This setting could impact Windows Clustering when applied to servers running Windows Server 2003, see Microsoft Knowledge Base articles 891597: [How to apply more restrictive security settings on a Windows Server 2003-based cluster server](#) and 890761: [You receive an "Error 0x8007042b" error message when you add or join a node to a cluster if you use NTLM version 2 in Windows Server 2003](#) for more information on possible issues and how to resolve them.

## Default Value:

Require 128-bit encryption. (NTLM connections will fail if strong encryption (128-bit) is not negotiated.)

## References:

1. CCE-35447-2

## Critical Controls:

13 [Data Protection](#)

Data Protection

### 2.3.11.10 (L1) Ensure 'Network security: Minimum session security for NTLM SSP based (including secure RPC) servers' is set to 'Require NTLMv2 session security, Require 128-bit encryption' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines which behaviors are allowed by servers for applications using the NTLM Security Support Provider (SSP). The SSP Interface (SSPI) is used by applications that need authentication services. The setting does not modify how the authentication sequence works but instead require certain behaviors in applications that use the SSPI.

The recommended state for this setting is: `Require NTLMv2 session security, Require 128-bit encryption`. **Note:** These values are dependent on the *Network security: LAN Manager Authentication Level* (rule 2.3.11.7) security setting value.

#### Rationale:

You can enable all of the options for this policy setting to help protect network traffic that uses the NTLM Security Support Provider (NTLM SSP) from being exposed or tampered with by an attacker who has gained access to the same network. That is, these options help protect against man-in-the-middle attacks.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\MSV1_0:NTLMMinServerSec
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Require NTLMv2 session security, Require 128-bit encryption:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\Network security: Minimum session security for NTLM SSP based (including secure RPC) servers
```

## Impact:

NTLM connections will fail if NTLMv2 protocol and strong encryption (128-bit) are not **both** negotiated. Server applications that are enforcing these settings will be unable to communicate with older servers that do not support them. This setting could impact Windows Clustering when applied to servers running Windows Server 2003, see Microsoft Knowledge Base articles 891597: [How to apply more restrictive security settings on a Windows Server 2003-based cluster server](#) and 890761: [You receive an "Error 0x8007042b" error message when you add or join a node to a cluster if you use NTLM version 2 in Windows Server 2003](#) for more information on possible issues and how to resolve them.

## Default Value:

Require 128-bit encryption. (NTLM connections will fail if strong encryption (128-bit) is not negotiated.)

## References:

1. CCE-35108-0

## Critical Controls:

13 [Data Protection](#)

Data Protection

### ***2.3.12 Recovery console***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***2.3.13 Shutdown***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 2.3.14 System cryptography

This section contains recommendations related to system cryptography.

*2.3.14.1 (L2) Ensure 'System cryptography: Force strong key protection for user keys stored on the computer' is set to 'User is prompted when the key is first used' or higher (Scored)*

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting determines whether users' private keys (such as their S-MIME keys) require a password to be used.

The recommended state for this setting is: `User is prompted when the key is first used`. Configuring this setting to `User must enter a password each time they use a key` also conforms with the benchmark.

### Rationale:

If a user's account is compromised or their computer is inadvertently left unsecured the malicious user can use the keys stored for the user to access protected resources. You can configure this policy setting so that users must provide a password that is distinct from their domain password every time they use a key. This configuration makes it more difficult for an attacker to access locally stored user keys, even if the attacker takes control of the user's computer and determines their logon password.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Cryptography:ForceKeyProtection
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `User is prompted when the key is first used` (`configuring to User must enter a password each time they use a key` also conforms with the benchmark):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local Policies\Security Options\System cryptography: Force strong key protection for user keys stored on the computer
```

## Impact:

Users will have to enter their password the first time they access a key that is stored on their computer. For example, if users use an S-MIME certificate to digitally sign their e-mail they will be forced to enter the password for that certificate the first time that they send a signed e-mail message. For even stronger security, the value `User must enter a password each time they use a key` can be set, but the overhead that is involved using this configuration may be too high for some organizations.

Microsoft does not recommend enforcing this setting on servers due to the significant impact on manageability. For example, you may not be able to configure Remote Desktop Services to use SSL certificates. More information is available in the Windows PKI TechNet Blog here: [What is a strong key protection in Windows?](#).

## Default Value:

User input is not required when new keys are stored and used.

## References:

1. CCE-35007-4

## Critical Controls:

### 16.14 Encrypt/Hash All Authentication Files And Monitor Their Access

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

## 2.3.15 System objects

This section contains recommendations related to system objects.

### 2.3.15.1 (L1) Ensure 'System objects: Require case insensitivity for non-Windows subsystems' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether case insensitivity is enforced for all subsystems. The Microsoft Win32 subsystem is case insensitive. However, the kernel supports case sensitivity for other subsystems, such as the Portable Operating System Interface for UNIX (POSIX). Because Windows is case insensitive (but the POSIX subsystem will support case sensitivity), failure to enforce this policy setting makes it possible for a user of the POSIX subsystem to create a file with the same name as another file by using mixed case to label it. Such a situation can block access to these files by another user who uses typical Win32 tools, because only one of the files will be available.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Because Windows is case-insensitive but the POSIX subsystem will support case sensitivity, failure to enable this policy setting would make it possible for a user of that subsystem to create a file with the same name as another file but with a different mix of upper and lower case letters. Such a situation could potentially confuse users when they try to access such files from normal Win32 tools because only one of the files will be available.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session  
Manager\Kernel:ObCaseInsensitive
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\System objects: Require case insensitivity for non-  
Windows subsystems
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (All subsystems will be forced to observe case insensitivity. This configuration may confuse users who are familiar with any UNIX-based operating systems that is case-sensitive.)

**References:**

1. CCE-35008-2

### 2.3.15.2 (L1) Ensure 'System objects: Strengthen default permissions of internal system objects (e.g. Symbolic Links)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines the strength of the default discretionary access control list (DACL) for objects. Active Directory maintains a global list of shared system resources, such as DOS device names, mutexes, and semaphores. In this way, objects can be located and shared among processes. Each type of object is created with a default DACL that specifies who can access the objects and what permissions are granted.

The recommended state for this setting is: `Enabled`.

#### Rationale:

This setting determines the strength of the default DACL for objects. Windows maintains a global list of shared computer resources so that objects can be located and shared among processes. Each type of object is created with a default DACL that specifies who can access the objects and with what permissions.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session  
Manager:ProtectionMode
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\System objects: Strengthen default permissions of  
internal system objects (e.g. Symbolic Links)
```

#### Impact:

None - this is the default configuration.



**Default Value:**

Enabled. (The default DACL is stronger, allowing users who are not administrators to read shared objects but not allowing these users to modify shared objects that they did not create.)

**References:**

1. CCE-35232-8

**Critical Controls:****14.4 Protect Information With Access Control Lists**

All information stored on systems shall be protected with file system, network share, claims, application, or database specific access control lists. These controls will enforce the principal that only authorized individuals should have access to the information based on their need to access the information as a part of their responsibilities.

***2.3.16 System settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **2.3.17 User Account Control**

This section contains recommendations related to User Account Control.

### *2.3.17.1 (L1) Ensure 'User Account Control: Admin Approval Mode for the Built-in Administrator account' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting controls the behavior of Admin Approval Mode for the built-in Administrator account.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

One of the risks that the User Account Control feature introduced with Windows Vista is trying to mitigate is that of malicious software running under elevated credentials without the user or administrator being aware of its activity. An attack vector for these programs was to discover the password of the account named "Administrator" because that user account was created for all installations of Windows. To address this risk, in Windows Vista and newer, the built-in Administrator account is now disabled by default. In a default installation of a new computer, accounts with administrative control over the computer are initially set up in one of two ways: - If the computer is not joined to a domain, the first user account you create has the equivalent permissions as a local administrator. - If the computer is joined to a domain, no local administrator accounts are created. The Enterprise or Domain Administrator must log on to the computer and create one if a local administrator account is warranted.

Once Windows is installed, the built-in Administrator account may be manually enabled, but we strongly recommend that this account remain disabled.

## **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
FilterAdministratorToken
```

## **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\User Account Control: Admin Approval Mode for the
Built-in Administrator account
```

## **Impact:**

The built-in Administrator account uses Admin Approval Mode. Users that log on using the local Administrator account will be prompted for consent whenever a program requests an elevation in privilege, just like any other user would.

## **Default Value:**

Disabled. (The built-in Administrator account runs all applications with full administrative privilege.)

## **References:**

1. CCE-35338-3

## **Critical Controls:**

### 5.1 Minimize And Sparingly Use Administrative Privileges

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### *2.3.17.2 (L1) Ensure 'User Account Control: Allow UIAccess applications to prompt for elevation without using the secure desktop' is set to 'Disabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting controls whether User Interface Accessibility (UIAccess or UIA) programs can automatically disable the secure desktop for elevation prompts used by a standard user.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

One of the risks that the UAC feature introduced with Windows Vista is trying to mitigate is that of malicious software running under elevated credentials without the user or administrator being aware of its activity. This setting allows the administrator to perform operations that require elevated privileges while connected via Remote Assistance. This increases security in that organizations can use UAC even when end user support is provided remotely. However, it also reduces security by adding the risk that an administrator might allow an unprivileged user to share elevated privileges for an application that the administrator needs to use during the Remote Desktop session.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
EnableUIADesktopToggle
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\User Account Control: Allow UIAccess applications
to prompt for elevation without using the secure desktop
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The secure desktop can be disabled only by the user of the interactive desktop or by disabling the "User Account Control: Switch to the secure desktop when prompting for elevation" policy setting.)

**References:**

1. CCE-35458-9

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

### *2.3.17.3 (L1) Ensure 'User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode' is set to 'Prompt for consent on the secure desktop' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting controls the behavior of the elevation prompt for administrators.

The recommended state for this setting is: `Prompt for consent on the secure desktop`.

#### **Rationale:**

One of the risks that the UAC feature introduced with Windows Vista is trying to mitigate is that of malicious software running under elevated credentials without the user or administrator being aware of its activity. This setting raises awareness to the administrator of elevated privilege operations and permits the administrator to prevent a malicious program from elevating its privilege when the program attempts to do so.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:  
ConsentPromptBehaviorAdmin
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Prompt for consent on the secure desktop`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\User Account Control: Behavior of the elevation  
prompt for administrators in Admin Approval Mode
```

**Impact:**

When an operation (including execution of a Windows binary) requires elevation of privilege, the user is prompted on the secure desktop to select either Permit or Deny. If the user selects Permit, the operation continues with the user's highest available privilege.

**Default Value:**

Prompt for consent for non-Windows binaries. (When an operation for a non-Microsoft application requires elevation of privilege, the user is prompted on the secure desktop to select either Permit or Deny. If the user selects Permit, the operation continues with the user's highest available privilege.)

**References:**

1. CCE-33784-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### *2.3.17.4 (L1) Ensure 'User Account Control: Behavior of the elevation prompt for standard users' is set to 'Automatically deny elevation requests' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting controls the behavior of the elevation prompt for standard users.

The recommended state for this setting is: `Automatically deny elevation requests`.

#### **Rationale:**

One of the risks that the User Account Control feature introduced with Windows Vista is trying to mitigate is that of malicious programs running under elevated credentials without the user or administrator being aware of their activity. This setting raises awareness to the user that a program requires the use of elevated privilege operations and requires that the user be able to supply administrative credentials in order for the program to run.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:  
ConsentPromptBehaviorUser
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Automatically deny elevation requests`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\User Account Control: Behavior of the elevation  
prompt for standard users
```



**Impact:**

When an operation requires elevation of privilege, a configurable access denied error message is displayed. An enterprise that is running desktops as standard user may choose this setting to reduce help desk calls.

**Note:** With this setting configured as recommended, the default error message displayed when a user attempts to perform an operation or run a program requiring privilege elevation (without Administrator rights) is *"This program will not run. This program is blocked by group policy. For more information, contact your system administrator."* Some users who are not used to seeing this message may believe that the operation or program they attempted is specifically blocked by group policy, as that is what the message seems to imply. This message may therefore result in user questions as to why that specific operation/program is blocked, when in fact, the problem is that they need to perform the operation or run the program with an Administrative account (or "Run as Administrator" if it is already an Administrator account), and they are not doing that.

**Default Value:**

Prompt for credentials. (When an operation requires elevation of privilege, the user is prompted to enter an administrative user name and password. If the user enters valid credentials, the operation continues with the applicable privilege.)

**References:**

1. CCE-33785-7

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.3.17.5 (L1) Ensure 'User Account Control: Detect application installations and prompt for elevation' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls the behavior of application installation detection for the computer.

The recommended state for this setting is: Enabled.

#### Rationale:

Some malicious software will attempt to install itself after being given permission to run. For example, malicious software with a trusted application shell. The user may have given permission for the program to run because the program is trusted, but if they are then prompted for installation of an unknown component this provides another way of trapping the software before it can do damage

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
EnableInstallerDetection
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\User Account Control: Detect application
installations and prompt for elevation
```

#### Impact:

When an application installation package is detected that requires elevation of privilege, the user is prompted to enter an administrative user name and password. If the user enters valid credentials, the operation continues with the applicable privilege.

**Default Value:**

Disabled. (Default for enterprise. Application installation packages are not detected and prompted for elevation.)

**References:**

1. CCE-35429-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### *2.3.17.6 (L1) Ensure 'User Account Control: Only elevate UIAccess applications that are installed in secure locations' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting controls whether applications that request to run with a User Interface Accessibility (UIAccess) integrity level must reside in a secure location in the file system. Secure locations are limited to the following: - ...\\Program Files\\, including subfolders - ...\\Windows\\system32\\ - ...\\Program Files (x86)\\, including subfolders for 64-bit versions of Windows

**Note:** Windows enforces a public key infrastructure (PKI) signature check on any interactive application that requests to run with a UIAccess integrity level regardless of the state of this security setting.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

UIAccess Integrity allows an application to bypass User Interface Privilege Isolation (UIPI) restrictions when an application is elevated in privilege from a standard user to an administrator. This is required to support accessibility features such as screen readers that are transmitting user interfaces to alternative forms. A process that is started with UIAccess rights has the following abilities: - To set the foreground window. - To drive any application window using `SendInput` function. - To use read input for all integrity levels using low-level hooks, raw input, `GetKeyState`, `GetAsyncKeyState`, and `GetKeyboardInput`. - To set journal hooks. - To uses `AttachThreadInput` to attach a thread to a higher integrity input queue.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
EnableSecureUIAPaths
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\User Account Control: Only elevate UIAccess
applications that are installed in secure locations
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (If an application resides in a secure location in the file system, it runs only with UIAccess integrity.)

**References:**

1. CCE-35401-9

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.3.17.7 (L1) Ensure 'User Account Control: Run all administrators in Admin Approval Mode' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls the behavior of all User Account Control (UAC) policy settings for the computer. If you change this policy setting, you must restart your computer.

The recommended state for this setting is: `Enabled`.

**Note:** If this policy setting is disabled, the Security Center notifies you that the overall security of the operating system has been reduced.

#### Rationale:

This is the setting that turns on or off UAC. If this setting is disabled, UAC will not be used and any security benefits and risk mitigations that are dependent on UAC will not be present on the system.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
EnableLUA
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\User Account Control: Run all administrators in
Admin Approval Mode
```

#### Impact:

None - this is the default configuration. Users and administrators will need to learn to work with UAC prompts and adjust their work habits to use least privilege operations.

**Default Value:**

Enabled. (Admin Approval Mode is enabled. This policy must be enabled and related UAC policy settings must also be set appropriately to allow the built-in Administrator account and all other users who are members of the Administrators group to run in Admin Approval Mode.)

**References:**

1. CCE-33788-1

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.3.17.8 (L1) Ensure 'User Account Control: Switch to the secure desktop when prompting for elevation' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls whether the elevation request prompt is displayed on the interactive user's desktop or the secure desktop.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Standard elevation prompt dialog boxes can be spoofed, which may cause users to disclose their passwords to malicious software. The secure desktop presents a very distinct appearance when prompting for elevation, where the user desktop dims, and the elevation prompt UI is more prominent. This increases the likelihood that users who become accustomed to the secure desktop will recognize a spoofed elevation prompt dialog box and not fall for the trick.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:  
PromptOnSecureDesktop
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local  
Policies\Security Options\User Account Control: Switch to the secure desktop  
when prompting for elevation
```

#### Impact:

None - this is the default configuration.



**Default Value:**

Enabled. (All elevation requests go to the secure desktop regardless of prompt behavior policy settings for administrators and standard users.)

**References:**

1. CCE-33815-2

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 2.3.17.9 (L1) Ensure 'User Account Control: Virtualize file and registry write failures to per-user locations' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls whether application write failures are redirected to defined registry and file system locations. This policy setting mitigates applications that run as administrator and write run-time application data to: - %ProgramFiles%, - %Windir%, - %Windir%\system32, OR - HKEY\_LOCAL\_MACHINE\Software.

The recommended state for this setting is: Enabled.

#### Rationale:

This setting reduces vulnerabilities by ensuring that legacy applications only write data to permitted locations.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
EnableVirtualization
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Local
Policies\Security Options\User Account Control: Virtualize file and registry
write failures to per-user locations
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Enabled. (Application write failures are redirected at run time to defined user locations for both the file system and registry.)

**References:**

1. CCE-35459-7

***3 Event Log***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***4 Restricted Groups***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***5 System Services***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***6 Registry***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***7 File System***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***8 Wired Network (IEEE 802.3) Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 9 Windows Firewall With Advanced Security

This section contains recommendations for configuring the Windows Firewall.

### 9.1 Domain Profile

This section contains recommendations for the Domain Profile of the Windows Firewall.

#### 9.1.1 (L1) Ensure 'Windows Firewall: Domain: Firewall state' is set to 'On (recommended)' (Scored)

##### Profile Applicability:

- Level 1
- Level 1 + BitLocker

##### Description:

Select On (recommended) to have Windows Firewall with Advanced Security use the settings for this profile to filter network traffic. If you select Off, Windows Firewall with Advanced Security will not use any of the firewall rules or connection security rules for this profile.

The recommended state for this setting is: On (recommended).

##### Rationale:

If the firewall is turned off all traffic will be able to access the system and an attacker may be more easily able to remotely exploit a weakness in a network service.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile:
EnableFirewall
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to On (recommended):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Firewall state
```

**Impact:**

None - this is the default configuration.

**Default Value:**

On (recommended). (The Windows Firewall with Advanced Security will be active in this profile.)

**References:**

1. CCE-33160-3

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

## 9.1.2 (L1) Ensure 'Windows Firewall: Domain: Inbound connections' is set to 'Block (default)' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting determines the behavior for inbound connections that do not match an inbound firewall rule.

The recommended state for this setting is: `Block (default)`.

### Rationale:

If the firewall allows all traffic to access the system then an attacker may be more easily able to remotely exploit a weakness in a network service.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile:
DefaultInboundAction
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Block (default)`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Domain Profile\Inbound connections
```

### Impact:

None - this is the default configuration.

**Default Value:**

Block (default). (The Windows Firewall with Advanced Security will block all inbound connections that do not match an inbound firewall rule in this profile.)

**References:**

1. CCE-33063-9

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 9.1.3 (L1) Ensure 'Windows Firewall: Domain: Outbound connections' is set to 'Allow (default)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting determines the behavior for outbound connections that do not match an outbound firewall rule.

The recommended state for this setting is: `Allow (default)`.

#### Rationale:

Some people believe that it is prudent to block all outbound connections except those specifically approved by the user or administrator. Microsoft disagrees with this opinion, blocking outbound connections by default will force users to deal with a large number of dialog boxes prompting them to authorize or block applications such as their web browser or instant messaging software. Additionally, blocking outbound traffic has little value because if an attacker has compromised the system they can reconfigure the firewall anyway.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile:
DefaultOutboundAction
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Allow (default)`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Domain Profile\Outbound connections
```



**Impact:**

None - this is the default configuration.

**Default Value:**

Allow (default). (The Windows Firewall with Advanced Security will allow all outbound connections in this profile unless there is a firewall rule explicitly blocking it.)

**References:**

1. CCE-33098-5

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 9.1.4 (L1) Ensure 'Windows Firewall: Domain: Settings: Display a notification' is set to 'No' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Select this option to have Windows Firewall with Advanced Security display notifications to the user when a program is blocked from receiving inbound connections.

The recommended state for this setting is: No.

**Note:** When the Apply local firewall rules setting is configured to No, it's recommended to also configure the Display a notification setting to No. Otherwise, users will continue to receive messages that ask if they want to unblock a restricted inbound connection, but the user's response will be ignored.

#### Rationale:

Firewall notifications can be complex and may confuse the end users, who would not be able to address the alert.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile:
DisableNotifications
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to No:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Domain Profile\Settings
Customize\Display a notification
```

**Impact:**

Windows Firewall will not display a notification when a program is blocked from receiving inbound connections.

**Default Value:**

Yes. (Windows Firewall with Advanced Security will display a notification when a program is blocked from receiving inbound connections.)

**References:**

1. CCE-33062-1

### 9.1.5 (L1) Ensure 'Windows Firewall: Domain: Settings: Apply local firewall rules' is set to 'Yes (default)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting controls whether local administrators are allowed to create local firewall rules that apply together with firewall rules configured by Group Policy.

The recommended state for this setting is: Yes (default).

#### Rationale:

Users with administrative privileges might create firewall rules that expose the system to remote attack.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile: AllowLocalPolicyMerge
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Yes (default):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Settings Customize\Apply local firewall rules
```

#### Impact:

None - this is the default configuration.

#### Default Value:

Yes (default). (Firewall rules created by administrators will be applied.)

**References:**

1. CCE-33061-3

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 9.1.6 (L1) Ensure 'Windows Firewall: Domain: Settings: Apply local connection security rules' is set to 'Yes (default)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting controls whether local administrators are allowed to create connection security rules that apply together with connection security rules configured by Group Policy.

The recommended state for this setting is: Yes (default).

#### Rationale:

Users with administrative privileges might create firewall rules that expose the system to remote attack.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile: AllowLocalIPsecPolicyMerge
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Yes (default):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Settings Customize\Apply local connection security rules
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Yes (default). (Local connection security rules created by administrators will be applied.)

**References:**

1. CCE-35701-2

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 9.1.7 (L1) Ensure 'Windows Firewall: Domain: Logging: Name' is set to '%SYSTEMROOT%\System32\logfiles\firewall\domainfw.log' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to specify the path and name of the file in which Windows Firewall will write its log information.

The recommended state for this setting is:

%SYSTEMROOT%\System32\logfiles\firewall\domainfw.log.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile\Logging\LogFilePath
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to

%SYSTEMROOT%\System32\logfiles\firewall\domainfw.log:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Logging Customize\Name
```

#### Impact:

The log file will be stored in the specified file.



**Default Value:**

%systemroot%\system32\logfiles\firewall\pfirewall.log

**References:**

1. CCE-34176-8

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

### 9.1.8 (L1) Ensure 'Windows Firewall: Domain: Logging: Size limit (KB)' is set to '16,384 KB or greater' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to specify the size limit of the file in which Windows Firewall will write its log information.

The recommended state for this setting is: 16,384 KB or greater.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile\Logging\LogFileSize
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to 16,384 KB or greater:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Logging Customize\Size limit (KB)
```

#### Impact:

The log file size will be limited to the specified size, old events will be overwritten by newer ones when the limit is reached.

**Default Value:**

4,096 KB.

**References:**

1. CCE-35083-5

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

### 9.1.9 (L1) Ensure 'Windows Firewall: Domain: Logging: Log dropped packets' is set to 'Yes' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to log when Windows Firewall with Advanced Security discards an inbound packet for any reason. The log records why and when the packet was dropped. Look for entries with the word `DROP` in the action column of the log.

The recommended state for this setting is: `Yes`.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile\Logging\LogDroppedPackets
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Yes`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Logging Customize\Log dropped packets
```

#### Impact:

Information about dropped packets will be recorded in the firewall log file.

**Default Value:**

No (default). (Information about dropped packets will not be recorded in the firewall log file.)

**References:**

1. CCE-35252-6

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

### 9.1.10 (L1) Ensure 'Windows Firewall: Domain: Logging: Log successful connections' is set to 'Yes' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to log when Windows Firewall with Advanced Security allows an inbound connection. The log records why and when the connection was formed. Look for entries with the word `ALLOW` in the action column of the log.

The recommended state for this setting is: `Yes`.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\DomainProfile\Logging\LogSuccessfulConnections
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Yes`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Domain Profile\Logging Customize\Log successful connections
```

#### Impact:

Information about successful connections will be recorded in the firewall log file.

**Default Value:**

No (default). (Information about successful connections will not be recorded in the firewall log file.)

**References:**

1. CCE-35306-0

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

## 9.2 Private Profile

This section contains recommendations for the Private Profile of the Windows Firewall.

### 9.2.1 (L1) Ensure 'Windows Firewall: Private: Firewall state' is set to 'On (recommended)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Select On (recommended) to have Windows Firewall with Advanced Security use the settings for this profile to filter network traffic. If you select Off, Windows Firewall with Advanced Security will not use any of the firewall rules or connection security rules for this profile.

The recommended state for this setting is: On (recommended).

#### Rationale:

If the firewall is turned off all traffic will be able to access the system and an attacker may be more easily able to remotely exploit a weakness in a network service.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile:EnableFirewall
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to On (recommended):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Private Profile\Firewall state
```



**Impact:**

None - this is the default configuration.

**Default Value:**

On (recommended). (The Windows Firewall with Advanced Security will be active in this profile.)

**References:**

1. CCE-33066-2

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

## 9.2.2 (L1) Ensure 'Windows Firewall: Private: Inbound connections' is set to 'Block (default)' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting determines the behavior for inbound connections that do not match an inbound firewall rule.

The recommended state for this setting is: `Block (default)`.

### Rationale:

If the firewall allows all traffic to access the system then an attacker may be more easily able to remotely exploit a weakness in a network service.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile  
:DefaultInboundAction
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Block (default)`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows  
Firewall with Advanced Security\Windows Firewall with Advanced  
Security\Windows Firewall Properties\Private Profile\Inbound connections
```

### Impact:

None - this is the default configuration.

**Default Value:**

Block (default). (The Windows Firewall with Advanced Security will block all inbound connections that do not match an inbound firewall rule in this profile.)

**References:**

1. CCE-33161-1

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 9.2.3 (L1) Ensure 'Windows Firewall: Private: Outbound connections' is set to 'Allow (default)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting determines the behavior for outbound connections that do not match an outbound firewall rule.

The recommended state for this setting is: `Allow (default)`.

**Note:** If you set Outbound connections to Block and then deploy the firewall policy by using a GPO, computers that receive the GPO settings cannot receive subsequent Group Policy updates unless you create and deploy an outbound rule that enables Group Policy to work. Predefined rules for Core Networking include outbound rules that enable Group Policy to work. Ensure that these outbound rules are active, and thoroughly test firewall profiles before deploying.

#### Rationale:

Some people believe that it is prudent to block all outbound connections except those specifically approved by the user or administrator. Microsoft disagrees with this opinion, blocking outbound connections by default will force users to deal with a large number of dialog boxes prompting them to authorize or block applications such as their web browser or instant messaging software. Additionally, blocking outbound traffic has little value because if an attacker has compromised the system they can reconfigure the firewall anyway.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile  
:DefaultOutboundAction
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Allow (default):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Private Profile\Outbound connections
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Allow (default). (The Windows Firewall with Advanced Security will allow all outbound connections in this profile unless there is a firewall rule explicitly blocking it.)

**References:**

1. CCE-33162-9

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

## 9.2.4 (L1) Ensure 'Windows Firewall: Private: Settings: Display a notification' is set to 'No' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

Select this option to have Windows Firewall with Advanced Security display notifications to the user when a program is blocked from receiving inbound connections.

The recommended state for this setting is: No.

**Note:** When the `Apply local firewall rules` setting is configured to No, it's recommended to also configure the `Display a notification` setting to No. Otherwise, users will continue to receive messages that ask if they want to unblock a restricted inbound connection, but the user's response will be ignored.

### Rationale:

Firewall notifications can be complex and may confuse the end users, who would not be able to address the alert.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile:DisableNotifications
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to No:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Private Profile\Settings Customize\Display a notification
```

**Impact:**

Windows Firewall will not display a notification when a program is blocked from receiving inbound connections.

**Default Value:**

Yes. (Windows Firewall with Advanced Security will display a notification when a program is blocked from receiving inbound connections.)

**References:**

1. CCE-33065-4

## 9.2.5 (L1) Ensure 'Windows Firewall: Private: Settings: Apply local firewall rules' is set to 'Yes (default)' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting controls whether local administrators are allowed to create local firewall rules that apply together with firewall rules configured by Group Policy.

The recommended state for this setting is: Yes (default).

### Rationale:

Users with administrative privileges might create firewall rules that expose the system to remote attack.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile:AllowLocalPolicyMerge
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Yes (default):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Private Profile\Settings Customize\Apply local firewall rules
```

### Impact:

None - this is the default configuration.

### Default Value:

Yes (default). (Firewall rules created by administrators will be applied.)



**References:**

1. CCE-35702-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 9.2.6 (L1) Ensure 'Windows Firewall: Private: Settings: Apply local connection security rules' is set to 'Yes (default)' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting controls whether local administrators are allowed to create connection security rules that apply together with connection security rules configured by Group Policy.

The recommended state for this setting is: Yes (default).

### Rationale:

Users with administrative privileges might create firewall rules that expose the system to remote attack.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile:AllowLocalIPsecPolicyMerge
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Yes (default):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Private Profile\Settings Customize\Apply local connection security rules
```

### Impact:

None - this is the default configuration.

**Default Value:**

Yes (default). (Local connection security rules created by administrators will be applied.)

**References:**

1. CCE-33064-7

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 9.2.7 (L1) Ensure 'Windows Firewall: Private: Logging: Name' is set to '%SYSTEMROOT%\System32\logfiles\firewall\privatefw.log' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

Use this option to specify the path and name of the file in which Windows Firewall will write its log information.

The recommended state for this setting is:

```
%SYSTEMROOT%\System32\logfiles\firewall\privatefw.log.
```

### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile  
\Logging:LogFilePath
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to

```
%SYSTEMROOT%\System32\logfiles\firewall\privatefw.log:
```

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows  
Firewall with Advanced Security\Windows Firewall with Advanced  
Security\Windows Firewall Properties\Private Profile\Logging Customize\Name
```

### Impact:

The log file will be stored in the specified file.

**Default Value:**

%systemroot%\system32\logfiles\firewall\pfirewall.log

**References:**

1. CCE-33437-5

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

## 9.2.8 (L1) Ensure 'Windows Firewall: Private: Logging: Size limit (KB)' is set to '16,384 KB or greater' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

Use this option to specify the size limit of the file in which Windows Firewall will write its log information.

The recommended state for this setting is: 16,384 KB or greater.

### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile
\Logging\LogFileSize
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to 16,384 KB or greater:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Private Profile\Logging Customize\Size
limit (KB)
```

### Impact:

The log file size will be limited to the specified size, old events will be overwritten by newer ones when the limit is reached.

**Default Value:**

4,096 KB.

**References:**

1. CCE-34356-6

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

### 9.2.9 (L1) Ensure 'Windows Firewall: Private: Logging: Log dropped packets' is set to 'Yes' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to log when Windows Firewall with Advanced Security discards an inbound packet for any reason. The log records why and when the packet was dropped. Look for entries with the word `DROP` in the action column of the log.

The recommended state for this setting is: `Yes`.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile
\Logging\LogDroppedPackets
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Yes`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Private Profile\Logging Customize\Log
dropped packets
```

#### Impact:

Information about dropped packets will be recorded in the firewall log file.



**Default Value:**

No (default). (Information about dropped packets will not be recorded in the firewall log file.)

**References:**

1. CCE-33436-7

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

## 9.2.10 (L1) Ensure 'Windows Firewall: Private: Logging: Log successful connections' is set to 'Yes' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

Use this option to log when Windows Firewall with Advanced Security allows an inbound connection. The log records why and when the connection was formed. Look for entries with the word `ALLOW` in the action column of the log.

The recommended state for this setting is: `Yes`.

### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PrivateProfile\nLogging:LogSuccessfulConnections
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Yes`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Private Profile\Logging Customize\Log successful connections
```

### Impact:

Information about successful connections will be recorded in the firewall log file.

**Default Value:**

No (default). (Information about successful connections will not be recorded in the firewall log file.)

**References:**

1. CCE-34177-6

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

## 9.3 Public Profile

This section contains recommendations for the Public Profile of the Windows Firewall.

### 9.3.1 (L1) Ensure 'Windows Firewall: Public: Firewall state' is set to 'On (recommended)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Select On (recommended) to have Windows Firewall with Advanced Security use the settings for this profile to filter network traffic. If you select Off, Windows Firewall with Advanced Security will not use any of the firewall rules or connection security rules for this profile.

The recommended state for this setting is: On (recommended).

#### Rationale:

If the firewall is turned off all traffic will be able to access the system and an attacker may be more easily able to remotely exploit a weakness in a network service.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile:
EnableFirewall
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to On (recommended) :

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Public Profile\Firewall state
```

**Impact:**

None - this is the default configuration.

**Default Value:**

On (recommended). (The Windows Firewall with Advanced Security will be active in this profile.)

**References:**

1. CCE-35703-8

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 9.3.2 (L1) Ensure 'Windows Firewall: Public: Inbound connections' is set to 'Block (default)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting determines the behavior for inbound connections that do not match an inbound firewall rule.

The recommended state for this setting is: `Block (default)`.

#### Rationale:

If the firewall allows all traffic to access the system then an attacker may be more easily able to remotely exploit a weakness in a network service.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile:
DefaultInboundAction
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Block (default)`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Public Profile\Inbound connections
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Block (default). (The Windows Firewall with Advanced Security will block all inbound connections that do not match an inbound firewall rule in this profile.)

**References:**

1. CCE-33069-6

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 9.3.3 (L1) Ensure 'Windows Firewall: Public: Outbound connections' is set to 'Allow (default)' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting determines the behavior for outbound connections that do not match an outbound firewall rule.

The recommended state for this setting is: `Allow (default)`.

**Note:** If you set Outbound connections to Block and then deploy the firewall policy by using a GPO, computers that receive the GPO settings cannot receive subsequent Group Policy updates unless you create and deploy an outbound rule that enables Group Policy to work. Predefined rules for Core Networking include outbound rules that enable Group Policy to work. Ensure that these outbound rules are active, and thoroughly test firewall profiles before deploying.

#### Rationale:

Some people believe that it is prudent to block all outbound connections except those specifically approved by the user or administrator. Microsoft disagrees with this opinion, blocking outbound connections by default will force users to deal with a large number of dialog boxes prompting them to authorize or block applications such as their web browser or instant messaging software. Additionally, blocking outbound traffic has little value because if an attacker has compromised the system they can reconfigure the firewall anyway.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile:
DefaultOutboundAction
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Allow (default):

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Public Profile\Outbound connections
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Allow (default). (The Windows Firewall with Advanced Security will allow all outbound connections in this profile unless there is a firewall rule explicitly blocking it.)

**References:**

1. CCE-33070-4

**Critical Controls:****9.2 Leverage Host-based Firewalls**

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 9.3.4 (L1) Ensure 'Windows Firewall: Public: Settings: Display a notification' is set to 'Yes' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Select this option to have Windows Firewall with Advanced Security display notifications to the user when a program is blocked from receiving inbound connections.

The recommended state for this setting is: Yes.

**Note:** When the `Apply local firewall rules` setting is configured to Yes, it is also recommended to also configure the `Display a notification` setting to Yes. Otherwise, users will not receive messages that ask if they want to unblock a restricted inbound connection.

#### Rationale:

Some organizations may prefer to avoid alarming users when firewall rules block certain types of network activity. However, notifications can be helpful when troubleshooting network issues involving the firewall.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile:
DisableNotifications
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Yes:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Public Profile\Settings
Customize\Display a notification
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Yes. (Windows Firewall with Advanced Security will display a notification when a program is blocked from receiving inbound connections.)

**References:**

1. CCE-33068-8

### 9.3.5 (L1) Ensure 'Windows Firewall: Public: Settings: Apply local firewall rules' is set to 'No' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting controls whether local administrators are allowed to create local firewall rules that apply together with firewall rules configured by Group Policy.

The recommended state for this setting is: No.

#### Rationale:

When in the Public profile, there should be no special local firewall exceptions per computer. These settings should be managed by a centralized policy.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile:
AllowLocalPolicyMerge
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to No:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Public Profile\Settings Customize\Apply
local firewall rules
```

#### Impact:

Administrators can still create firewall rules, but the rules will not be applied.

#### Default Value:

Yes (default). (Firewall rules created by administrators will be applied.)

**References:**

1. CCE-35537-0

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 9.3.6 (L1) Ensure 'Windows Firewall: Public: Settings: Apply local connection security rules' is set to 'No' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting controls whether local administrators are allowed to create connection security rules that apply together with connection security rules configured by Group Policy.

The recommended state for this setting is: No.

#### Rationale:

Users with administrative privileges might create firewall rules that expose the system to remote attack.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile: AllowLocalIPsecPolicyMerge
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to No:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Public Profile\Settings Customize\Apply local connection security rules
```

#### Impact:

Administrators can still create local connection security rules, but the rules will not be applied.

**Default Value:**

Yes (default). (Local connection security rules created by administrators will be applied.)

**References:**

1. CCE-33099-3

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 9.3.7 (L1) Ensure 'Windows Firewall: Public: Logging: Name' is set to '%SYSTEMROOT%\System32\logfiles\firewall\publicfw.log' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to specify the path and name of the file in which Windows Firewall will write its log information.

The recommended state for this setting is:

%SYSTEMROOT%\System32\logfiles\firewall\publicfw.log.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile\Logging\LogFilePath
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to

%SYSTEMROOT%\System32\logfiles\firewall\publicfw.log:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Public Profile\Logging Customize\Name
```

#### Impact:

The log file will be stored in the specified file.



**Default Value:**

%systemroot%\system32\logfiles\firewall\pfirewall.log

**References:**

1. CCE-35117-1

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

### 9.3.8 (L1) Ensure 'Windows Firewall: Public: Logging: Size limit (KB)' is set to '16,384 KB or greater' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to specify the size limit of the file in which Windows Firewall will write its log information.

The recommended state for this setting is: 16,384 KB or greater.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile\
Logging:LogFileSize
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to 16,384 KB or greater:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows
Firewall with Advanced Security\Windows Firewall with Advanced
Security\Windows Firewall Properties\Public Profile\Logging Customize\Size
limit (KB)
```

#### Impact:

The log file size will be limited to the specified size, old events will be overwritten by newer ones when the limit is reached.

**Default Value:**

4,096 KB.

**References:**

1. CCE-35421-7

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

### 9.3.9 (L1) Ensure 'Windows Firewall: Public: Logging: Log dropped packets' is set to 'Yes' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to log when Windows Firewall with Advanced Security discards an inbound packet for any reason. The log records why and when the packet was dropped. Look for entries with the word `DROP` in the action column of the log.

The recommended state for this setting is: `Yes`.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile\Logging\LogDroppedPackets
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Yes`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Public Profile\Logging Customize\Log dropped packets
```

#### Impact:

Information about dropped packets will be recorded in the firewall log file.

**Default Value:**

No (default). (Information about dropped packets will not be recorded in the firewall log file.)

**References:**

1. CCE-35116-3

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

### 9.3.10 (L1) Ensure 'Windows Firewall: Public: Logging: Log successful connections' is set to 'Yes' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Use this option to log when Windows Firewall with Advanced Security allows an inbound connection. The log records why and when the connection was formed. Look for entries with the word `ALLOW` in the action column of the log.

The recommended state for this setting is: `Yes`.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsFirewall\PublicProfile\Logging\LogSuccessfulConnections
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Yes`.

```
Computer Configuration\Policies\Windows Settings\Security Settings\Windows Firewall with Advanced Security\Windows Firewall with Advanced Security\Windows Firewall Properties\Public Profile\Logging Customize\Log successful connections
```

#### Impact:

Information about successful connections will be recorded in the firewall log file.

**Default Value:**

No (default). (Information about successful connections will not be recorded in the firewall log file.)

**References:**

1. CCE-33734-5

**Critical Controls:****6.2 Ensure Audit Log Settings Support Appropriate Log Entry Formatting**

Validate audit log settings for each hardware device and the software installed on it, ensuring that logs include a date, timestamp, source addresses, destination addresses, and various other useful elements of each packet and/or transaction. Systems should record logs in a standardized format such as syslog entries or those outlined by the Common Event Expression initiative. If systems cannot generate logs in a standardized format, log normalization tools can be deployed to convert logs into such a format.

## ***10 Network List Manager Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***11 Wireless Network (IEEE 802.11) Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***12 Public Key Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***13 Software Restriction Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***14 Network Access Protection NAP Client Configuration***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***15 Application Control Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***16 IP Security Policies***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## **17 Advanced Audit Policy Configuration**

This section contains recommendations for configuring the Windows audit facilities.

### **17.1 Account Logon**

This section contains recommendations for configuring the Account Logon audit policy.

#### **17.1.1 (L1) Ensure 'Audit Credential Validation' is set to 'Success and Failure' (Scored)**

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This subcategory reports the results of validation tests on credentials submitted for a user account logon request. These events occur on the computer that is authoritative for the credentials. For domain accounts, the domain controller is authoritative, whereas for local accounts, the local computer is authoritative. In domain environments, most of the Account Logon events occur in the Security log of the domain controllers that are authoritative for the domain accounts. However, these events can occur on other computers in the organization when local accounts are used to log on. Events for this subcategory include:

- 4774: An account was mapped for logon.
- 4775: An account could not be mapped for logon.
- 4776: The domain controller attempted to validate the credentials for an account.
- 4777: The domain controller failed to validate the credentials for an account.

The recommended state for this setting is: `Success and Failure`.

##### **Rationale:**

Auditing these events may be useful when investigating a security incident.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Account Logon\Audit Credential Validation
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

No Auditing.

## References:

1. CCE-35494-4

## Critical Controls:

### 16.4 Automatically Log Off Users After Standard Period Of Inactivity

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.

### 16.8 Log Attempts To Access Deactivated Accounts

Monitor attempts to access deactivated accounts through audit logging.

## 17.2 Account Management

This section contains recommendations for configuring the Account Management audit policy.

### 17.2.1 (L1) Ensure 'Audit Application Group Management' is set to 'Success and Failure' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to audit events generated by changes to application groups such as the following:

- Application group is created, changed, or deleted.
- Member is added or removed from an application group.

Application groups are utilized by Windows Authorization Manager, which is a flexible framework created by Microsoft for integrating role-based access control (RBAC) into applications. More information on Windows Authorization Manager is available at [MSDN - Windows Authorization Manager](#).

The recommended state for this setting is: `Success and Failure`.

#### Rationale:

Auditing events in this category may be useful when investigating an incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Account Management\Audit  
Application Group Management
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

No Auditing.

## References:

1. CCE-32932-6

## Critical Controls:

16 Account Monitoring and Control  
Account Monitoring and Control

## 17.2.2 (L1) Ensure 'Audit Computer Account Management' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports each event of computer account management, such as when a computer account is created, changed, deleted, renamed, disabled, or enabled. Events for this subcategory include:

- 4741: A computer account was created.
- 4742: A computer account was changed.
- 4743: A computer account was deleted.

The recommended state for this setting is: `Success and Failure`.

### Rationale:

Auditing events in this category may be useful when investigating an incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success and Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Account Management\Audit Computer Account Management
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

No Auditing.

**References:**

1. CCE-33410-2

**Critical Controls:**

1 [Inventory of Authorized and Unauthorized Devices](#)  
Inventory of Authorized and Unauthorized Devices

### 17.2.3 (L1) Ensure 'Audit Other Account Management Events' is set to 'Success and Failure' (Scored)

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This subcategory reports other account management events. Events for this subcategory include:

- 4782: The password hash an account was accessed.
- 4793: The Password Policy Checking API was called.

The recommended state for this setting is: `Success and Failure`.

#### **Rationale:**

Auditing these events may be useful when investigating a security incident.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Success and Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Account Management\Audit Other Account Management Events
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

No Auditing.

**References:**

1. CCE-35497-7

**Critical Controls:****16.4 Automatically Log Off Users After Standard Period Of Inactivity**

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.



## 17.2.4 (L1) Ensure 'Audit Security Group Management' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports each event of security group management, such as when a security group is created, changed, or deleted or when a member is added to or removed from a security group. If you enable this Audit policy setting, administrators can track events to detect malicious, accidental, and authorized creation of security group accounts. Events for this subcategory include:

- 4727: A security-enabled global group was created.
- 4728: A member was added to a security-enabled global group.
- 4729: A member was removed from a security-enabled global group.
- 4730: A security-enabled global group was deleted.
- 4731: A security-enabled local group was created.
- 4732: A member was added to a security-enabled local group.
- 4733: A member was removed from a security-enabled local group.
- 4734: A security-enabled local group was deleted.
- 4735: A security-enabled local group was changed.
- 4737: A security-enabled global group was changed.
- 4754: A security-enabled universal group was created.
- 4755: A security-enabled universal group was changed.
- 4756: A member was added to a security-enabled universal group.
- 4757: A member was removed from a security-enabled universal group.
- 4758: A security-enabled universal group was deleted.
- 4764: A group's type was changed.

The recommended state for this setting is: `Success and Failure`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Success and Failure:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Account Management\Audit Security Group Management
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-35498-5

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 17.2.5 (L1) Ensure 'Audit User Account Management' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports each event of user account management, such as when a user account is created, changed, or deleted; a user account is renamed, disabled, or enabled; or a password is set or changed. If you enable this Audit policy setting, administrators can track events to detect malicious, accidental, and authorized creation of user accounts.

Events for this subcategory include:

- 4720: A user account was created.
- 4722: A user account was enabled.
- 4723: An attempt was made to change an account's password.
- 4724: An attempt was made to reset an account's password.
- 4725: A user account was disabled.
- 4726: A user account was deleted.
- 4738: A user account was changed.
- 4740: A user account was locked out.
- 4765: SID History was added to an account.
- 4766: An attempt to add SID History to an account failed.
- 4767: A user account was unlocked.
- 4780: The ACL was set on accounts which are members of administrators groups.
- 4781: The name of an account was changed:
- 4794: An attempt was made to set the Directory Services Restore Mode.
- 5376: Credential Manager credentials were backed up.
- 5377: Credential Manager credentials were restored from a backup.

The recommended state for this setting is: `Success and Failure`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Account Management\Audit User Account Management
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-35499-3

**Critical Controls:****16.4 Automatically Log Off Users After Standard Period Of Inactivity**

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.

## 17.3 Detailed Tracking

This section contains recommendations for configuring the Detailed Tracking audit policy.

### 17.3.1 (L1) Ensure 'Audit Process Creation' is set to 'Success' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports the creation of a process and the name of the program or user that created it. Events for this subcategory include:

- 4688: A new process has been created.
- 4696: A primary token was assigned to process.

Refer to Microsoft Knowledge Base article 947226: [Description of security events in Windows Vista and in Windows Server 2008](#) for the most recent information about this setting.

The recommended state for this setting is: `Success`.

#### Rationale:

Auditing these events may be useful when investigating a security incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Detailed Tracking\Audit Process  
Creation
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

No Auditing.

**References:**

1. CCE-33040-7

***17.4 DS Access***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 17.5 Logon/Logoff

This section contains recommendations for configuring the Logon/Logoff audit policy.

### 17.5.1 (L1) Ensure 'Audit Account Lockout' is set to 'Success' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports when a user's account is locked out as a result of too many failed logon attempts. Events for this subcategory include:

- 4625: An account failed to log on.

The recommended state for this setting is: `Success`.

#### Rationale:

Auditing these events may be useful when investigating a security incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Logon/Logoff\Audit Account Lockout
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-35504-0

**Critical Controls:****16.7 Configure Account Lockouts**

Use and configure account lockouts such that after a set number of failed login attempts the account is locked for a standard period of time.



## 17.5.2 (L1) Ensure 'Audit Logoff' is set to 'Success' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports when a user logs off from the system. These events occur on the accessed computer. For interactive logons, the generation of these events occurs on the computer that is logged on to. If a network logon takes place to access a share, these events generate on the computer that hosts the accessed resource. If you configure this setting to No auditing, it is difficult or impossible to determine which user has accessed or attempted to access organization computers. Events for this subcategory include:

- 4634: An account was logged off.
- 4647: User initiated logoff.

The recommended state for this setting is: *Success*.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to *Success*:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Logon/Logoff\Audit Logoff
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-35507-3

**Critical Controls:****16.1 Perform Regular Account Reviews**

Review all system accounts and disable any account that cannot be associated with a business process and owner.

### 17.5.3 (L1) Ensure 'Audit Logon' is set to 'Success and Failure' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports when a user attempts to log on to the system. These events occur on the accessed computer. For interactive logons, the generation of these events occurs on the computer that is logged on to. If a network logon takes place to access a share, these events generate on the computer that hosts the accessed resource. If you configure this setting to No auditing, it is difficult or impossible to determine which user has accessed or attempted to access organization computers. Events for this subcategory include:

- 4624: An account was successfully logged on.
- 4625: An account failed to log on.
- 4648: A logon was attempted using explicit credentials.
- 4675: SIDs were filtered.

The recommended state for this setting is: `Success and Failure`.

#### Rationale:

Auditing these events may be useful when investigating a security incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success and Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Logon/Logoff\Audit Logon
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-35508-1

**Critical Controls:****16.1 Perform Regular Account Reviews**

Review all system accounts and disable any account that cannot be associated with a business process and owner.

## 17.5.4 (L1) Ensure 'Audit Other Logon/Logoff Events' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports other logon/logoff-related events, such as Terminal Services session disconnects and reconnects, using RunAs to run processes under a different account, and locking and unlocking a workstation. Events for this subcategory include:

- 4649: A replay attack was detected.
- 4778: A session was reconnected to a Window Station.
- 4779: A session was disconnected from a Window Station.
- 4800: The workstation was locked.
- 4801: The workstation was unlocked.
- 4802: The screen saver was invoked.
- 4803: The screen saver was dismissed.
- 5378: The requested credentials delegation was disallowed by policy.
- 5632: A request was made to authenticate to a wireless network.
- 5633: A request was made to authenticate to a wired network.

The recommended state for this setting is: `Success and Failure`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Logon/Logoff\Audit Other  
Logon/Logoff Events
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

No Auditing.

## References:

1. CCE-35510-7

## Critical Controls:

### 16.1 Perform Regular Account Reviews

Review all system accounts and disable any account that cannot be associated with a business process and owner.

## 17.5.5 (L1) Ensure 'Audit Special Logon' is set to 'Success' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports when a special logon is used. A special logon is a logon that has administrator-equivalent privileges and can be used to elevate a process to a higher level. Events for this subcategory include:

- 4964 : Special groups have been assigned to a new logon.

The recommended state for this setting is: `Success`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Logon/Logoff\Audit Special Logon
```

### Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-35511-5

**Critical Controls:****5.8 Administrators Should Not Directly Log In To A System (i.e. use RunAs/sudo)**

Administrators should be required to access a system using a fully logged and non-administrative account. Then, once logged on to the machine without administrative privileges, the administrator should transition to administrative privileges using tools such as Sudo on Linux/UNIX, RunAs on Windows, and other similar facilities for other types of systems.



## 17.6 Object Access

This section contains recommendations for configuring the Object Access audit policy.

### 17.6.1 (L1) Ensure 'Audit Removable Storage' is set to 'Success and Failure' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to audit user attempts to access file system objects on a removable storage device. A security audit event is generated only for all objects for all types of access requested. If you configure this policy setting, an audit event is generated each time an account accesses a file system object on a removable storage. Success audits record successful attempts and Failure audits record unsuccessful attempts. If you do not configure this policy setting, no audit event is generated when an account accesses a file system object on a removable storage.

The recommended state for this setting is: `Success and Failure`. **Note:** A Windows 8, Server 2012 (non-R2) or higher OS is required to access and set this value in Group Policy.

#### Rationale:

Auditing removable storage may be useful when investigating an incident. For example, if an individual is suspected of copying sensitive information onto a USB drive.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\Object Access\Audit Removable  
Storage
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

No Auditing.

## References:

1. CCE-35520-6

## Critical Controls:

### 8.3 Limit Use Of External Devices (i.e. USB)

Limit use of external devices to those with an approved, documented business need.

Monitor for use and attempted use of external devices. Configure laptops, workstations, and servers so that they will not auto-run content from removable media, like USB tokens (i.e., “thumb drives”), USB hard drives, CDs/DVDs, FireWire devices, external serial advanced technology attachment devices, and mounted network shares. Configure systems so that they automatically conduct an anti-malware scan of removable media when inserted.

## 17.7 Policy Change

This section contains recommendations for configuring the Policy Change audit policy.

### 17.7.1 (L1) Ensure 'Audit Audit Policy Change' is set to 'Success and Failure' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports changes in audit policy including SACL changes. Events for this subcategory include:

- 4715: The audit policy (SACL) on an object was changed.
- 4719: System audit policy was changed.
- 4902: The Per-user audit policy table was created.
- 4904: An attempt was made to register a security event source.
- 4905: An attempt was made to unregister a security event source.
- 4906: The CrashOnAuditFail value has changed.
- 4907: Auditing settings on object were changed.
- 4908: Special Groups Logon table modified.
- 4912: Per User Audit Policy was changed.

The recommended state for this setting is: `Success and Failure`.

#### Rationale:

Auditing these events may be useful when investigating a security incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Policy Change\Audit Audit Policy Change
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

Success.

## References:

1. CCE-35521-4

## Critical Controls:

### 3.5 Use File Integrity Tools For Critical System Files

Use file integrity checking tools to ensure that critical system files (including sensitive system and application executables, libraries, and configurations) have not been altered. The reporting system should: have the ability to account for routine and expected changes; highlight and alert on unusual or unexpected alterations; show the history of configuration changes over time and identify who made the change (including the original logged-in account in the event of a user ID switch, such as with the `su` or `sudo` command). These integrity checks should identify suspicious system alterations such as: owner and permissions changes to files or directories; the use of alternate data streams which could be used to hide malicious activities; and the introduction of extra files into key system areas (which could indicate malicious payloads left by attackers or additional files inappropriately added during batch distribution processes).

## 17.7.2 (L1) Ensure 'Audit Authentication Policy Change' is set to 'Success' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports changes in authentication policy. Events for this subcategory include:

- 4706: A new trust was created to a domain.
- 4707: A trust to a domain was removed.
- 4713: Kerberos policy was changed.
- 4716: Trusted domain information was modified.
- 4717: System security access was granted to an account.
- 4718: System security access was removed from an account.
- 4739: Domain Policy was changed.
- 4864: A namespace collision was detected.
- 4865: A trusted forest information entry was added.
- 4866: A trusted forest information entry was removed.
- 4867: A trusted forest information entry was modified.

The recommended state for this setting is: `Success`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Policy Change\Audit Authentication Policy Change
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-33091-0

**Critical Controls:****3.5 Use File Integrity Tools For Critical System Files**

Use file integrity checking tools to ensure that critical system files (including sensitive system and application executables, libraries, and configurations) have not been altered. The reporting system should: have the ability to account for routine and expected changes; highlight and alert on unusual or unexpected alterations; show the history of configuration changes over time and identify who made the change (including the original logged-in account in the event of a user ID switch, such as with the su or sudo command). These integrity checks should identify suspicious system alterations such as: owner and permissions changes to files or directories; the use of alternate data streams which could be used to hide malicious activities; and the introduction of extra files into key system areas (which could indicate malicious payloads left by attackers or additional files inappropriately added during batch distribution processes).

## 17.8 Privilege Use

This section contains recommendations for configuring the Privilege Use audit policy.

### 17.8.1 (L1) Ensure 'Audit Sensitive Privilege Use' is set to 'Success and Failure' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports when a user account or service uses a sensitive privilege. A sensitive privilege includes the following user rights: Act as part of the operating system, Back up files and directories, Create a token object, Debug programs, Enable computer and user accounts to be trusted for delegation, Generate security audits, Impersonate a client after authentication, Load and unload device drivers, Manage auditing and security log, Modify firmware environment values, Replace a process-level token, Restore files and directories, and Take ownership of files or other objects. Auditing this subcategory will create a high volume of events. Events for this subcategory include:

- 4672: Special privileges assigned to new logon.
- 4673: A privileged service was called.
- 4674: An operation was attempted on a privileged object.

The recommended state for this setting is: `Success and Failure`.

#### Rationale:

Auditing these events may be useful when investigating a security incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\Privilege Use\Audit Sensitive Privilege Use
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

No Auditing.

## References:

1. CCE-35524-8

## Critical Controls:

### 5.1 Minimize And Sparingly Use Administrative Privileges

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.



## 17.9 System

This section contains recommendations for configuring the System audit policy.

### 17.9.1 (L1) Ensure 'Audit IPsec Driver' is set to 'Success and Failure' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports on the activities of the Internet Protocol security (IPsec) driver. Events for this subcategory include:

- 4960: IPsec dropped an inbound packet that failed an integrity check. If this problem persists, it could indicate a network issue or that packets are being modified in transit to this computer. Verify that the packets sent from the remote computer are the same as those received by this computer. This error might also indicate interoperability problems with other IPsec implementations.
- 4961: IPsec dropped an inbound packet that failed a replay check. If this problem persists, it could indicate a replay attack against this computer.
- 4962: IPsec dropped an inbound packet that failed a replay check. The inbound packet had too low a sequence number to ensure it was not a replay.
- 4963: IPsec dropped an inbound clear text packet that should have been secured. This is usually due to the remote computer changing its IPsec policy without informing this computer. This could also be a spoofing attack attempt.
- 4965: IPsec received a packet from a remote computer with an incorrect Security Parameter Index (SPI). This is usually caused by malfunctioning hardware that is corrupting packets. If these errors persist, verify that the packets sent from the remote computer are the same as those received by this computer. This error may also indicate interoperability problems with other IPsec implementations. In that case, if connectivity is not impeded, then these events can be ignored.
- 5478: IPsec Services has started successfully.
- 5479: IPsec Services has been shut down successfully. The shutdown of IPsec Services can put the computer at greater risk of network attack or expose the computer to potential security risks.
- 5480: IPsec Services failed to get the complete list of network interfaces on the computer. This poses a potential security risk because some of the network

interfaces may not get the protection provided by the applied IPsec filters. Use the IP Security Monitor snap-in to diagnose the problem.

- 5483: IPsec Services failed to initialize RPC server. IPsec Services could not be started.
- 5484: IPsec Services has experienced a critical failure and has been shut down. The shutdown of IPsec Services can put the computer at greater risk of network attack or expose the computer to potential security risks.
- 5485: IPsec Services failed to process some IPsec filters on a plug-and-play event for network interfaces. This poses a potential security risk because some of the network interfaces may not get the protection provided by the applied IPsec filters. Use the IP Security Monitor snap-in to diagnose the problem.

The recommended state for this setting is: `Success` and `Failure`.

### **Rationale:**

Auditing these events may be useful when investigating a security incident.

### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\System\Audit IPsec Driver
```

### **Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

### **Default Value:**

No Auditing.

**References:**

1. CCE-35525-5

**Critical Controls:**

13 Data Protection

Data Protection

## 17.9.2 (L1) Ensure 'Audit Other System Events' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports on other system events. Events for this subcategory include:

- 5024 : The Windows Firewall Service has started successfully.
- 5025 : The Windows Firewall Service has been stopped.
- 5027 : The Windows Firewall Service was unable to retrieve the security policy from the local storage. The service will continue enforcing the current policy.
- 5028 : The Windows Firewall Service was unable to parse the new security policy. The service will continue with currently enforced policy.
- 5029: The Windows Firewall Service failed to initialize the driver. The service will continue to enforce the current policy.
- 5030: The Windows Firewall Service failed to start.
- 5032: Windows Firewall was unable to notify the user that it blocked an application from accepting incoming connections on the network.
- 5033 : The Windows Firewall Driver has started successfully.
- 5034 : The Windows Firewall Driver has been stopped.
- 5035 : The Windows Firewall Driver failed to start.
- 5037 : The Windows Firewall Driver detected critical runtime error. Terminating.
- 5058: Key file operation.
- 5059: Key migration operation.

The recommended state for this setting is: `Success and Failure`.

### Rationale:

Capturing these audit events may be useful for identifying when the Windows Firewall is not performing as expected.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced Audit Policy Configuration\Audit Policies\System\Audit Other System Events
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

Success and Failure.

## References:

1. CCE-32936-7

## Critical Controls:

### 9.2 Leverage Host-based Firewalls

Apply host-based firewalls or port filtering tools on end systems, with a default-deny rule that drops all traffic except those services and ports that are explicitly allowed.

### 17.9.3 (L1) Ensure 'Audit Security State Change' is set to 'Success' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This subcategory reports changes in security state of the system, such as when the security subsystem starts and stops. Events for this subcategory include:

- 4608: Windows is starting up.
- 4609: Windows is shutting down.
- 4616: The system time was changed.
- 4621: Administrator recovered system from CrashOnAuditFail. Users who are not administrators will now be allowed to log on. Some audit-able activity might not have been recorded.

The recommended state for this setting is: `Success`.

#### Rationale:

Auditing these events may be useful when investigating a security incident.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\System\Audit Security State Change
```

**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

Success.

**References:**

1. CCE-33043-1

## 17.9.4 (L1) Ensure 'Audit Security System Extension' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports the loading of extension code such as authentication packages by the security subsystem. Events for this subcategory include:

- 4610: An authentication package has been loaded by the Local Security Authority.
- 4611: A trusted logon process has been registered with the Local Security Authority.
- 4614: A notification package has been loaded by the Security Account Manager.
- 4622: A security package has been loaded by the Local Security Authority.
- 4697: A service was installed in the system.

The recommended state for this setting is: `Success` and `Failure`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\System\Audit Security System  
Extension
```



**Impact:**

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

**Default Value:**

No Auditing.

**References:**

1. CCE-35526-3

**Critical Controls:**

6 Maintenance, Monitoring, and Analysis of Audit Logs  
Maintenance, Monitoring, and Analysis of Audit Logs

## 17.9.5 (L1) Ensure 'Audit System Integrity' is set to 'Success and Failure' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This subcategory reports on violations of integrity of the security subsystem. Events for this subcategory include:

- 4612 : Internal resources allocated for the queuing of audit messages have been exhausted, leading to the loss of some audits.
- 4615 : Invalid use of LPC port.
- 4618 : A monitored security event pattern has occurred.
- 4816 : RPC detected an integrity violation while decrypting an incoming message.
- 5038 : Code integrity determined that the image hash of a file is not valid. The file could be corrupt due to unauthorized modification or the invalid hash could indicate a potential disk device error.
- 5056: A cryptographic self test was performed.
- 5057: A cryptographic primitive operation failed.
- 5060: Verification operation failed.
- 5061: Cryptographic operation.
- 5062: A kernel-mode cryptographic self test was performed.

The recommended state for this setting is: `Success and Failure`.

### Rationale:

Auditing these events may be useful when investigating a security incident.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Success` and `Failure`:

```
Computer Configuration\Policies\Windows Settings\Security Settings\Advanced  
Audit Policy Configuration\Audit Policies\System\Audit System Integrity
```

## Impact:

If no audit settings are configured, or if audit settings are too lax on the computers in your organization, security incidents might not be detected or not enough evidence will be available for network forensic analysis after security incidents occur. However, if audit settings are too severe, critically important entries in the Security log may be obscured by all of the meaningless entries and computer performance and the available amount of data storage may be seriously affected. Companies that operate in certain regulated industries may have legal obligations to log certain events or activities.

## Default Value:

Success and Failure.

## References:

1. CCE-35527-1

## Critical Controls:

6 Maintenance, Monitoring, and Analysis of Audit Logs  
Maintenance, Monitoring, and Analysis of Audit Logs

## **18 Administrative Templates (Computer)**

This section contains recommendations for computer-based administrative templates.

### **18.1 Control Panel**

This section contains recommendations for Control Panel settings.

#### **18.1.1 Personalization**

This section contains recommendations for Control Panel personalization settings.

##### **18.1.1.1 (L1) Ensure 'Prevent enabling lock screen camera' is set to 'Enabled' (Scored)**

###### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

###### **Description:**

Disables the lock screen camera toggle switch in PC Settings and prevents a camera from being invoked on the lock screen.

The recommended state for this setting is: `Enabled`.

###### **Rationale:**

Disabling the lock screen camera extends the protection afforded by the lock screen to camera features.

###### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Personalization:NoLockScreenCamera
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Control  
Panel\Personalization\Prevent enabling lock screen camera
```

**Impact:**

If you enable this setting, users will no longer be able to enable or disable lock screen camera access in PC Settings, and the camera cannot be invoked on the lock screen.

**Default Value:**

Disabled. (Users can enable invocation of an available camera on the lock screen.)

**References:**

1. CCE-35799-6

### 18.1.1.2 (L1) Ensure 'Prevent enabling lock screen slide show' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Disables the lock screen slide show settings in PC Settings and prevents a slide show from playing on the lock screen.

The recommended state for this setting is: Enabled.

#### Rationale:

Disabling the lock screen slide show extends the protection afforded by the lock screen to slide show contents.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Personalization:NoLockScreenSlideshow
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Control Panel\Personalization\Prevent enabling lock screen slide show
```

#### Impact:

If you enable this setting, users will no longer be able to modify slide show settings in PC Settings, and no slide show will ever start.

#### Default Value:

Disabled. (Users can enable a slide show that will run after they lock the machine.)

**References:**

1. CCE-35800-2

## 18.2 LAPS

This section contains recommendations for configuring Microsoft Local Administrator Password Solution (LAPS).

The Group Policy settings contained within this section are provided by the Group Policy template `AdmPwd.admx/adml` that is included with LAPS.

### 18.2.1 (L1) Ensure LAPS AdmPwd GPO Extension / CSE is installed (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

In May 2015, Microsoft released the Local Administrator Password Solution (LAPS) tool, which is free and supported software that allows an organization to automatically set randomized and unique local Administrator account passwords on domain-attached workstations and member servers. The passwords are stored in a confidential attribute of the domain computer account and can be retrieved from Active Directory by approved Sysadmins when needed.

The LAPS tool requires a small Active Directory Schema update in order to implement, as well as installation of a Group Policy Client Side Extension (CSE) on targeted computers. Please see the LAPS documentation for details.

LAPS supports Windows Vista or newer workstation OSes, and Server 2003 or newer server OSes. LAPS does not support standalone computers - they must be joined to a domain.

**Note:** Organizations that utilize 3rd-party commercial software to manage unique & complex local Administrator passwords on domain members may opt to disregard these LAPS recommendations.



**Rationale:**

Due to the difficulty in managing local Administrator passwords, many organizations choose to use the same password on all workstations and/or member servers when deploying them. This poses a serious attack surface security risk because if an attacker manages to compromise one system and learn the password to its local Administrator account, then they can leverage that account to instantly gain access to all other computers that also use that password for their local Administrator account.

**Audit:**

The LAPS AdmPwd GPO Extension / CSE can be verified to be installed by the presence of the following registry value:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon\GPExtensions\{D76B9641-3288-4f75-942D-  
087DE603E3EA}:DllName
```

**Remediation:**

In order to utilize LAPS, a minor Active Directory Schema update is required, and a Group Policy Client Side Extension (CSE) must be installed on each managed computer. When LAPS is installed, the file `AdmPwd.dll` must be present in the following location and registered in Windows (the LAPS AdmPwd GPO Extension / CSE installation does this for you):

```
C:\Program Files\LAPS\CSE\AdmPwd.dll
```

**Impact:**

No impact. When installed and registered properly, `AdmPwd.dll` takes no action unless given appropriate GPO commands during Group Policy refresh. It is not a memory-resident agent or service.

In a disaster recovery scenario where Active Directory is not available, the local Administrator password will not be retrievable and a local password reset using a tool (such as Microsoft's Disaster and Recovery Toolset (DaRT) Recovery Image) may be necessary.

**Default Value:**

Not Installed.

**Critical Controls:****16.9 Configure Account Access Centrally**

Configure access for all accounts through a centralized point of authentication, for example Active Directory or LDAP. Configure network and security devices for centralized authentication as well.

## *18.2.2 (L1) Ensure 'Do not allow password expiration time longer than required by policy' is set to 'Enabled' (Scored)*

### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

### **Description:**

In May 2015, Microsoft released the Local Administrator Password Solution (LAPS) tool, which is free and supported software that allows an organization to automatically set randomized and unique local Administrator account passwords on domain-attached workstations and member servers. The passwords are stored in a confidential attribute of the domain computer account and can be retrieved from Active Directory by approved Sysadmins when needed.

The LAPS tool requires a small Active Directory Schema update in order to implement, as well as installation of a Group Policy Client Side Extension (CSE) on targeted computers. Please see the LAPS documentation for details.

LAPS supports Windows Vista or newer workstation OSes, and Server 2003 or newer server OSes. LAPS does not support standalone computers - they must be joined to a domain.

The recommended state for this setting is: `Enabled`.

**Note:** Organizations that utilize 3rd-party commercial software to manage unique & complex local Administrator passwords on domain members may opt to disregard these LAPS recommendations.

### **Rationale:**

Due to the difficulty in managing local Administrator passwords, many organizations choose to use the same password on all workstations and/or member servers when deploying them. This poses a serious attack surface security risk because if an attacker manages to compromise one system and learn the password to its local Administrator account, then they can leverage that account to instantly gain access to all other computers that also use that password for their local Administrator account.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft  
Services\AdmPwd:PwdExpirationProtectionEnabled
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\LAPS\Do not allow  
password expiration time longer than required by policy
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`AdmPwd.admx/adml`) is required - it is included with Microsoft Local Administrator Password Solution (LAPS).

**Impact:**

Planned password expiration longer than password age dictated by "Password Settings" policy is NOT allowed.

**Default Value:**

Disabled. (Password expiration time may be longer than required by the "Password Settings" policy.)

**Critical Controls:****16.2 All Accounts Have A Monitored Expiration Date**

Ensure that all accounts have an expiration date that is monitored and enforced.

### 18.2.3 (L1) Ensure 'Enable Local Admin Password Management' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

In May 2015, Microsoft released the Local Administrator Password Solution (LAPS) tool, which is free and supported software that allows an organization to automatically set randomized and unique local Administrator account passwords on domain-attached workstations and member servers. The passwords are stored in a confidential attribute of the domain computer account and can be retrieved from Active Directory by approved Sysadmins when needed.

The LAPS tool requires a small Active Directory Schema update in order to implement, as well as installation of a Group Policy Client Side Extension (CSE) on targeted computers. Please see the LAPS documentation for details.

LAPS supports Windows Vista or newer workstation OSes, and Server 2003 or newer server OSes. LAPS does not support standalone computers - they must be joined to a domain.

The recommended state for this setting is: `Enabled`.

**Note:** Organizations that utilize 3rd-party commercial software to manage unique & complex local Administrator passwords on domain members may opt to disregard these LAPS recommendations.

#### Rationale:

Due to the difficulty in managing local Administrator passwords, many organizations choose to use the same password on all workstations and/or member servers when deploying them. This poses a serious attack surface security risk because if an attacker manages to compromise one system and learn the password to its local Administrator account, then they can leverage that account to instantly gain access to all other computers that also use that password for their local Administrator account.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft Services\AdmPwd:AdmPwdEnabled
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\LAPS\Enable Local Admin Password Management
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (AdmPwd.admx/adml) is required - it is included with Microsoft Local Administrator Password Solution (LAPS).

**Impact:**

The local administrator password is managed (provided that the LAPS AdmPwd GPO Extension / CSE is installed on the target computer (see rule 18.2.1), the Active Directory domain schema and account permissions have been properly configured on the domain).

In a disaster recovery scenario where Active Directory is not available, the local Administrator password will not be retrievable and a local password reset using a tool (such as Microsoft's Disaster and Recovery Toolset (DaRT) Recovery Image) may be necessary.

**Default Value:**

Disabled. (Local Administrator password is NOT managed.)

**Critical Controls:****16.9 Configure Account Access Centrally**

Configure access for all accounts through a centralized point of authentication, for example Active Directory or LDAP. Configure network and security devices for centralized authentication as well.

### *18.2.4 (L1) Ensure 'Password Settings: Password Complexity' is set to 'Enabled: Large letters + small letters + numbers + special characters' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

In May 2015, Microsoft released the Local Administrator Password Solution (LAPS) tool, which is free and supported software that allows an organization to automatically set randomized and unique local Administrator account passwords on domain-attached workstations and member servers. The passwords are stored in a confidential attribute of the domain computer account and can be retrieved from Active Directory by approved Sysadmins when needed.

The LAPS tool requires a small Active Directory Schema update in order to implement, as well as installation of a Group Policy Client Side Extension (CSE) on targeted computers. Please see the LAPS documentation for details.

LAPS supports Windows Vista or newer workstation OSes, and Server 2003 or newer server OSes. LAPS does not support standalone computers - they must be joined to a domain.

The recommended state for this setting is: `Enabled: Large letters + small letters + numbers + special characters.`

**Note:** Organizations that utilize 3rd-party commercial software to manage unique & complex local Administrator passwords on domain members may opt to disregard these LAPS recommendations.

#### **Rationale:**

Due to the difficulty in managing local Administrator passwords, many organizations choose to use the same password on all workstations and/or member servers when deploying them. This poses a serious attack surface security risk because if an attacker manages to compromise one system and learn the password to its local Administrator account, then they can leverage that account to instantly gain access to all other computers that also use that password for their local Administrator account.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft  
Services\AdmPwd>PasswordComplexity
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and configure the `Password Complexity` option to `Large letters + small letters + numbers + special characters`:

```
Computer Configuration\Policies\Administrative Templates\LAPS>Password  
Settings
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`AdmPwd.admx/adml`) is required - it is included with Microsoft Local Administrator Password Solution (LAPS).

**Impact:**

LAPS-generated passwords will be required to contain large letters + small letters + numbers + special characters.

**Default Value:**

Large letters + small letters + numbers + special characters.

**Critical Controls:****5.7 User Accounts Shall Use Long Passwords**

Where multi-factor authentication is not supported, user accounts shall be required to use long passwords on the system (longer than 14 characters).



## 18.2.5 (L1) Ensure 'Password Settings: Password Length' is set to 'Enabled: 15 or more' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

In May 2015, Microsoft released the Local Administrator Password Solution (LAPS) tool, which is free and supported software that allows an organization to automatically set randomized and unique local Administrator account passwords on domain-attached workstations and member servers. The passwords are stored in a confidential attribute of the domain computer account and can be retrieved from Active Directory by approved Sysadmins when needed.

The LAPS tool requires a small Active Directory Schema update in order to implement, as well as installation of a Group Policy Client Side Extension (CSE) on targeted computers. Please see the LAPS documentation for details.

LAPS supports Windows Vista or newer workstation OSes, and Server 2003 or newer server OSes. LAPS does not support standalone computers - they must be joined to a domain.

The recommended state for this setting is: `Enabled: 15 or more`.

**Note:** Organizations that utilize 3rd-party commercial software to manage unique & complex local Administrator passwords on domain members may opt to disregard these LAPS recommendations.

### Rationale:

Due to the difficulty in managing local Administrator passwords, many organizations choose to use the same password on all workstations and/or member servers when deploying them. This poses a serious attack surface security risk because if an attacker manages to compromise one system and learn the password to its local Administrator account, then they can leverage that account to instantly gain access to all other computers that also use that password for their local Administrator account.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft Services\AdmPwd>PasswordLength
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and configure the `Password Length` option to `15` or more:

```
Computer Configuration\Policies\Administrative Templates\LAPS>Password Settings
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`AdmPwd.admx/adml`) is required - it is included with Microsoft Local Administrator Password Solution (LAPS).

**Impact:**

LAPS-generated passwords will be required to have a length of 15 characters (or more, if selected).

**Default Value:**

14 characters.

**Critical Controls:****5.7 User Accounts Shall Use Long Passwords**

Where multi-factor authentication is not supported, user accounts shall be required to use long passwords on the system (longer than 14 characters).

## 18.2.6 (L1) Ensure 'Password Settings: Password Age (Days)' is set to 'Enabled: 30 or fewer' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

In May 2015, Microsoft released the Local Administrator Password Solution (LAPS) tool, which is free and supported software that allows an organization to automatically set randomized and unique local Administrator account passwords on domain-attached workstations and member servers. The passwords are stored in a confidential attribute of the domain computer account and can be retrieved from Active Directory by approved Sysadmins when needed.

The LAPS tool requires a small Active Directory Schema update in order to implement, as well as installation of a Group Policy Client Side Extension (CSE) on targeted computers. Please see the LAPS documentation for details.

LAPS supports Windows Vista or newer workstation OSes, and Server 2003 or newer server OSes. LAPS does not support standalone computers - they must be joined to a domain.

The recommended state for this setting is: `Enabled: 30 or fewer`.

**Note:** Organizations that utilize 3rd-party commercial software to manage unique & complex local Administrator passwords on domain members may opt to disregard these LAPS recommendations.

### Rationale:

Due to the difficulty in managing local Administrator passwords, many organizations choose to use the same password on all workstations and/or member servers when deploying them. This poses a serious attack surface security risk because if an attacker manages to compromise one system and learn the password to its local Administrator account, then they can leverage that account to instantly gain access to all other computers that also use that password for their local Administrator account.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft  
Services\AdmPwd>PasswordAgeDays
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and configure the `Password Age (Days)` option to `30` or fewer:

```
Computer Configuration\Policies\Administrative Templates\LAPS>Password  
Settings
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`AdmPwd.admx/adml`) is required - it is included with Microsoft Local Administrator Password Solution (LAPS).

**Impact:**

LAPS-generated passwords will be required to have a maximum age of 30 days (or fewer, if selected).

**Default Value:**

30 days.

**Critical Controls:**

### 16.5 Ensure Workstation Screen Locks Are Configured

Configure screen locks on systems to limit access to unattended workstations.

## 18.3 MSS (Legacy)

This section contains recommendations for the Microsoft Solutions for Security (MSS) settings.

The Group Policy settings contained within this section are provided by the Group Policy template `MSS-legacy.admx/adml` that is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

### 18.3.1 (L1) Ensure 'MSS: (AutoAdminLogon) Enable Automatic Logon (not recommended)' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting is separate from the Welcome screen feature in Windows XP and Windows Vista; if that feature is disabled, this setting is not disabled. If you configure a computer for automatic logon, anyone who can physically gain access to the computer can also gain access to everything that is on the computer, including any network or networks to which the computer is connected. Also, if you enable automatic logon, the password is stored in the registry in plaintext, and the specific registry key that stores this value is remotely readable by the Authenticated Users group.

For additional information, see Microsoft Knowledge Base article 324737: [How to turn on automatic logon in Windows](#).

The recommended state for this setting is: `Disabled`.

## Rationale:

If you configure a computer for automatic logon, anyone who can physically gain access to the computer can also gain access to everything that is on the computer, including any network or networks that the computer is connected to. Also, if you enable automatic logon, the password is stored in the registry in plaintext. The specific registry key that stores this setting is remotely readable by the Authenticated Users group. As a result, this entry is appropriate only if the computer is physically secured and if you ensure that untrusted users cannot remotely see the registry.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon:AutoAdminLogon
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS:  
(AutoAdminLogon) Enable Automatic Logon (not recommended)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (MSS-legacy.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

None - this is the default configuration.

## Default Value:

Disabled.

## References:

1. CCE-35438-1

## Critical Controls:

16 Account Monitoring and Control  
Account Monitoring and Control

### *18.3.2 (L1) Ensure 'MSS: (DisableIPSourceRouting IPv6) IP source routing protection level (protects against packet spoofing)' is set to 'Enabled: Highest protection, source routing is completely disabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

IP source routing is a mechanism that allows the sender to determine the IP route that a datagram should follow through the network.

The recommended state for this setting is: Enabled: Highest protection, source routing is completely disabled.

#### **Rationale:**

An attacker could use source routed packets to obscure their identity and location. Source routing allows a computer that sends a packet to specify the route that the packet takes.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip6\Parameters:DisableIPSourceRouting
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled: Highest protection, source routing is completely disabled:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS: (DisableIPSourceRouting IPv6) IP source routing protection level (protects against packet spoofing)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (MSS-legacy.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

**Impact:**

All incoming source routed packets will be dropped.

**Default Value:**

No additional protection, source routed packets are allowed.

**References:**

1. CCE-33790-7

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services

Limitation and Control of Network Ports, Protocols, and Services



### *18.3.3 (L1) Ensure 'MSS: (DisableIPSourceRouting) IP source routing protection level (protects against packet spoofing)' is set to 'Enabled: Highest protection, source routing is completely disabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

IP source routing is a mechanism that allows the sender to determine the IP route that a datagram should take through the network. It is recommended to configure this setting to Not Defined for enterprise environments and to Highest Protection for high security environments to completely disable source routing.

The recommended state for this setting is: Enabled: Highest protection, source routing is completely disabled.

#### **Rationale:**

An attacker could use source routed packets to obscure their identity and location. Source routing allows a computer that sends a packet to specify the route that the packet takes.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters:DisableIPSourceRouting
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Highest protection, source routing is completely disabled:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS:  
(DisableIPSourceRouting) IP source routing protection level (protects against  
packet spoofing)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

All incoming source routed packets will be dropped.

## Default Value:

Medium, source routed packets ignored when IP forwarding is enabled.

## References:

1. CCE-33816-0

## Critical Controls:

9 Limitation and Control of Network Ports, Protocols, and Services

Limitation and Control of Network Ports, Protocols, and Services

### 18.3.4 (L2) Ensure 'MSS: (DisableSavePassword) Prevent the dial-up password from being saved' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

When you dial a phonebook or VPN entry in Dial-Up Networking, you can use the "Save Password" option so that your Dial-Up Networking password is cached and you will not need to enter it on successive dial attempts. For security, administrators may want to prevent users from caching passwords.

The recommended state for this setting is: `Enabled`.

#### Rationale:

An attacker who steals a mobile user's computer could automatically connect to the organization's network if the **Save This Password** check box is selected for the dial-up or VPN networking entry used to connect to your organization's network.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\RasMan\Parameters:DisableSavePassword
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS: (DisableSavePassword) Prevent the dial-up password from being saved
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

**Impact:**

Users will not be able to automatically store their logon credentials for dial-up and VPN connections.

**Default Value:**

Disabled. (Saving of dial-up and VPN passwords is allowed.)

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services

### 18.3.5 (L1) Ensure 'MSS: (EnableICMPRedirect) Allow ICMP redirects to override OSPF generated routes' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Internet Control Message Protocol (ICMP) redirects cause the IPv4 stack to plumb host routes. These routes override the Open Shortest Path First (OSPF) generated routes.

The recommended state for this setting is: `Disabled`.

#### Rationale:

This behavior is expected. The problem is that the 10 minute time-out period for the ICMP redirect-plumbed routes temporarily creates a network situation in which traffic will no longer be routed properly for the affected host. Ignoring such ICMP redirects will limit the system's exposure to attacks that will impact its ability to participate on the network.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed for your organization. This group policy object is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters:EnableICMPRedirect
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS: (EnableICMPRedirect) Allow ICMP redirects to override OSPF generated routes
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

**Impact:**

When Routing and Remote Access Service (RRAS) is configured as an autonomous system boundary router (ASBR), it does not correctly import connected interface subnet routes. Instead, this router injects host routes into the OSPF routes. However, the OSPF router cannot be used as an ASBR router, and when connected interface subnet routes are imported into OSPF the result is confusing routing tables with strange routing paths.

**Default Value:**

Enabled. (ICMP redirects can override OSPF-generated routes.)

**References:**

1. CCE-34597-5

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services

### 18.3.6 (L2) Ensure 'MSS: (KeepAliveTime) How often keep-alive packets are sent in milliseconds' is set to 'Enabled: 300,000 or 5 minutes (recommended)' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This value controls how often TCP attempts to verify that an idle connection is still intact by sending a keep-alive packet. If the remote computer is still reachable, it acknowledges the keep-alive packet.

The recommended state for this setting is: Enabled: 300,000 or 5 minutes (recommended).

#### Rationale:

An attacker who is able to connect to network applications could establish numerous connections to cause a DoS condition.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters:KeepAliveTime
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: 300,000 or 5 minutes (recommended):

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS: (KeepAliveTime) How often keep-alive packets are sent in milliseconds
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (MSS-legacy.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

**Impact:**

Keep-alive packets are not sent by default by Windows. However, some applications may configure the TCP stack flag that requests keep-alive packets. For such configurations, you can lower this value from the default setting of two hours to five minutes to disconnect inactive sessions more quickly.

**Default Value:**

7,200,000 milliseconds or 120 minutes.

**References:**

1. CCE-35469-6

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services



### *18.3.7 (L1) Ensure 'MSS: (NoNameReleaseOnDemand) Allow the computer to ignore NetBIOS name release requests except from WINS servers' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

NetBIOS over TCP/IP is a network protocol that among other things provides a way to easily resolve NetBIOS names that are registered on Windows-based systems to the IP addresses that are configured on those systems. This setting determines whether the computer releases its NetBIOS name when it receives a name-release request.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

The NetBT protocol is designed not to use authentication, and is therefore vulnerable to spoofing. Spoofing makes a transmission appear to come from a user other than the user who performed the action. A malicious user could exploit the unauthenticated nature of the protocol to send a name-conflict datagram to a target computer, which would cause the computer to relinquish its name and not respond to queries.

An attacker could send a request over the network and query a computer to release its NetBIOS name. As with any change that could affect applications, it is recommended that you test this change in a non-production environment before you change the production environment.

The result of such an attack could be to cause intermittent connectivity issues on the target computer, or even to prevent the use of Network Neighborhood, domain logons, the NET SEND command, or additional NetBIOS name resolution.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\NetBT\Parameters:NoNameReleaseOnDemand
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS:  
(NoNameReleaseOnDemand) Allow the computer to ignore NetBIOS name release  
requests except from WINS servers
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (MSS-legacy.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

None - this is the default configuration.

## Default Value:

Enabled.

## References:

1. CCE-35405-0

## Critical Controls:

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services

### 18.3.8 (L2) Ensure 'MSS: (PerformRouterDiscovery) Allow IRDP to detect and configure Default Gateway addresses (could lead to DoS)' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This setting is used to enable or disable the Internet Router Discovery Protocol (IRDP), which allows the system to detect and configure default gateway addresses automatically as described in RFC 1256 on a per-interface basis.

The recommended state for this setting is: `Disabled`.

#### Rationale:

An attacker who has gained control of a computer on the same network segment could configure a computer on the network to impersonate a router. Other computers with IRDP enabled would then attempt to route their traffic through the already compromised computer.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters:PerformRouterDiscovery
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS: (PerformRouterDiscovery) Allow IRDP to detect and configure Default Gateway addresses (could lead to DoS)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

**Impact:**

Windows will not automatically detect and configure default gateway addresses on the computer.

**Default Value:**

Enable only if DHCP sends the Perform Router Discovery option.

**References:**

1. CCE-34614-8

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services

### 18.3.9 (L1) Ensure 'MSS: (SafeDllSearchMode) Enable Safe DLL search mode (recommended)' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

The DLL search order can be configured to search for DLLs that are requested by running processes in one of two ways:

- Search folders specified in the system path first, and then search the current working folder.
- Search current working folder first, and then search the folders specified in the system path.

When enabled, the registry value is set to 1. With a setting of 1, the system first searches the folders that are specified in the system path and then searches the current working folder. When disabled the registry value is set to 0 and the system first searches the current working folder and then searches the folders that are specified in the system path.

Applications will be forced to search for DLLs in the system path first. For applications that require unique versions of these DLLs that are included with the application, this entry could cause performance or stability problems.

The recommended state for this setting is: `Enabled`.

#### Rationale:

If a user unknowingly executes hostile code that was packaged with additional files that include modified versions of system DLLs, the hostile code could load its own versions of those DLLs and potentially increase the type and degree of damage the code can render.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session  
Manager:SafeDllSearchMode
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS:  
(SafeDllSearchMode) Enable Safe DLL search mode (recommended)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (MSS-legacy.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

None - this is the default configuration.

## Default Value:

Enabled.

## References:

1. CCE-34022-4

## Critical Controls:

8 Malware Defenses

Malware Defenses

*18.3.10 (L1) Ensure 'MSS: (ScreenSaverGracePeriod) The time in seconds before the screen saver grace period expires (0 recommended)' is set to 'Enabled: 5 or fewer seconds' (Scored)*

**Profile Applicability:**

- Level 1
- Level 1 + BitLocker

**Description:**

Windows includes a grace period between when the screen saver is launched and when the console is actually locked automatically when screen saver locking is enabled.

The recommended state for this setting is: `Enabled: 5 or fewer seconds`.

**Rationale:**

The default grace period that is allowed for user movement before the screen saver lock takes effect is five seconds. If you leave the default grace period configuration, your computer is vulnerable to a potential attack from someone who could approach the console and attempt to log on to the computer before the lock takes effect. An entry to the registry can be made to adjust the length of the grace period.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows  
NT\CurrentVersion\Winlogon:ScreenSaverGracePeriod
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
5 or fewer seconds:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS:  
(ScreenSaverGracePeriod) The time in seconds before the screen saver grace  
period expires (0 recommended)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

Users will have to enter their passwords to resume their console sessions as soon as the grace period ends after screen saver activation.

## Default Value:

5 seconds.

## References:

1. CCE-34619-7

## Critical Controls:

### 16.5 Ensure Workstation Screen Locks Are Configured

Configure screen locks on systems to limit access to unattended workstations.



### 18.3.11 (L2) Ensure 'MSS: (TcpMaxDataRetransmissions IPv6) How many times unacknowledged data is retransmitted' is set to 'Enabled: 3' (Scored)

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This setting controls the number of times that TCP retransmits an individual data segment (non-connect segment) before the connection is aborted. The retransmission time-out is doubled with each successive retransmission on a connection. It is reset when responses resume. The base time-out value is dynamically determined by the measured round-trip time on the connection.

The recommended state for this setting is: `Enabled: 3`.

#### **Rationale:**

A malicious user could exhaust a target computer's resources if it never sent any acknowledgment messages for data that was transmitted by the target computer.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TCPIP6\Parameters:TcpMaxDataRetransmissions
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
3:

```
Computer Configuration\Policies\Administrative Templates\MSS  
(Legacy)\MSS:(TcpMaxDataRetransmissions IPv6) How many times unacknowledged  
data is retransmitted
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

TCP starts a retransmission timer when each outbound segment is passed to the IP. If no acknowledgment is received for the data in a given segment before the timer expires, then the segment is retransmitted up to three times.

## Default Value:

5 times.

## References:

1. CCE-34622-1

## Critical Controls:

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Limitation and Control of Network Ports, Protocols, and Services

*18.3.12 (L2) Ensure 'MSS: (TcpMaxDataRetransmissions) How many times unacknowledged data is retransmitted' is set to 'Enabled: 3' (Scored)*

**Profile Applicability:**

- Level 2
- Level 2 + BitLocker

**Description:**

This setting controls the number of times that TCP retransmits an individual data segment (non-connect segment) before the connection is aborted. The retransmission time-out is doubled with each successive retransmission on a connection. It is reset when responses resume. The base time-out value is dynamically determined by the measured round-trip time on the connection.

The recommended state for this setting is: `Enabled: 3`.

**Rationale:**

A malicious user could exhaust a target computer's resources if it never sent any acknowledgment messages for data that was transmitted by the target computer.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters:TcpMaxDataRetransmissions
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
3:

```
Computer Configuration\Policies\Administrative Templates\MSS  
(Legacy)\MSS:(TcpMaxDataRetransmissions) How many times unacknowledged data  
is retransmitted
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`MSS-legacy.admx/adml`) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

TCP starts a retransmission timer when each outbound segment is passed to the IP. If no acknowledgment is received for the data in a given segment before the timer expires, then the segment is retransmitted up to three times.

## Default Value:

5 times.

## References:

1. CCE-34623-9

## Critical Controls:

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### *18.3.13 (L1) Ensure 'MSS: (WarningLevel) Percentage threshold for the security event log at which the system will generate a warning' is set to 'Enabled: 90% or less' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This setting can generate a security audit in the Security event log when the log reaches a user-defined threshold.

**Note:** If log settings are configured to Overwrite events as needed or Overwrite events older than x days, this event will not be generated.

The recommended state for this setting is: Enabled: 90% or less.

#### **Rationale:**

If the Security log reaches 90 percent of its capacity and the computer has not been configured to overwrite events as needed, more recent events will not be written to the log. If the log reaches its capacity and the computer has been configured to shut down when it can no longer record events to the Security log, the computer will shut down and will no longer be available to provide network services.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Eventlog\Security:WarningLevel
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:  
90% or less:

```
Computer Configuration\Policies\Administrative Templates\MSS (Legacy)\MSS:  
(WarningLevel) Percentage threshold for the security event log at which the  
system will generate a warning
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (MSS-legacy.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM), or available from this TechNet blog post:

<https://blogs.technet.microsoft.com/secguide/2016/10/02/the-mss-settings/>

## Impact:

An audit event will be generated when the Security log reaches the 90% percent full threshold (or whatever lower value may be set) unless the log is configured to overwrite events as needed.

## Default Value:

0%. (No warning event is generated.)

## References:

1. CCE-35406-8

## Critical Controls:

### 6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

## **18.4 Network**

This section contains recommendations for network settings.

### **18.4.1 Background Intelligent Transfer Service (BITS)**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.4.2 BranchCache**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.4.3 DirectAccess Client Experience Settings**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.4.4 DNS Client**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.4.5 Fonts**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `GroupPolicy.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### **18.4.6 Hotspot Authentication**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.4.7 Lanman Server***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.4.8 Lanman Workstation***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## 18.4.9 Link-Layer Topology Discovery

This section contains recommendations for Link-Layer Topology Discovery settings.

### 18.4.9.1 (L2) Ensure 'Turn on Mapper I/O (LLTDIO) driver' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting changes the operational behavior of the Mapper I/O network protocol driver.

LLTDIO allows a computer to discover the topology of a network it's connected to. It also allows a computer to initiate Quality-of-Service requests such as bandwidth estimation and network health analysis.

The recommended state for this setting is: `Disabled`.

#### Rationale:

To help protect from potentially discovering and connecting to unauthorized devices, We are recommending that this setting be disabled to guarantee the prevention of responding to network traffic for network topology discovery.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:AllowLLTDIOOnDomain
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:AllowLLTDIOOnPublicNet
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:EnableLLTDIO
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:ProhibitLLTDIOOnPrivateNet
```

**Remediation:**

To implement the recommended configuration state, set the following Group Policy setting to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Network\Link-Layer  
Topology Discovery\Turn on Mapper I/O (LLTDIO) driver
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The Mapper I/O (LLTDIO) network protocol driver is turned off.)

**References:**

1. CCE-34262-6

**Critical Controls:**

9 [Limitation and Control of Network Ports, Protocols, and Services](#)

Limitation and Control of Network Ports, Protocols, and Services

## 18.4.9.2 (L2) Ensure 'Turn on Responder (RSPNDR) driver' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting changes the operational behavior of the Responder network protocol driver.

The Responder allows a computer to participate in Link Layer Topology Discovery requests so that it can be discovered and located on the network. It also allows a computer to participate in Quality-of-Service activities such as bandwidth estimation and network health analysis.

The recommended state for this setting is: `Disabled`.

### Rationale:

To help protect from potentially discovering and connecting to unauthorized devices, We are recommending that this setting be disabled to guarantee the prevention of responding to network traffic for network topology discovery.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:AllowRspndrOnDomain
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:AllowRspndrOnPublicNet
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:EnableRspndr
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LLTD:ProhibitRspndrOnPrivateNet
```

**Remediation:**

To implement the recommended configuration state, set the following Group Policy setting to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Network\Link-Layer  
Topology Discovery\Turn on Responder (RSPNDR) driver
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The Responder (RSPNDR) network protocol driver is turned off.)

**References:**

1. CCE-34073-7

**Critical Controls:**

9 Limitation and Control of Network Ports, Protocols, and Services

Limitation and Control of Network Ports, Protocols, and Services

## 18.4.10 Microsoft Peer-to-Peer Networking Services

This section contains recommendations for Microsoft Peer-to-Peer Networking Services settings.

### 18.4.10.1 Peer Name Resolution Protocol

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

#### 18.4.10.2 (L2) Ensure 'Turn off Microsoft Peer-to-Peer Networking Services' is set to 'Enabled' (Scored)

##### Profile Applicability:

- Level 2
- Level 2 + BitLocker

##### Description:

The Peer Name Resolution Protocol (PNRP) allows for distributed resolution of a name to an IPV6 address and port number. The protocol operates in the context of *clouds*. A cloud is a set of peer computers that can communicate with each other by using the same IPv6 scope.

Peer-to-Peer protocols allow for applications in the areas of RTC, collaboration, content distribution and distributed processing.

The recommended state for this setting is: `Enabled`.

##### Rationale:

This setting enhances the security of the environment and reduces the overall risk exposure related to peer-to-peer networking.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Peernet:Disabled
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Network\Microsoft  
Peer-to-Peer Networking Services\Turn off Microsoft Peer-to-Peer Networking  
Services
```

**Impact:**

Microsoft Peer-to-Peer Networking Services are turned off in their entirety, and all applications dependent on them will stop working.

**Default Value:**

Disabled. (Peer-to-peer protocols are turned on.)

**References:**

1. CCE-33208-0

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

## 18.4.11 Network Connections

This section contains recommendations for Network Connections settings.

### 18.4.11.1 Windows Firewall

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

#### 18.4.11.2 (L1) Ensure 'Prohibit installation and configuration of Network Bridge on your DNS domain network' is set to 'Enabled' (Scored)

##### Profile Applicability:

- Level 1
- Level 1 + BitLocker

##### Description:

You can use this procedure to controls user's ability to install and configure a network bridge.

The recommended state for this setting is: `Enabled`.

##### Rationale:

The Network Bridge setting, if enabled, allows users to create a Layer 2 Media Access Control (MAC) bridge, enabling them to connect two or more physical network segments together. A network bridge thus allows a computer that has connections to two different networks to share data between those networks.

In an enterprise environment, where there is a need to control network traffic to only authorized paths, allowing users to create a network bridge increases the risk and attack surface from the bridged network.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Network  
Connections:NC_AllowNetBridge_NLA
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Network\Network  
Connections\Prohibit installation and configuration of Network Bridge on your  
DNS domain network
```

**Impact:**

Users cannot create or configure a network bridge.

**Default Value:**

Disabled. (Users are able create and modify the configuration of Network Bridges. Membership in the local Administrators group, or equivalent, is the minimum required to complete this procedure.)

**References:**

1. CCE-33107-4

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.



### 18.4.11.3 (L1) Ensure 'Require domain users to elevate when setting a network's location' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines whether to require domain users to elevate when setting a network's location.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Allowing regular users to set a network location increases the risk and attack surface.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Network  
Connections:NC_StdDomainUserSetLocation
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Network\Network  
Connections\Require domain users to elevate when setting a network's location
```

#### Impact:

Domain users must elevate when setting a network's location.

#### Default Value:

Disabled. (Users can set a network's location without elevating.)

#### References:

1. CCE-35554-5

## **Critical Controls:**

### **5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### ***18.4.12 Network Connectivity Status Indicator***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.4.13 Network Isolation***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **18.4.14 Network Provider**

This section contains recommendations for Network Provider settings.

The Group Policy settings contained within this section are provided by the Group Policy template `NetworkProvider.admx/adml` that is included with MS15-011 / KB3000483 and the Microsoft Windows 10 Administrative Templates.

*18.4.14.1 (L1) Ensure 'Hardened UNC Paths' is set to 'Enabled, with "Require Mutual Authentication" and "Require Integrity" set for all NETLOGON and SYSVOL shares' (Scored)*

### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

### **Description:**

This policy setting configures secure access to UNC paths.

The recommended state for this setting is: Enabled, with "Require Mutual Authentication" and "Require Integrity" set for all NETLOGON and SYSVOL shares.

**Note:** If the environment exclusively contains Windows 8.0 / Server 2012 or higher systems, then the "Privacy" setting may (optionally) also be set to enable SMB encryption. However, using SMB encryption will render the targeted share paths completely inaccessible by older OSes, so only use this additional option with caution and thorough testing.

## Rationale:

In February 2015, Microsoft released a new control mechanism to mitigate a security risk in Group Policy as part of [MS15-011](#) / [MSKB 3000483](#). This mechanism requires both the installation of the new security update and also the deployment of specific group policy settings to all computers on the domain from Vista/Server 2008 or higher (the associated security patch to enable this feature was not released for Server 2003). A new group policy template (`NetworkProvider.admx/adml`) was also provided with the security update.

Once the new GPO template is in place, the following are the minimum requirements to remediate the Group Policy security risk: `\\*\NETLOGON`

```
RequireMutualAuthentication=1, RequireIntegrity=1 \\*\SYSVOL
```

```
RequireMutualAuthentication=1, RequireIntegrity=1
```

**Note:** A reboot may be required after the setting is applied to a client machine to access the above paths.

Additional guidance on the deployment of this security setting is available from the Microsoft Premier Field Engineering (PFE) Platforms TechNet Blog here: [Guidance on Deployment of MS15-011 and MS15-014](#).

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry locations:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\NetworkProvider\HardenedPaths:\\*\NETLOGON
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\NetworkProvider\HardenedPaths:\\*\SYSVOL
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled` with the following paths configured, at a minimum:

```
\\*\NETLOGON RequireMutualAuthentication=1, RequireIntegrity=1
```

```
\\*\SYSVOL RequireMutualAuthentication=1, RequireIntegrity=1
```

```
Computer Configuration\Policies\Administrative Templates\Network\Network Provider\Hardened UNC Paths
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`NetworkProvider.admx/adml`) is required - it is included with KB3000483 or with the Microsoft Windows 10 Administrative Templates.

**Impact:**

Windows only allows access to the specified UNC paths after fulfilling additional security requirements.

**Default Value:**

Disabled. (No UNC paths are hardened.)

**Critical Controls:**

3 Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers

Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers

### ***18.4.15 Offline Files***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.4.16 QoS Packet Scheduler***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.4.17 SNMP***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.4.18 SSL Configuration Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **18.4.19 TCPIP Settings**

This section contains TCP/IP configuration settings.

### **18.4.19.1 IPv6 Transition Technologies**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.4.19.2 Parameters**

This section contains TCP/IP parameter configuration settings.

#### **18.4.19.2.1 (L2) Disable IPv6 (Ensure TCPIP6 Parameter 'DisabledComponents' is set to '0xff (255)') (Scored)**

##### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

##### **Description:**

Internet Protocol version 6 (IPv6) is a set of protocols that computers use to exchange information over the Internet and over home and business networks. IPv6 allows for many more IP addresses to be assigned than IPv4 did. Older networking, hosts and operating systems may not support IPv6 natively.

The recommended state for this setting is: `DisabledComponents - 0xff (255)`

##### **Rationale:**

Since the vast majority of private corporate networks have no need to utilize IPv6 (because they have access to private IPv4 addressing), disabling IPv6 components reduces a possible attack surface that is also harder to monitor the traffic on. As a result, we recommend configuring IPv6 to a Disabled state when it is not needed.

##### **Audit:**

Navigate to the Registry path articulated in the Remediation section and confirm it is set as prescribed.

## Remediation:

To establish the recommended configuration, set the following Registry value to `0xff` (255) (DWORD):

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\TCPIP6\Parameters\DisabledComponents
```

**Note:** Although Microsoft does not provide an ADMX template to configure this registry value, a custom .ADM template (`Disable-IPv6-Components-KB929852.adm`) is provided in the CIS Benchmark Remediation Kit to facilitate its configuration. Be aware though that simply turning off the group policy setting in the .ADM template will not "undo" the change once applied. Instead, the opposite setting must be applied to change the registry value to the opposite state.

## Impact:

Connectivity to other systems using IPv6 will no longer operate, and software that depends on IPv6 will cease to function. Examples of Microsoft applications that may use IPv6 include: Remote Assistance, HomeGroup, DirectAccess, Windows Mail.

This registry change is documented in Microsoft Knowledge Base article 929852: [How to disable IPv6 or its components in Windows](#).

**Note:** This registry change does not take effect until the next reboot.

## Default Value:

All IPv6 components are enabled and Windows prefers IPv6 over IPv4.

## Critical Controls:

9 Limitation and Control of Network Ports, Protocols, and Services  
Limitation and Control of Network Ports, Protocols, and Services

## 18.4.20 Windows Connect Now

This section contains recommendations for Windows Connect Now settings.

### 18.4.20.1 (L2) Ensure 'Configuration of wireless settings using Windows Connect Now' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting allows the configuration of wireless settings using Windows Connect Now (WCN). The WCN Registrar enables the discovery and configuration of devices over Ethernet (UPnP) over In-band 802.11 Wi-Fi through the Windows Portable Device API (WPD) and via USB Flash drives. Additional options are available to allow discovery and configuration over a specific medium.

The recommended state for this setting is: Disabled.

#### Rationale:

This setting enhances the security of the environment and reduces the overall risk exposure related to user configuration of wireless settings.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WCN\Registrars:EnableR  
egistrars  
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WCN\Registrars:Disable  
UPnPRegistrar  
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WCN\Registrars:Disable  
InBand802DOT11Registrar  
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WCN\Registrars:Disable  
FlashConfigRegistrar  
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WCN\Registrars:Disable  
WPDRegistrar
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Network\Windows  
Connect Now\Configuration of wireless settings using Windows Connect Now
```

**Impact:**

WCN operations are disabled over all media.

**Default Value:**

WCN operations are enabled and allowed over all media.

**References:**

1. CCE-34326-9

**Critical Controls:****15.4 Configure Only Authorized Wireless Access On Client Machines**

Where a specific business need for wireless access has been identified, configure wireless access on client machines to allow access only to authorized wireless networks. For devices that do not have an essential wireless business purpose, disable wireless access in the hardware configuration (basic input/output system or extensible firmware interface).

## 18.4.20.2 (L2) Ensure 'Prohibit access of the Windows Connect Now wizards' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting prohibits access to Windows Connect Now (WCN) wizards.

The recommended state for this setting is: `Enabled`.

### Rationale:

Allowing standard users to access the Windows Connect Now wizard increases the risk and attack surface.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WCN\UI:DisableWcnUi
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative  
Templates\Network\Network\Windows Connect Now\Prohibit access of the Windows  
Connect Now wizards
```

### Impact:

The WCN wizards are turned off and users have no access to any of the wizard tasks. All the configuration related tasks including "Set up a wireless router or access point" and "Add a wireless device" are disabled.

### Default Value:

Disabled. (Users can access all WCN wizard tasks.)

**References:**

1. CCE-35606-3

**Critical Controls:****15.4 Configure Only Authorized Wireless Access On Client Machines**

Where a specific business need for wireless access has been identified, configure wireless access on client machines to allow access only to authorized wireless networks. For devices that do not have an essential wireless business purpose, disable wireless access in the hardware configuration (basic input/output system or extensible firmware interface).

## 18.4.21 Windows Connection Manager

This section contains recommendations for Windows Connection Manager settings.

### 18.4.21.1 (L1) Ensure 'Minimize the number of simultaneous connections to the Internet or a Windows Domain' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting prevents computers from connecting to both a domain based network and a non-domain based network at the same time.

The recommended state for this setting is: Enabled.

#### Rationale:

Blocking simultaneous connections can help prevent a user unknowingly allowing network traffic to flow between the Internet and the corporate network.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WcmSvc\GroupPolicy:fMinimizeConnections
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Network\Windows Connection Manager\Minimize the number of simultaneous connections to the Internet or a Windows Domain
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Enabled. (When the computer has at least one active connection to the Internet, new automatic connection attempts to the Internet are blocked. When the computer has at least one active connection to a Windows domain, new automatic connection attempts to the same Windows domain are also blocked. Manual connection attempts by users to either the Internet or a Windows domain are not blocked.)

**References:**

1. CCE-35242-7

**Critical Controls:**

12 Boundary Defense  
Boundary Defense

### *18.4.21.2 (L1) Ensure 'Prohibit connection to non-domain networks when connected to domain authenticated network' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting prevents computers from connecting to both a domain based network and a non-domain based network at the same time.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

The potential concern is that a user would unknowingly allow network traffic to flow between the insecure public network and the managed corporate network.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WcmSvc\GroupPolicy:fBlockNonDomain
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Network\Windows Connection Manager\Prohibit connection to non-domain networks when connected to domain authenticated network
```

**Impact:**

The computer responds to automatic and manual network connection attempts based on the following circumstances:

*Automatic connection attempts* - When the computer is already connected to a domain based network, all automatic connection attempts to non-domain networks are blocked. - When the computer is already connected to a non-domain based network, automatic connection attempts to domain based networks are blocked.

*Manual connection attempts* - When the computer is already connected to either a non-domain based network or a domain based network over media other than Ethernet, and a user attempts to create a manual connection to an additional network in violation of this policy setting, the existing network connection is disconnected and the manual connection is allowed. - When the computer is already connected to either a non-domain based network or a domain based network over Ethernet, and a user attempts to create a manual connection to an additional network in violation of this policy setting, the existing Ethernet connection is maintained and the manual connection attempt is blocked.

**Default Value:**

Disabled. (Connections to both domain and non-domain networks are simultaneously allowed.)

**References:**

1. CCE-35375-5

**Critical Controls:**

12 Boundary Defense  
Boundary Defense

**18.5 Printers**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.6 SCM: Pass the Hash Mitigations

This section contains recommendations for mitigating Pass-the-Hash attacks.

The Group Policy settings contained within this section are provided by the Group Policy template `PtH.admx/adml` that is included with Microsoft Security Compliance Manager (SCM).

### 18.6.1 (L1) Ensure 'Apply UAC restrictions to local accounts on network logons' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting controls whether local accounts can be used for remote administration via network logon (e.g., NET USE, connecting to C\$, etc.). Local accounts are at high risk for credential theft when the same account and password is configured on multiple systems. Enabling this policy significantly reduces that risk.

**Enabled:** Applies UAC token-filtering to local accounts on network logons. Membership in powerful group such as Administrators is disabled and powerful privileges are removed from the resulting access token. This configures the `LocalAccountTokenFilterPolicy` registry value to 0. This is the default behavior for Windows.

**Disabled:** Allows local accounts to have full administrative rights when authenticating via network logon, by configuring the `LocalAccountTokenFilterPolicy` registry value to 1.

For more information about local accounts and credential theft, review the "[Mitigating Pass-the-Hash \(PtH\) Attacks and Other Credential Theft Techniques](#)" documents.

For more information about `LocalAccountTokenFilterPolicy`, see Microsoft Knowledge Base article 951016: [Description of User Account Control and remote restrictions in Windows Vista](#).

The recommended state for this setting is: `Enabled`.



**Rationale:**

Local accounts are at high risk for credential theft when the same account and password is configured on multiple systems. Ensuring this policy is Enabled significantly reduces that risk.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:LocalAccountTokenFilterPolicy
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\SCM: Pass the Hash Mitigations\Apply UAC restrictions to local accounts on network logons
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (PtH.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM).

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (UAC token-filtering is applied to local accounts on network logons. Membership in powerful groups such as Administrators and disabled and powerful privileges are removed from the resulting access token.)

**References:**

1. CCE-35486-0

## **Critical Controls:**

### **5.8 Administrators Should Not Directly Log In To A System (i.e. use RunAs/sudo)**

Administrators should be required to access a system using a fully logged and non-administrative account. Then, once logged on to the machine without administrative privileges, the administrator should transition to administrative privileges using tools such as Sudo on Linux/UNIX, RunAs on Windows, and other similar facilities for other types of systems.

## 18.6.2 (L1) Ensure 'WDigest Authentication' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

When WDigest authentication is enabled, Lsass.exe retains a copy of the user's plaintext password in memory, where it can be at risk of theft. If this setting is not configured, WDigest authentication is disabled in Windows 8.1 and in Windows Server 2012 R2; it is enabled by default in earlier versions of Windows and Windows Server.

For more information about local accounts and credential theft, review the "[Mitigating Pass-the-Hash \(PtH\) Attacks and Other Credential Theft Techniques](#)" documents.

For more information about `UseLogonCredential`, see Microsoft Knowledge Base article 2871997: [Microsoft Security Advisory Update to improve credentials protection and management May 13, 2014](#).

The recommended state for this setting is: `Disabled`.

### Rationale:

Preventing the plaintext storage of credentials in memory may reduce opportunity for credential theft.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\WDigest  
:UseLogonCredential
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\SCM: Pass the Hash Mitigations\WDigest Authentication (disabling may require KB2871997)
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (PtH.admx/adml) is required - it is included with Microsoft Security Compliance Manager (SCM).

## Impact:

None - this is the default configuration for Windows 8.1 and Server 2012 R2.

## Default Value:

On Windows 8.1 and later: Disabled. (Lsass.exe does not retain a copy of the user's plaintext password in memory.) On Windows 8.0 and earlier: Enabled. (Lsass.exe retains a copy of the user's plaintext password in memory, where it is at risk of theft.)

## References:

1. CCE-35815-0

## Critical Controls:

### 16.14 Encrypt/Hash All Authentication Files And Monitor Their Access

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

## ***18.7 Start Menu and Taskbar***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **18.8 System**

This section contains recommendations for System settings.

### **18.8.1 Access-Denied Assistance**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.8.2 App-V**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `appv.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

## 18.8.3 Audit Process Creation

This section contains settings related to auditing of process creation events.

### 18.8.3.1 (L1) Ensure 'Include command line in process creation events' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting determines what information is logged in security audit events when a new process has been created.

The recommended state for this setting is: `Disabled`.

#### Rationale:

When this policy setting is enabled, any user who has read access to the security events can read the command-line arguments for any successfully created process. Command-line arguments may contain sensitive or private information such as passwords or user data.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\Audit:ProcessCreationIncludeCmdLine_Enabled
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Audit Process Creation\Include command line in process creation events
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Disabled. (The process's command line information will not be included in Audit Process Creation events.)

**References:**

1. CCE-35802-8

**Critical Controls:****16.14 Encrypt/Hash All Authentication Files And Monitor Their Access**

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

***18.8.4 Credentials Delegation***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.8.5 Device Guard***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `deviceguard.admx/adml` that is included with the Microsoft Windows 10 Administrative Templates.

## **18.8.6 Device Installation**

This section contains recommendations related to device installation.

### **18.8.6.1 Device Installation Restrictions**

This section contains recommendations related to device installation restrictions.

#### **18.8.6.1.1 (BL) Ensure 'Prevent installation of devices that match any of these device IDs' is set to 'Enabled' (Scored)**

##### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

##### **Description:**

This policy setting allows you to specify a list of Plug and Play hardware IDs and compatible IDs for devices that Windows is prevented from installing. This policy setting takes precedence over any other policy setting that allows Windows to install a device.

If you enable this policy setting, Windows is prevented from installing a device whose hardware ID or compatible ID appears in the list you create. If you enable this policy setting on a remote desktop server, the policy setting affects redirection of the specified devices from a remote desktop client to the remote desktop server.

If you disable or do not configure this policy setting, devices can be installed and updated as allowed or prevented by other policy settings.

The recommended state for this setting is: `Enabled`.



## Rationale:

A BitLocker-protected computer may be vulnerable to Direct Memory Access (DMA) attacks when the computer is turned on or is in the Standby power state. This includes when the desktop is locked.

BitLocker with TPM-only authentication lets a computer enter the power-on state without any pre-boot authentication. Therefore, an attacker may be able to perform DMA attacks.

This issue is documented in Microsoft Knowledge Base article 2516445: [Blocking the SBP-2 driver and Thunderbolt controllers to reduce 1394 DMA and Thunderbolt DMA threats to BitLocker.](#)

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\DeviceInstall\Restrictions:DenyDeviceIDs
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Device Installation\Device Installation Restrictions\Prevent installation of devices that match any of these device IDs
```

## Impact:

Devices matching the specified device IDs will be prevented from installation.

## Default Value:

Disabled. (Devices can be installed and updated as allowed or prevented by other policy settings.)

## References:

1. CCE-35360-7

## **Critical Controls:**

### **13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.

*18.8.6.1.2 (BL) Ensure 'Prevent installation of devices that match any of these device IDs: Prevent installation of devices that match any of these device IDs' is set to 'PCI\CC\_0C0A' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to specify a list of Plug and Play hardware IDs and compatible IDs for devices that Windows is prevented from installing. This policy setting takes precedence over any other policy setting that allows Windows to install a device.

If you enable this policy setting, Windows is prevented from installing a device whose hardware ID or compatible ID appears in the list you create. If you enable this policy setting on a remote desktop server, the policy setting affects redirection of the specified devices from a remote desktop client to the remote desktop server.

If you disable or do not configure this policy setting, devices can be installed and updated as allowed or prevented by other policy settings.

The recommended state for this setting is: PCI\CC\_0C0A

**Rationale:**

A BitLocker-protected computer may be vulnerable to Direct Memory Access (DMA) attacks when the computer is turned on or is in the Standby power state. This includes when the desktop is locked.

BitLocker with TPM-only authentication lets a computer enter the power-on state without any pre-boot authentication. Therefore, an attacker may be able to perform DMA attacks.

This issue is documented in Microsoft Knowledge Base article 2516445: [Blocking the SBP-2 driver and Thunderbolt controllers to reduce 1394 DMA and Thunderbolt DMA threats to BitLocker.](#)

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\DeviceInstall\Restrictions\DenyDeviceIDs:1
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and add `PCI\CC_0C0A` to the Device IDs list:

```
Computer Configuration\Policies\Administrative Templates\System\Device Installation\Device Installation Restrictions\Prevent installation of devices that match any of these device IDs
```

**Impact:**

Thunderbolt controllers will be prevented from being installed in Windows.

**Default Value:**

None. (No device ID types are prevented from installation.)

**References:**

1. CCE-35360-7

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.

*18.8.6.1.3 (BL) Ensure 'Prevent installation of devices that match any of these device IDs: Also apply to matching devices that are already installed.' is set to 'True' (checked) (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to specify a list of Plug and Play hardware IDs and compatible IDs for devices that Windows is prevented from installing. This policy setting takes precedence over any other policy setting that allows Windows to install a device.

If you enable this policy setting, Windows is prevented from installing a device whose hardware ID or compatible ID appears in the list you create. If you enable this policy setting on a remote desktop server, the policy setting affects redirection of the specified devices from a remote desktop client to the remote desktop server.

If you disable or do not configure this policy setting, devices can be installed and updated as allowed or prevented by other policy settings.

The recommended state for this setting is: `True` (checked).

**Rationale:**

A BitLocker-protected computer may be vulnerable to Direct Memory Access (DMA) attacks when the computer is turned on or is in the Standby power state. This includes when the desktop is locked.

BitLocker with TPM-only authentication lets a computer enter the power-on state without any pre-boot authentication. Therefore, an attacker may be able to perform DMA attacks.

This issue is documented in Microsoft Knowledge Base article 2516445: [Blocking the SBP-2 driver and Thunderbolt controllers to reduce 1394 DMA and Thunderbolt DMA threats to BitLocker.](#)

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\DeviceInstall\Restrictions:DenyDeviceIDsRetroactive
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and check the `Also apply to matching devices that are already installed` checkbox:

```
Computer Configuration\Policies\Administrative Templates\System\Device Installation\Device Installation Restrictions\Prevent installation of devices that match any of these device IDs
```

**Impact:**

Existing devices (that match the device IDs specified) that were previously installed prior to the hardening will be disabled or removed.

**Default Value:**

False (unchecked). (Pre-existing devices matching the device IDs will not be disabled or removed.)

**References:**

1. CCE-35360-7

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.

#### *18.8.6.1.4 (BL) Ensure 'Prevent installation of devices using drivers that match these device setup classes' is set to 'Enabled' (Scored)*

##### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

##### **Description:**

This policy setting allows you to specify a list of device setup class globally unique identifiers (GUIDs) for device drivers that Windows is prevented from installing. This policy setting takes precedence over any other policy setting that allows Windows to install a device.

If you enable this policy setting, Windows is prevented from installing or updating device drivers whose device setup class GUIDs appear in the list you create. If you enable this policy setting on a remote desktop server, the policy setting affects redirection of the specified devices from a remote desktop client to the remote desktop server.

If you disable or do not configure this policy setting, Windows can install and update devices as allowed or prevented by other policy settings.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

A BitLocker-protected computer may be vulnerable to Direct Memory Access (DMA) attacks when the computer is turned on or is in the Standby power state. This includes when the desktop is locked.

BitLocker with TPM-only authentication lets a computer enter the power-on state without any pre-boot authentication. Therefore, an attacker may be able to perform DMA attacks.

This issue is documented in Microsoft Knowledge Base article 2516445: [Blocking the SBP-2 driver and Thunderbolt controllers to reduce 1394 DMA and Thunderbolt DMA threats to BitLocker](#).

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\DeviceInstall\Restrictions:DenyDeviceClasses
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Device Installation\Device Installation Restrictions\Prevent installation of devices using drivers that match these device setup classes
```

**Impact:**

Devices matching the specified device setup classes will be prevented from installation.

**Default Value:**

Disabled. (Devices can be installed and updated as allowed or prevented by other policy settings.)

**References:**

1. CCE-34254-3

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.



*18.8.6.1.5 (BL) Ensure 'Prevent installation of devices using drivers that match these device setup classes: Prevent installation of devices using drivers for these device setup' is set to '{d48179be-ec20-11d1-b6b8-00c04fa372a7}' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to specify a list of device setup class globally unique identifiers (GUIDs) for device drivers that Windows is prevented from installing. This policy setting takes precedence over any other policy setting that allows Windows to install a device.

If you enable this policy setting, Windows is prevented from installing or updating device drivers whose device setup class GUIDs appear in the list you create. If you enable this policy setting on a remote desktop server, the policy setting affects redirection of the specified devices from a remote desktop client to the remote desktop server.

If you disable or do not configure this policy setting, Windows can install and update devices as allowed or prevented by other policy settings.

The recommended state for this setting is: {d48179be-ec20-11d1-b6b8-00c04fa372a7}

**Rationale:**

A BitLocker-protected computer may be vulnerable to Direct Memory Access (DMA) attacks when the computer is turned on or is in the Standby power state. This includes when the desktop is locked.

BitLocker with TPM-only authentication lets a computer enter the power-on state without any pre-boot authentication. Therefore, an attacker may be able to perform DMA attacks.

This issue is documented in Microsoft Knowledge Base article 2516445: [Blocking the SBP-2 driver and Thunderbolt controllers to reduce 1394 DMA and Thunderbolt DMA threats to BitLocker.](#)

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\DeviceInstall\Restrictions\DenyDeviceClasses:1
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and add `-11` to the device setup classes list:

```
Computer Configuration\Policies\Administrative Templates\System\Device Installation\Device Installation Restrictions\Prevent installation of devices using drivers that match these device setup classes
```

**Impact:**

SBP-2 drives will be prevented from being installed in Windows.

**Default Value:**

None. (No device setup classes are prevented from installation.)

**References:**

1. CCE-34254-3

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.

*18.8.6.1.6 (BL) Ensure 'Prevent installation of devices using drivers that match these device setup classes: Also apply to matching devices that are already installed.' is set to 'True' (checked) (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to specify a list of device setup class globally unique identifiers (GUIDs) for device drivers that Windows is prevented from installing. This policy setting takes precedence over any other policy setting that allows Windows to install a device.

If you enable this policy setting, Windows is prevented from installing or updating device drivers whose device setup class GUIDs appear in the list you create. If you enable this policy setting on a remote desktop server, the policy setting affects redirection of the specified devices from a remote desktop client to the remote desktop server.

If you disable or do not configure this policy setting, Windows can install and update devices as allowed or prevented by other policy settings.

The recommended state for this setting is: `True` (checked).

**Rationale:**

A BitLocker-protected computer may be vulnerable to Direct Memory Access (DMA) attacks when the computer is turned on or is in the Standby power state. This includes when the desktop is locked.

BitLocker with TPM-only authentication lets a computer enter the power-on state without any pre-boot authentication. Therefore, an attacker may be able to perform DMA attacks.

This issue is documented in Microsoft Knowledge Base article 2516445: [Blocking the SBP-2 driver and Thunderbolt controllers to reduce 1394 DMA and Thunderbolt DMA threats to BitLocker.](#)

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\DeviceInstall\Restrictions:DenyDeviceClassesRetroactive
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, and check the `Also apply to matching devices that are already installed` checkbox:

```
Computer Configuration\Policies\Administrative Templates\System\Device Installation\Device Installation Restrictions\Prevent installation of devices using drivers that match these device setup classes
```

**Impact:**

Existing devices (that match the device setup classes specified) that were previously installed prior to the hardening will be disabled or removed.

**Default Value:**

False (unchecked). (Pre-existing devices matching the device setup classes will not be disabled or removed.)

**References:**

1. CCE-34254-3

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.

### ***18.8.7 Device Redirection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `DeviceRedirection.admx/adml` that is included with the Microsoft Windows 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### ***18.8.8 Disk NV Cache***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.9 Disk Quotas***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.10 Distributed COM***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.11 Driver Installation***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.12 Early Launch Antimalware

This section contains recommendations for configuring boot-start driver initialization settings.

### 18.8.12.1 (L1) Ensure 'Boot-Start Driver Initialization Policy' is set to 'Enabled: Good, unknown and bad but critical' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to specify which boot-start drivers are initialized based on a classification determined by an Early Launch Antimalware boot-start driver. The Early Launch Antimalware boot-start driver can return the following classifications for each boot-start driver:

- **Good:** The driver has been signed and has not been tampered with.
- **Bad:** The driver has been identified as malware. It is recommended that you do not allow known bad drivers to be initialized.
- **Bad, but required for boot:** The driver has been identified as malware, but the computer cannot successfully boot without loading this driver.
- **Unknown:** This driver has not been attested to by your malware detection application and has not been classified by the Early Launch Antimalware boot-start driver.

If you enable this policy setting you will be able to choose which boot-start drivers to initialize the next time the computer is started.

If your malware detection application does not include an Early Launch Antimalware boot-start driver or if your Early Launch Antimalware boot-start driver has been disabled, this setting has no effect and all boot-start drivers are initialized.

The recommended state for this setting is: `Enabled: Good, unknown and bad but critical`.

#### Rationale:

This policy setting helps reduce the impact of malware that has already infected your system.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\EarlyLaunch:DriverLoadPolicy
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled: Good, unknown and bad but critical:

```
Computer Configuration\Policies\Administrative Templates\System\Early Launch Antimalware\Boot-Start Driver Initialization Policy
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Boot-start drivers determined to be Good, Unknown or Bad but Boot Critical are initialized and the initialization of drivers determined to be bad is skipped.)

**References:**

1. CCE-33231-2

**Critical Controls:**

8 [Malware Defenses](#)  
Malware Defenses

### ***18.8.13 Enhanced Storage Access***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `EnhancedStorage.admx/adml` that is included with the Microsoft Windows 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### ***18.8.14 File Classification Infrastructure***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.15 File Share Shadow Copy Agent***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `FileServerVSSAgent.admx/adml` that is included with the Microsoft Windows 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### ***18.8.16 File Share Shadow Copy Provider***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.17 Filesystem***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.18 Folder Redirection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## 18.8.19 Group Policy

This section contains recommendations for configuring group policy-related settings.

### 18.8.19.1 Logging and tracing

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

*18.8.19.2 (L1) Ensure 'Configure registry policy processing: Do not apply during periodic background processing' is set to 'Enabled: FALSE' (Scored)*

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

The "Do not apply during periodic background processing" option prevents the system from updating affected policies in the background while the computer is in use. When background updates are disabled, policy changes will not take effect until the next user logon or system restart.

The recommended state for this setting is: `Enabled: FALSE (unchecked)`.

#### Rationale:

Setting this option to false (unchecked) will ensure that domain policy changes take effect more quickly, as compared to waiting until the next user logon or system restart.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Group  
Policy\{35378EAC-683F-11D2-A89A-00C04FBBCFA2}:NoBackgroundPolicy
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`, then set the `Do not apply during periodic background processing` option to `FALSE` (unchecked):

```
Computer Configuration\Policies\Administrative Templates\System\Group Policy\Configure registry policy processing
```

**Impact:**

Group Policies will be reapplied every time they are refreshed, which could have a slight impact on performance.

**Default Value:**

Disabled. (Group policies are not reapplied until the next logon or restart.)

**References:**

1. CCE-35384-7

**Critical Controls:****3.7 Deploy System Configuration Management Tools (i.e. Remediation Tools)**

Deploy system configuration management tools, such as Active Directory Group Policy Objects for Microsoft Windows systems or Puppet for UNIX systems that will automatically enforce and redeploy configuration settings to systems at regularly scheduled intervals. They should be capable of triggering redeployment of configuration settings on a scheduled, manual, or event-driven basis.

### 18.8.19.3 (L1) Ensure 'Configure registry policy processing: Process even if the Group Policy objects have not changed' is set to 'Enabled: TRUE' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

The "Process even if the Group Policy objects have not changed" option updates and reapplies policies even if the policies have not changed.

The recommended state for this setting is: `Enabled: TRUE` (checked).

#### Rationale:

Setting this option to true (checked) will ensure unauthorized changes that might have been configured locally are forced to match the domain-based Group Policy settings again.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Group  
Policy\{35378EAC-683F-11D2-A89A-00C04FBBCFA2}:NoGPListChanges
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`, then set the `Process even if the Group Policy objects have not changed` option to `TRUE` (checked):

```
Computer Configuration\Policies\Administrative Templates\System\Group  
Policy\Configure registry policy processing
```

#### Impact:

Group Policies will be reapplied even if they have not been changed, which could have a slight impact on performance.

**Default Value:**

Disabled. (Group policies are not reapplied if they have not been changed.)

**References:**

1. CCE-35384-7

**Critical Controls:****3.7 Deploy System Configuration Management Tools (i.e. Remediation Tools)**

Deploy system configuration management tools, such as Active Directory Group Policy Objects for Microsoft Windows systems or Puppet for UNIX systems that will automatically enforce and redeploy configuration settings to systems at regularly scheduled intervals. They should be capable of triggering redeployment of configuration settings on a scheduled, manual, or event-driven basis.

### 18.8.19.4 (L1) Ensure 'Turn off background refresh of Group Policy' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting prevents Group Policy from being updated while the computer is in use. This policy setting applies to Group Policy for computers, users and domain controllers.

The recommended state for this setting is: `Disabled`.

#### Rationale:

This setting ensures that group policy changes take effect more quickly, as compared to waiting until the next user logon or system restart.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is in effect when the following registry location does not exist:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
DisableBkGndGroupPolicy
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Group
Policy\Turn off background refresh of Group Policy
```

#### Impact:

None - this is the default configuration.

#### Default Value:

Disabled. (Updates can be applied while users are working.)

**References:**

1. CCE-35776-4

**Critical Controls:****3.7 Deploy System Configuration Management Tools (i.e. Remediation Tools)**

Deploy system configuration management tools, such as Active Directory Group Policy Objects for Microsoft Windows systems or Puppet for UNIX systems that will automatically enforce and redeploy configuration settings to systems at regularly scheduled intervals. They should be capable of triggering redeployment of configuration settings on a scheduled, manual, or event-driven basis.

## **18.8.20 Internet Communication Management**

This section contains recommendations related to Internet Communication Management.

### **18.8.20.1 Internet Communication settings**

This section contains recommendations related to Internet Communication settings.

#### **18.8.20.1.1 (L2) Ensure 'Turn off access to the Store' is set to 'Enabled' (Scored)**

##### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

##### **Description:**

This policy setting specifies whether to use the Store service for finding an application to open a file with an unhandled file type or protocol association. When a user opens a file type or protocol that is not associated with any applications on the computer, the user is given the choice to select a local application or use the Store service to find an application.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

The Store service is a retail outlet built into Windows, primarily for consumer use. In an enterprise environment the IT department should be managing the installation of all applications to reduce the risk of the installation of vulnerable software.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Explorer:NoUseStoreOpenWith
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\System\Internet  
Communication Management\Internet Communication settings\Turn off access to  
the Store
```

**Impact:**

The "Look for an app in the Store" item in the Open With dialog is removed.

**Default Value:**

Disabled. (Users are allowed to use the Store service and the Store item is available in the Open With dialog.)

**References:**

1. CCE-35626-1

**Critical Controls:**

2 Inventory of Authorized and Unauthorized Software  
Inventory of Authorized and Unauthorized Software



## 18.8.20.1.2 (L2) Ensure 'Turn off downloading of print drivers over HTTP' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting controls whether the computer can download print driver packages over HTTP. To set up HTTP printing, printer drivers that are not available in the standard operating system installation might need to be downloaded over HTTP.

The recommended state for this setting is: `Enabled`.

### Rationale:

Users might download drivers that include malicious code.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows  
NT\Printers:DisableWebPnPDownload
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet  
Communication Management\Internet Communication settings\Turn off downloading  
of print drivers over HTTP
```

### Impact:

Print drivers cannot be downloaded over HTTP.

**Note:** This policy setting does not prevent the client computer from printing to printers on the intranet or the Internet over HTTP. It only prohibits downloading drivers that are not already installed locally.

**Default Value:**

Disabled. (Users can download print drivers over HTTP.)

**References:**

1. CCE-35781-4

**Critical Controls:**

2 Inventory of Authorized and Unauthorized Software

Inventory of Authorized and Unauthorized Software

### *18.8.20.1.3 (L2) Ensure 'Turn off handwriting personalization data sharing' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This setting turns off data sharing from the handwriting recognition personalization tool.

The handwriting recognition personalization tool enables Tablet PC users to adapt handwriting recognition to their own writing style by providing writing samples. The tool can optionally share user writing samples with Microsoft to improve handwriting recognition in future versions of Windows. The tool generates reports and transmits them to Microsoft over a secure connection.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

A person's handwriting is Personally Identifiable Information (PII), especially when it comes to your signature. As such, it is unacceptable in many environments to automatically upload PII to a website without explicit approval by the user.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\TabletPC:PreventHandwritingDataSharing
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet  
Communication Management\Internet Communication settings\Turn off handwriting  
personalization data sharing
```

**Note:** This Group Policy setting is provided by the Group Policy template "ShapeCollector.admx/adml" that is included with the Microsoft Windows 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

## Impact:

Tablet PC users cannot choose to share writing samples from the handwriting recognition personalization tool with Microsoft.

## Default Value:

Tablet PC users can choose whether or not they want to share their writing samples from the handwriting recognition personalization tool with Microsoft.

## References:

1. CCE-32945-8

## Critical Controls:

13 Data Protection

Data Protection

#### 18.8.20.1.4 (L2) Ensure 'Turn off handwriting recognition error reporting' is set to 'Enabled' (Scored)

##### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

##### **Description:**

Turns off the handwriting recognition error reporting tool.

The handwriting recognition error reporting tool enables users to report errors encountered in Tablet PC Input Panel. The tool generates error reports and transmits them to Microsoft over a secure connection. Microsoft uses these error reports to improve handwriting recognition in future versions of Windows.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

A person's handwriting is Personally Identifiable Information (PII), especially when it comes to your signature. As such, it is unacceptable in many environments to automatically upload PII to a website without explicit approval by the user.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\HandwritingErrorReports:PreventHandwritingErrorReports
```

##### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off handwriting recognition error reporting
```

**Impact:**

Users cannot start the handwriting recognition error reporting tool or send error reports to Microsoft.

**Default Value:**

Disabled. (Tablet PC users can report handwriting recognition errors to Microsoft.)

**References:**

1. CCE-35784-8

**Critical Controls:**

13 Data Protection

Data Protection

### *18.8.20.1.5 (L2) Ensure 'Turn off Internet Connection Wizard if URL connection is referring to Microsoft.com' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether the Internet Connection Wizard can connect to Microsoft to download a list of Internet Service Providers (ISPs).

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

In an Enterprise environment we want to lower the risk of a user unknowingly exposing sensitive data.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Internet Connection Wizard:ExitOnMSICW
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off Internet Connection Wizard if URL connection is referring to Microsoft.com
```

#### **Impact:**

The "Choose a list of Internet Service Providers" path in the Internet Connection Wizard causes the wizard to exit. This prevents users from retrieving the list of ISPs, which resides on Microsoft servers.

**Default Value:**

Disabled. (Users can connect to Microsoft to download a list of ISPs for their area.)

**References:**

1. CCE-33153-8

**Critical Controls:**

13 Data Protection

Data Protection



### *18.8.20.1.6 (L2) Ensure 'Turn off Internet download for Web publishing and online ordering wizards' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting controls whether Windows will download a list of providers for the Web publishing and online ordering wizards.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Although the risk is minimal, enabling this setting will reduce the possibility of a user unknowingly downloading malicious content through this feature.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:NoWebServices
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off Internet download for Web publishing and online ordering wizards
```

#### **Impact:**

Windows is prevented from downloading providers; only the service providers cached in the local registry are displayed.

**Default Value:**

Disabled. (A list of providers is downloaded when the user uses the web publishing or online ordering wizards.)

**References:**

1. CCE-33143-9

**Critical Controls:**

7 Email and Web Browser Protections

Email and Web Browser Protections

### 18.8.20.1.7 (L2) Ensure 'Turn off printing over HTTP' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting allows you to disable the client computer's ability to print over HTTP, which allows the computer to print to printers on the intranet as well as the Internet.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Information that is transmitted over HTTP through this capability is not protected and can be intercepted by malicious users. For this reason, it is not often used in enterprise environments.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows  
NT\Printers:DisableHTTPPrinting
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet  
Communication Management\Internet Communication settings\Turn off printing  
over HTTP
```

#### Impact:

The client computer will not be able to print to Internet printers over HTTP.

**Note:** This policy setting affects the client side of Internet printing only. Regardless of how it is configured, a computer could act as an Internet Printing server and make its shared printers available through HTTP.

**Default Value:**

Disabled. (Users can choose to print to Internet printers over HTTP.)

**References:**

1. CCE-33783-2

**Critical Controls:****13.1 Assess Data To Identify Sensitive Information**

Perform an assessment of data to identify sensitive information that requires the application of encryption and integrity controls.

### *18.8.20.1.8 (L2) Ensure 'Turn off Registration if URL connection is referring to Microsoft.com' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether the Windows Registration Wizard connects to Microsoft.com for online registration.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Users in a corporate environment should not be registering their own copies of Windows, providing their own PII in the process.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Registration Wizard  
Control\NoRegistration
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet  
Communication Management\Internet Communication settings\Turn off  
Registration if URL connection is referring to Microsoft.com
```

#### **Impact:**

Users are blocked from connecting to Microsoft.com for online registration and they cannot register their copy of Windows online.

**Default Value:**

Disabled. (Users can connect to Microsoft.com to complete the online Windows Registration.)

**References:**

1. CCE-33216-3

### *18.8.20.1.9 (L2) Ensure 'Turn off Search Companion content file updates' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether Search Companion should automatically download content updates during local and Internet searches.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

There is a small risk that users will unknowingly reveal sensitive information because of the topics they are searching for. This risk is very low because even if this setting is enabled users still must submit search queries to the desired search engine in order to perform searches.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\SearchCompanion:DisableContentFileUpdates
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off Search Companion content file updates
```

**Impact:**

Search Companion does not download content updates during searches.

**Note:** Internet searches will still send the search text and information about the search to Microsoft and the chosen search provider. If you select Classic Search, the Search Companion feature will be unavailable. You can select Classic Search by clicking Start, Search, Change Preferences, and then Change Internet Search Behavior.

**Default Value:**

Disabled. (Search Companion downloads content updates unless the user is using Classic Search.)

**References:**

1. CCE-33817-8

**Critical Controls:**

13 Data Protection

Data Protection



### 18.8.20.1.10 (L2) Ensure 'Turn off the "Order Prints" picture task' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting specifies whether the "Order Prints Online" task is available from Picture Tasks in Windows folders.

The Order Prints Online Wizard is used to download a list of providers and allow users to order prints online.

The recommended state for this setting is: Enabled.

#### Rationale:

In an Enterprise environment we want to lower the risk of a user unknowingly exposing sensitive data.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:NoOnlinePrintsWizard
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off the "Order Prints" picture task
```

#### Impact:

The task "Order Prints Online" is removed from Picture Tasks in File Explorer folders.

**Default Value:**

Disabled. (The "Order Prints Online" task is displayed in Picture Tasks in File Explorer folders.)

**References:**

1. CCE-34061-2

**Critical Controls:**

13 Data Protection

Data Protection

### *18.8.20.1.11 (L2) Ensure 'Turn off the "Publish to Web" task for files and folders' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether the tasks Publish this file to the Web, Publish this folder to the Web, and Publish the selected items to the Web are available from File and Folder Tasks in Windows folders. The Web Publishing wizard is used to download a list of providers and allow users to publish content to the Web.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Users may publish confidential or sensitive information to a public service outside of the control of the organization.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:NoPublishingWizard
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off the "Publish to Web" task for files and folders
```

#### **Impact:**

The "Publish to Web" task is removed from File and Folder tasks in Windows folders.

**Default Value:**

Disabled. (The "Publish to Web" task is shown in File and Folder tasks in Windows folders.)

**References:**

1. CCE-33246-0

**Critical Controls:**

13 Data Protection

Data Protection

## 18.8.20.1.12 (L2) Ensure 'Turn off the Windows Messenger Customer Experience Improvement Program' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting specifies whether Windows Messenger can collect anonymous information about how the Windows Messenger software and service is used. Microsoft uses information collected through the Customer Experience Improvement Program to detect software flaws so that they can be corrected more quickly, enabling this setting will reduce the amount of data Microsoft is able to gather for this purpose.

The recommended state for this setting is: `Enabled`.

### Rationale:

Large enterprise environments may not want to have information collected from managed client computers.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Messenger\Client:CEIP
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off the Windows Messenger Customer Experience Improvement Program
```

### Impact:

Windows Messenger will not collect usage information, and the user settings to enable the collection of usage information will not be shown.

**Default Value:**

Users have the choice to opt-in and allow information to be collected.

**References:**

1. CCE-33957-2

**Critical Controls:**

13 Data Protection

Data Protection

### *18.8.20.1.13 (L2) Ensure 'Turn off Windows Customer Experience Improvement Program' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether Windows Messenger can collect anonymous information about how the Windows Messenger software and service is used.

Microsoft uses information collected through the Windows Customer Experience Improvement Program to detect software flaws so that they can be corrected more quickly, enabling this setting will reduce the amount of data Microsoft is able to gather for this purpose. The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Large enterprise environments may not want to have information collected from managed client computers.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\SQMClient\Windows:CEIPEnable
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off Windows Customer Experience Improvement Program
```

#### **Impact:**

All users are opted out of the Windows Customer Experience Improvement Program.

**Default Value:**

The Administrator can use the Problem Reports and Solutions component in Control Panel to enable Windows Customer Experience Improvement Program for all users.

**References:**

1. CCE-33255-1

**Critical Controls:**

13 Data Protection

Data Protection



## 18.8.20.1.14 (L2) Ensure 'Turn off Windows Error Reporting' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting controls whether or not errors are reported to Microsoft.

Error Reporting is used to report information about a system or application that has failed or has stopped responding and is used to improve the quality of the product.

The recommended state for this setting is: `Enabled`.

### Rationale:

If a Windows Error occurs in a secure, managed corporate environment, the error should be reported directly to IT staff for troubleshooting and remediation. There is no benefit to the corporation to report these errors directly to Microsoft, and there is some risk of unknowingly exposing sensitive data as part of the error.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Windows Error Reporting:Disabled
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Internet Communication Management\Internet Communication settings\Turn off Windows Error Reporting
```

### Impact:

Users are not given the option to report errors to Microsoft.

**Default Value:**

Disabled. (Errors may be reported to Microsoft via the Internet or to a corporate file share.)

**References:**

1. CCE-34260-0

**Critical Controls:**

13 Data Protection

Data Protection

***18.8.21 iSCSI***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.8.22 KDC***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.8.23 Kerberos***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.24 Locale Services

This section contains recommendations for Locale Services settings.

### 18.8.24.1 (L2) Ensure 'Disallow copying of user input methods to the system account for sign-in' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy prevents automatic copying of user input methods to the system account for use on the sign-in screen. The user is restricted to the set of input methods that are enabled in the system account.

The recommended state for this setting is: `Enabled`.

#### Rationale:

This is a way to increase the security of the system account.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Control  
Panel\International:BlockUserInputMethodsForSignIn
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Locale  
Services\Disallow copying of user input methods to the system account for  
sign-in
```

#### Impact:

Users will have input methods enabled for the system account on the sign-in page.

**Default Value:**

Disabled. (Users will be able to use input methods enabled for their user account on the sign-in page.)

**References:**

1. CCE-35101-5

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

## 18.8.25 Logon

This section contains recommendations related to the logon process and lock screen.

### 18.8.25.1 (L1) Ensure 'Do not display network selection UI' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to control whether anyone can interact with available networks UI on the logon screen.

The recommended state for this setting is: `Enabled`.

#### Rationale:

An unauthorized user could disconnect the PC from the network or can connect the PC to other available networks without signing into Windows.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System:DontDisplayNetworkSelectionUI
```

#### Remediation:

To implement the recommended configuration state, set the following Group Policy setting to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Logon\Do not display network selection UI
```

#### Impact:

The PC's network connectivity state cannot be changed without signing into Windows.

**Default Value:**

Disabled. (Any user can disconnect the PC from the network or can connect the PC to other available networks without signing into Windows.)

**References:**

1. CCE-33822-8

**Critical Controls:**

5 Controlled Use of Administration Privileges

Controlled Use of Administration Privileges

## 18.8.25.2 (L1) Ensure 'Do not enumerate connected users on domain-joined computers' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting prevents connected users from being enumerated on domain-joined computers.

The recommended state for this setting is: `Enabled`.

### Rationale:

A malicious user could use this feature to gather account names of other users, that information could then be used in conjunction with other types of attacks such as guessing passwords or social engineering. The value of this countermeasure is small because a user with domain credentials could gather the same account information using other methods.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System:DontEnumerateConnectedUsers
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Logon\Do not enumerate connected users on domain-joined computers
```

### Impact:

The Logon UI will not enumerate any connected users on domain-joined computers.

### Default Value:

Disabled. (Connected users will be enumerated on domain-joined computers.)

**References:**

1. CCE-35207-0

**Critical Controls:****16.9 Configure Account Access Centrally**

Configure access for all accounts through a centralized point of authentication, for example Active Directory or LDAP. Configure network and security devices for centralized authentication as well.



### 18.8.25.3 (L1) Ensure 'Enumerate local users on domain-joined computers' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows local users to be enumerated on domain-joined computers.

The recommended state for this setting is: Disabled.

#### Rationale:

A malicious user could use this feature to gather account names of other users, that information could then be used in conjunction with other types of attacks such as guessing passwords or social engineering. The value of this countermeasure is small because a user with domain credentials could gather the same account information using other methods.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System:EnumerateLocalUsers
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\System\Logon\Enumerate local users on domain-joined computers
```

#### Impact:

None - this is the default configuration.

#### Default Value:

Disabled. (The Logon UI will not enumerate local users on domain-joined computers.)

**References:**

1. CCE-34838-3

**Critical Controls:****16.9 Configure Account Access Centrally**

Configure access for all accounts through a centralized point of authentication, for example Active Directory or LDAP. Configure network and security devices for centralized authentication as well.

#### 18.8.25.4 (L1) Ensure 'Turn off app notifications on the lock screen' is set to 'Enabled' (Scored)

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting allows you to prevent app notifications from appearing on the lock screen.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

App notifications might display sensitive business or personal data.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System:DisableLockScreenAppNotifications
```

##### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Logon\Turn off app notifications on the lock screen
```

##### **Impact:**

No app notifications are displayed on the lock screen.

##### **Default Value:**

Disabled. (Users can choose which apps display notifications on the lock screen.)

##### **References:**

1. CCE-34837-5

**Critical Controls:**

16.5 Ensure Workstation Screen Locks Are Configured

Configure screen locks on systems to limit access to unattended workstations.

### 18.8.25.5 (L1) Ensure 'Turn on convenience PIN sign-in' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to control whether a domain user can sign in using a convenience PIN. In Windows 10, convenience PIN was replaced with Passport, which has stronger security properties. To configure Passport for domain users, use the policies under Computer configuration\Administrative Templates\Windows Components\Microsoft Passport for Work.

**Note:** The user's domain password will be cached in the system vault when using this feature.

The recommended state for this setting is: `Disabled`.

#### Rationale:

A PIN is created from a much smaller selection of characters than a password, so in most cases a PIN will be much less robust than a password.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System:AllowDomainPINLogon
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Logon\Turn on convenience PIN sign-in
```

**Note:** In older Microsoft Windows Administrative Templates, this setting was simply named "Turn on PIN sign-in", but it was renamed as of the Windows 10 Release 1511 Administrative Templates.

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (A domain user can't set up and use a convenience PIN.)

**References:**

1. CCE-35095-9

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

***18.8.26 Mitigation Options***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.8.27 Net Logon***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.8.28 Performance Control Panel***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `PerfCenterCPL.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2 & 8/2012 Administrative Templates.

## ***18.8.29 Power Management***

This section contains recommendations for Power Management settings.

### ***18.8.29.1 Button Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.29.2 Energy Saver Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `Power.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***18.8.29.3 Hard Disk Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.29.4 Notification Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.29.5 Sleep Settings

This section contains recommendations related to Power Management Sleep mode.

### 18.8.29.5.1 (BL) Ensure 'Allow standby states (S1-S3) when sleeping (on battery)' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

Dictates whether or not Windows is allowed to use standby states when sleeping the computer.

The recommended state for this setting is: `Disabled`.

#### Rationale:

System sleep states (S1-S3) keep power to the RAM which may contain secrets, such as the BitLocker volume encryption key. An attacker finding a computer in sleep states (S1-S3) could directly attack the memory of the computer and gain access to the secrets through techniques such as RAM reminisce and direct memory access (DMA).

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Power\PowerSettings\abfc2519-3608-4c2a-94ea-171b0ed546ab:DCSettingIndex
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Power Management\Sleep Settings\Allow standby states (S1-S3) when sleeping (on battery)
```



**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Users will not be able to use Sleep (S3) while on battery, which resumes faster than Hibernation (S4).)

**References:**

1. CCE-33169-4

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

## 18.8.29.5.2 (BL) Ensure 'Allow standby states (S1-S3) when sleeping (plugged in)' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

### Description:

Dictates whether or not Windows is allowed to use standby states when sleeping the computer.

The recommended state for this setting is: `Disabled`.

### Rationale:

System sleep states (S1-S3) keep power to the RAM which may contain secrets, such as the BitLocker volume encryption key. An attacker finding a computer in sleep states (S1-S3) could directly attack the memory of the computer and gain access to the secrets through techniques such as RAM reminisce and direct memory access (DMA).

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Power\PowerSettings\abfc2519-3608-4c2a-94ea-171b0ed546ab:ACSettingIndex
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Power Management\Sleep Settings\Allow standby states (S1-S3) when sleeping (plugged in)
```

### Impact:

None - this is the default configuration.

**Default Value:**

Disabled. (Users will not be able to use Sleep (S3) while plugged in, which resumes faster than Hibernation (S4).)

**References:**

1. CCE-34130-5

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.8.29.5.3 (L1) Ensure 'Require a password when a computer wakes (on battery)' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

Specifies whether or not the user is prompted for a password when the system resumes from sleep.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Enabling this setting ensures that anyone who wakes an unattended computer from sleep state will have to provide logon credentials before they can access the system.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Power\PowerSettings\0e796bdb-100d-47d6-a2d5-f7d2daa51f51:DCSettingIndex
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Power Management\Sleep Settings\Require a password when a computer wakes (on battery)
```

#### **Impact:**

None - this is the default configuration.

#### **Default Value:**

Enabled. (The user is prompted for a password when the system resumes from sleep while on battery.)

**References:**

1. CCE-33782-4

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

#### 18.8.29.5.4 (L1) Ensure 'Require a password when a computer wakes (plugged in)' is set to 'Enabled' (Scored)

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

Specifies whether or not the user is prompted for a password when the system resumes from sleep.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

Enabling this setting ensures that anyone who wakes an unattended computer from sleep state will have to provide logon credentials before they can access the system.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Power\PowerSettings\0e796bdb-100d-47d6-a2d5-f7d2daa51f51:ACSettingIndex
```

##### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Power Management\Sleep Settings\Require a password when a computer wakes (plugged in)
```

##### **Impact:**

None - this is the default configuration.

##### **Default Value:**

Enabled. (The user is prompted for a password when the system resumes from sleep while plugged in.)

**References:**

1. CCE-35462-1

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

***18.8.30 Recovery***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.31 Remote Assistance

This section contains recommendations related to Remote Assistance.

### 18.8.31.1 (L1) Ensure 'Configure Offer Remote Assistance' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to turn on or turn off Offer (Unsolicited) Remote Assistance on this computer.

Help desk and support personnel will not be able to proactively offer assistance, although they can still respond to user assistance requests.

The recommended state for this setting is: `Disabled`.

#### Rationale:

A user might be tricked and accept an unsolicited Remote Assistance offer from a malicious user.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fAllowUnsolicited
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Remote  
Assistance\Configure Offer Remote Assistance
```



**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Users on this computer cannot get help from their corporate technical support staff using Offer (Unsolicited) Remote Assistance.)

**References:**

1. CCE-33801-2

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

## 18.8.31.2 (L1) Ensure 'Configure Solicited Remote Assistance' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows you to turn on or turn off Solicited (Ask for) Remote Assistance on this computer.

The recommended state for this setting is: `Disabled`.

### Rationale:

There is slight risk that a rogue administrator will gain access to another user's desktop session, however, they cannot connect to a user's computer unannounced or control it without permission from the user. When an expert tries to connect, the user can still choose to deny the connection or give the expert view-only privileges. The user must explicitly click the Yes button to allow the expert to remotely control the workstation.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fAllowToGetHelp
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Remote  
Assistance\Configure Solicited Remote Assistance
```

### Impact:

Users on this computer cannot use e-mail or file transfer to ask someone for help. Also, users cannot use instant messaging programs to allow connections to this computer.

**Default Value:**

Users can turn on or turn off Solicited (Ask for) Remote Assistance themselves in System Properties in Control Panel. Users can also configure Remote Assistance settings.

**References:**

1. CCE-35331-8

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 18.8.32 Remote Procedure Call

This section contains recommendations related to Remote Procedure Call.

### 18.8.32.1 (L1) Ensure 'Enable RPC Endpoint Mapper Client Authentication' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls whether RPC clients authenticate with the Endpoint Mapper Service when the call they are making contains authentication information. The Endpoint Mapper Service on computers running Windows NT4 (all service packs) cannot process authentication information supplied in this manner. This policy setting can cause a specific issue with *1-way* forest trusts if it is applied to the *trusting* domain DCs (see Microsoft [KB3073942](#)), so we do not recommend applying it to domain controllers.

**Note:** This policy will not be applied until the system is rebooted.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Anonymous access to RPC services could result in accidental disclosure of information to unauthenticated users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows  
NT\Rpc:EnableAuthEpResolution
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Remote  
Procedure Call\Enable RPC Endpoint Mapper Client Authentication
```

## Impact:

RPC clients will authenticate to the Endpoint Mapper Service for calls that contain authentication information. Clients making such calls will not be able to communicate with the Windows NT4 Server Endpoint Mapper Service.

## Default Value:

Disabled. (RPC clients will not authenticate to the Endpoint Mapper Service, but they will be able to communicate with the Windows NT4 Server Endpoint Mapper Service.)

## References:

1. CCE-35392-0

## Critical Controls:

### 9.1 Limit Open Ports, Protocols, and Services

Ensure that only ports, protocols, and services with validated business needs are running on each system.

## 18.8.32.2 (L1) Ensure 'Restrict Unauthenticated RPC clients' is set to 'Enabled: Authenticated' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting controls how the RPC server runtime handles unauthenticated RPC clients connecting to RPC servers.

This policy setting impacts all RPC applications. In a domain environment this policy setting should be used with caution as it can impact a wide range of functionality including group policy processing itself. Reverting a change to this policy setting can require manual intervention on each affected machine. **This policy setting should never be applied to a domain controller.**

A client will be considered an authenticated client if it uses a named pipe to communicate with the server or if it uses RPC Security. RPC Interfaces that have specifically requested to be accessible by unauthenticated clients may be exempt from this restriction, depending on the selected value for this policy setting.

-- "**None**" allows all RPC clients to connect to RPC Servers running on the machine on which the policy setting is applied. -- "**Authenticated**" allows only authenticated RPC Clients (per the definition above) to connect to RPC Servers running on the machine on which the policy setting is applied. Exemptions are granted to interfaces that have requested them. -- "**Authenticated without exceptions**" allows only authenticated RPC Clients (per the definition above) to connect to RPC Servers running on the machine on which the policy setting is applied. No exceptions are allowed. **This value has the potential to cause serious problems and is not recommended.**

**Note:** This policy setting will not be applied until the system is rebooted.

The recommended state for this setting is: `Enabled: Authenticated`.

### Rationale:

Unauthenticated RPC communication can create a security vulnerability.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows  
NT\Rpc:RestrictRemoteClients
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to **Enabled: Authenticated:**

```
Computer Configuration\Policies\Administrative Templates\System\Remote  
Procedure Call\Restrict Unauthenticated RPC clients
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled: Authenticated. (Only authenticated RPC clients are allowed to connect to RPC servers running on the machine. Exemptions are granted to interfaces that have requested them.)

**References:**

1. CCE-35391-2

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

### ***18.8.33 Removable Storage Access***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.34 Scripts***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.35 Server Manager***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.36 Shutdown***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.37 Shutdown Options***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.38 System Restore***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## ***18.8.39 Troubleshooting and Diagnostics***

This section contains recommendations related to Troubleshooting and Diagnostics.

### ***18.8.39.1 Application Compatibility Diagnostics***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.39.2 Corrupted File Recovery***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.39.3 Disk Diagnostic***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.39.4 Fault Tolerant Heap***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.39.5 Microsoft Support Diagnostic Tool

This section contains recommendations related to the Microsoft Support Diagnostic Tool.

### 18.8.39.5.1 (L2) Ensure 'Microsoft Support Diagnostic Tool: Turn on MSDT interactive communication with support provider' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting configures Microsoft Support Diagnostic Tool (MSDT) interactive communication with the support provider. MSDT gathers diagnostic data for analysis by support professionals.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Due to privacy concerns, data should never be sent to any 3rd party since this data could contain sensitive information.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\ScriptedDiagnosticsProvider\Policy:DisableQueryRemoteServer
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\System\Troubleshooting and Diagnostics\Microsoft Support Diagnostic Tool\Microsoft Support Diagnostic Tool: Turn on MSDT interactive communication with support provider
```

**Impact:**

MSDT cannot run in support mode, and no data can be collected or sent to the support provider.

**Default Value:**

Enabled. (Users can use MSDT to collect and send diagnostic data to a support professional to resolve a problem. By default, the support provider is set to Microsoft Corporation.)

**References:**

1. CCE-34972-0

**Critical Controls:**

13 Data Protection

Data Protection

### ***18.8.39.6 MSI Corrupted File Recovery***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.39.7 Scheduled Maintenance***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `sdiagschd.admx/adml` that is included with the Microsoft Windows 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### ***18.8.39.8 Scripted Diagnostics***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.39.9 Windows Boot Performance Diagnostics***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.8.39.10 Windows Memory Leak Diagnosis***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.39.11 Windows Performance PerfTrack

This section contains recommendations related to Windows Performance PerfTrack.

### 18.8.39.11.1 (L2) Ensure 'Enable/Disable PerfTrack' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting specifies whether to enable or disable tracking of responsiveness events.

The recommended state for this setting is: `Disabled`.

#### Rationale:

When enabled the aggregated data of a given event will be transmitted to Microsoft. The option exists to restrict this feature for a specific user, set the consent level, and designate specific programs for which error reports could be sent. However, centrally restricting the ability to execute PerfTrack to limit the potential for unauthorized or undesired usage, data leakage, or unintentional communications is highly recommended.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WDI\{9c5a40da-b965-4fc3-8781-88dd50a6299d}:ScenarioExecutionEnabled
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative  
Templates\System\Troubleshooting and Diagnostics\Windows Performance  
PerfTrack\Enable/Disable PerfTrack
```

**Impact:**

Responsiveness events are not processed.

**Default Value:**

Enabled. (Responsiveness events are processed and aggregated. The aggregated data will be transmitted to Microsoft through SQM.)

**References:**

1. CCE-33662-8

**Critical Controls:**

13 Data Protection

Data Protection

***18.8.40 Trusted Platform Module Services***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.8.41 User Profiles

This section contains recommendations related to User Profiles.

### 18.8.41.1 (L2) Ensure 'Turn off the advertising ID' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting turns off the advertising ID, preventing apps from using the ID for experiences across apps.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Tracking user activity for advertising purposes, even anonymously, may be a privacy concern. In an enterprise environment, applications should not need or require tracking for targeted advertising.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\policies\Microsoft\Windows\AdvertisingInfo:DisabledByGroupPolicy
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\System\User Profiles\Turn off the advertising ID
```

#### Impact:

The advertising ID is turned off. Apps can't use the ID for experiences across apps.

**Default Value:**

Disabled. (Users can control whether apps can use the advertising ID for experiences across apps.)

**References:**

1. CCE-33823-6

**Critical Controls:**

13 Data Protection

Data Protection

***18.8.42 Windows File Protection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.8.43 Windows HotStart***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `HotStart.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2 & 8/2012 Administrative Templates.



## 18.8.44 Windows Time Service

This section contains recommendations related to the Windows Time Service.

### 18.8.44.1 Time Providers

This section contains recommendations related to Time Providers.

#### 18.8.44.1.1 (L2) Ensure 'Enable Windows NTP Client' is set to 'Enabled' (Scored)

##### Profile Applicability:

- Level 2
- Level 2 + BitLocker

##### Description:

This policy setting specifies whether the Windows NTP Client is enabled. Enabling the Windows NTP Client allows your computer to synchronize its computer clock with other NTP servers. You might want to disable this service if you decide to use a third-party time provider.

The recommended state for this setting is: `Enabled`.

##### Rationale:

A reliable and accurate account of time is important for a number of services and security requirements, including but not limited to distributed applications, authentication services, multi-user databases and logging services. The use of an NTP client (with secure operation) establishes functional accuracy and is a focal point when reviewing security relevant events.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\W32Time\TimeProviders\NtpClient:Enabled
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\System\Windows Time Service\Time Providers\Enable Windows NTP Client
```

**Impact:**

You can set the local computer clock to synchronize time with NTP servers.

**Default Value:**

Disabled. (The local computer clock does not synchronize time with NTP servers.)

**References:**

1. CCE-33661-0

**Critical Controls:****6.1 Use At Least Two Synchronized Time Sources For All Servers And Network Equipment**

Include at least two synchronized time sources from which all servers and network equipment retrieve time information on a regular basis so that timestamps in logs are consistent.

## 18.8.44.1.2 (L2) Ensure 'Enable Windows NTP Server' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting allows you to specify whether the Windows NTP Server is enabled.

The recommended state for this setting is: Disabled.

### Rationale:

The configuration of proper time synchronization is critically important in a corporate environment both due to the sensitivity of Kerberos authentication timestamps and also to ensure accurate security logging.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\W32Time\TimeProviders\NtpServer:Enabled
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\System\Windows Time Service\Time Providers\Enable Windows NTP Server
```

### Impact:

None - this is the default configuration.

### Default Value:

Disabled. (The computer cannot service NTP requests from other computers.)

**References:**

1. CCE-35135-3

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

## ***18.9 Windows Components***

This section contains recommendations for Windows Component settings.

### ***18.9.1 Active Directory Federation Services***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `adfs.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2 & 8/2012 Administrative Templates.

### ***18.9.2 ActiveX Installer Service***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.3 Add features to Windows 8 / 8.1 / 10***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WindowsAnytimeUpgrade.admx/adml` that is included with the Microsoft Windows 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### ***18.9.4 App Package Deployment***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.5 App Privacy***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.6 App runtime

This section contains recommendations for App runtime settings.

### 18.9.6.1 (L1) Ensure 'Allow Microsoft accounts to be optional' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting lets you control whether Microsoft accounts are optional for Windows Store apps that require an account to sign in. This policy only affects Windows Store apps that support it.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Enabling this setting allows an organization to use their enterprise user accounts instead of using their Microsoft accounts when accessing Windows store apps. This provides the organization with greater control over relevant credentials. Microsoft accounts cannot be centrally managed and as such enterprise credential security policies cannot be applied to them, which could put any information accessed by using Microsoft accounts at risk.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:MSAOptional
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\App runtime\Allow Microsoft accounts to be optional
```

**Impact:**

Windows Store apps that typically require a Microsoft account to sign in will allow users to sign in with an enterprise account instead.

**Default Value:**

Disabled. (Users will need to sign in with a Microsoft account.)

**References:**

1. CCE-35803-6

**Critical Controls:****16.9 Configure Account Access Centrally**

Configure access for all accounts through a centralized point of authentication, for example Active Directory or LDAP. Configure network and security devices for centralized authentication as well.

***18.9.7 Application Compatibility***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.8 AutoPlay Policies

This section contains recommendations for AutoPlay policies.

### 18.9.8.1 (L1) Ensure 'Disallow Autoplay for non-volume devices' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting disallows AutoPlay for MTP devices like cameras or phones.

The recommended state for this setting is: `Enabled`.

#### Rationale:

An attacker could use this feature to launch a program to damage a client computer or data on the computer.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Explorer:NoAutoplayfor  
nonVolume
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\AutoPlay Policies\Disallow Autoplay for non-volume devices
```

#### Impact:

AutoPlay will not be allowed for MTP devices like cameras or phones.



**Default Value:**

Disabled. (AutoPlay is enabled for non-volume devices.)

**References:**

1. CCE-35289-8

**Critical Controls:****8.3 Limit Use Of External Devices (i.e. USB)**

Limit use of external devices to those with an approved, documented business need.

Monitor for use and attempted use of external devices. Configure laptops, workstations, and servers so that they will not auto-run content from removable media, like USB tokens (i.e., “thumb drives”), USB hard drives, CDs/DVDs, FireWire devices, external serial advanced technology attachment devices, and mounted network shares. Configure systems so that they automatically conduct an anti-malware scan of removable media when inserted.

## 18.9.8.2 (L1) Ensure 'Set the default behavior for AutoRun' is set to 'Enabled: Do not execute any autorun commands' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting sets the default behavior for Autorun commands. Autorun commands are generally stored in autorun.inf files. They often launch the installation program or other routines.

The recommended state for this setting is: Enabled: Do not execute any autorun commands.

### Rationale:

Prior to Windows Vista, when media containing an autorun command is inserted, the system will automatically execute the program without user intervention. This creates a major security concern as code may be executed without user's knowledge. The default behavior starting with Windows Vista is to prompt the user whether autorun command is to be run. The autorun command is represented as a handler in the Autoplay dialog.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:NoAutorun
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: Do not execute any autorun commands:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\AutoPlay Policies\Set the default behavior for AutoRun
```

**Impact:**

AutoRun commands will be completely disabled.

**Default Value:**

Disabled. (Windows will prompt the user whether autorun command is to be run.)

**References:**

1. CCE-34771-6

**Critical Controls:****8.3 Limit Use Of External Devices (i.e. USB)**

Limit use of external devices to those with an approved, documented business need.

Monitor for use and attempted use of external devices. Configure laptops, workstations, and servers so that they will not auto-run content from removable media, like USB tokens (i.e., “thumb drives”), USB hard drives, CDs/DVDs, FireWire devices, external serial advanced technology attachment devices, and mounted network shares. Configure systems so that they automatically conduct an anti-malware scan of removable media when inserted.

### 18.9.8.3 (L1) Ensure 'Turn off Autoplay' is set to 'Enabled: All drives' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Autoplay starts to read from a drive as soon as you insert media in the drive, which causes the setup file for programs or audio media to start immediately. An attacker could use this feature to launch a program to damage the computer or data on the computer. Autoplay is disabled by default on some removable drive types, such as floppy disk and network drives, but not on CD-ROM drives.

**Note:** You cannot use this policy setting to enable Autoplay on computer drives in which it is disabled by default, such as floppy disk and network drives.

The recommended state for this setting is: `Enabled: All drives`.

#### Rationale:

An attacker could use this feature to launch a program to damage a client computer or data on the computer.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:NoDriveTypeAutoRun
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: All drives`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\AutoPlay Policies\Turn off Autoplay
```

**Impact:**

Autoplay will be disabled - users will have to manually launch setup or installation programs that are provided on removable media.

**Default Value:**

Disabled. (Autoplay is enabled.)

**References:**

1. CCE-33791-5

**Critical Controls:****8.3 Limit Use Of External Devices (i.e. USB)**

Limit use of external devices to those with an approved, documented business need. Monitor for use and attempted use of external devices. Configure laptops, workstations, and servers so that they will not auto-run content from removable media, like USB tokens (i.e., “thumb drives”), USB hard drives, CDs/DVDs, FireWire devices, external serial advanced technology attachment devices, and mounted network shares. Configure systems so that they automatically conduct an anti-malware scan of removable media when inserted.

**18.9.9 Backup**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `UserBackup.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012 and Windows 10 Administrative Templates.

**18.9.10 Biometrics**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.11 BitLocker Drive Encryption

This section contains recommendations for configuring BitLocker.

### 18.9.11.1 Fixed Data Drives

This section contains recommendations for configuring Fixed Data Drives in BitLocker.

#### 18.9.11.1.1 (BL) Ensure 'Allow access to BitLocker-protected fixed data drives from earlier versions of Windows' is set to 'Disabled' (Scored)

##### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

##### Description:

This policy setting configures whether or not fixed data drives formatted with the FAT file system can be unlocked and viewed on computers running Windows Server 2008, Windows Vista, Windows XP with Service Pack 3 (SP3), or Windows XP with Service Pack 2 (SP2) operating systems.

**Note:** This policy setting does not apply to drives that are formatted with the NTFS file system.

The recommended state for this setting is: `Disabled`.

##### Rationale:

By default BitLocker virtualizes FAT formatted drives to permit access via the BitLocker To Go Reader on previous versions of Windows. Additionally the BitLocker To Go Reader application is applied to the unencrypted portion of the drive.

The BitLocker To Go Reader application, like any other application, is subject to spoofing and could be a mechanism to propagate malware.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVDDiscoveryVolumeType
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Allow access to  
BitLocker-protected fixed data drives from earlier versions of Windows
```

## Impact:

Fixed data drives formatted with the FAT file system that are BitLocker-protected cannot be unlocked on computers running Windows Server 2008, Windows Vista, Windows XP with SP3 or Windows XP with SP2. Bitlockertogo.exe will not be installed.

## Default Value:

Enabled. (Fixed data drives formatted with the FAT file system can be unlocked on computers running Windows Server 2008, Windows Vista, Windows XP with SP3 or Windows XP with SP2, and their content can be viewed. These operating systems will only have read-only access to BitLocker-protected drives.)

## References:

1. CCE-34253-5

## Critical Controls:

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.1.2 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

The "Allow data recovery agent" check box is used to specify whether a data recovery agent can be used with BitLocker-protected fixed data drives. Before a data recovery agent can be used it must be added from the Public Key Policies item in either the Group Policy Management Console or the Local Group Policy Editor. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about adding data recovery agents.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

Select "Omit recovery options from the BitLocker setup wizard" to prevent users from specifying recovery options when they enable BitLocker on a drive. This means that you will not be able to specify which recovery option to use when you enable BitLocker, instead BitLocker recovery options for the drive are determined by the policy setting.

In "Save BitLocker recovery information to Active Directory Domain Services" choose which BitLocker recovery information to store in AD DS for fixed data drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. Storing the key package supports recovering data from a drive that has been physically corrupted. If you select "Backup recovery password only," only the recovery password is stored in AD DS.

Select the "Do not enable BitLocker until recovery information is stored in AD DS for fixed data drives" check box if you want to prevent users from enabling BitLocker unless the computer is connected to the domain and the backup of BitLocker recovery information to AD DS succeeds.



**Note:** If the "Do not enable BitLocker until recovery information is stored in AD DS for fixed data drives" check box is selected, a recovery password is automatically generated.

The recommended state for this setting is: `Enabled`.

### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVRcovery
```

### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-  
protected fixed drives can be recovered
```

### **Impact:**

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

### **Default Value:**

Disabled. (The default recovery options are supported for BitLocker recovery - a DRA is allowed, and the recovery options can be specified by the user including the recovery password and recovery key, and recovery information is not backed up to AD DS.)

### **References:**

1. CCE-33072-0

## **Critical Controls:**

### **10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### **13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.3 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Allow data recovery agent' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

The "Allow data recovery agent" check box is used to specify whether a data recovery agent can be used with BitLocker-protected fixed data drives. Before a data recovery agent can be used it must be added from the Public Key Policies item in either the Group Policy Management Console or the Local Group Policy Editor. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about adding data recovery agents.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

`HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVManageDRA`

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: True` (checked):

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-  
protected fixed drives can be recovered: Allow data recovery agent
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled: True. (A DRA is allowed.)

**References:**

1. CCE-33072-0

**Critical Controls:****10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

**13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

#### *18.9.11.1.4 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Recovery Password' is set to 'Enabled: Allow 48-digit recovery password' (Scored)*

##### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

##### **Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

The recommended state for this setting is: `Enabled: Allow 48-digit recovery password`.

##### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVRecoveryPassword
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Allow 48-digit recovery password:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-  
protected fixed drives can be recovered: Recovery Password
```

## Impact:

A 48-digit recovery password will be permitted for fixed drives.

## Default Value:

Recovery options are specified by the user.

## References:

1. CCE-33072-0

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.1.5 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Recovery Key' is set to 'Enabled: Allow 256-bit recovery key' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

The recommended state for this setting is: `Enabled: Allow 256-bit recovery key`.

#### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVRecoveryKey
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Allow 256-bit recovery key:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-  
protected fixed drives can be recovered: Recovery Key
```

## Impact:

A 256-bit recovery key will be permitted for fixed drives.

## Default Value:

Recovery options are specified by the user.

## References:

1. CCE-33072-0

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



*18.9.11.1.6 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Omit recovery options from the BitLocker setup wizard' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

Select "Omit recovery options from the BitLocker setup wizard" to prevent users from specifying recovery options when they enable BitLocker on a drive. This means that you will not be able to specify which recovery option to use when you enable BitLocker, instead BitLocker recovery options for the drive are determined by the policy setting.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVHideRecoveryPage
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-  
protected fixed drives can be recovered: Omit recovery options from the  
BitLocker setup wizard
```

## Impact:

The ability to manually select recovery options for fixed drives will not be presented to the user in the BitLocker setup wizard.

## Default Value:

Recovery options for fixed drives are selectable by the user in the BitLocker setup wizard.

## References:

1. CCE-33072-0

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.7 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Save BitLocker recovery information to AD DS for fixed data drives' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Save BitLocker recovery information to Active Directory Domain Services" choose which BitLocker recovery information to store in AD DS for fixed data drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. Storing the key package supports recovering data from a drive that has been physically corrupted. If you select "Backup recovery password only," only the recovery password is stored in AD DS.

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

`HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVActiveDirectoryBackup`

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-protected fixed drives can be recovered: Save BitLocker recovery information to AD DS for fixed data drives
```

## Impact:

None - this is the default configuration.

## Default Value:

BitLocker recovery information for fixed drives is not backed up to AD DS.

## References:

1. CCE-33072-0

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.8 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Configure storage of BitLocker recovery information to AD DS' is set to 'Enabled: Backup recovery passwords and key packages' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Save BitLocker recovery information to Active Directory Domain Services" choose which BitLocker recovery information to store in AD DS for fixed data drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. Storing the key package supports recovering data from a drive that has been physically corrupted. If you select "Backup recovery password only," only the recovery password is stored in AD DS.

The recommended state for this setting is: `Enabled: Backup recovery passwords and key packages`.

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVActiveDirectoryInfoToStore
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Backup recovery passwords and key packages:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-protected fixed drives can be recovered: Configure storage of BitLocker recovery information to AD DS:
```

## Impact:

None - this value is ignored when the checkbox above it (*Save BitLocker recovery information to AD DS for fixed data drives*) is `False` (unchecked), as is required in 18.9.11.1.7. If that checkbox **is** set to `True` (checked), both recovery passwords and key packages for fixed drives will be saved to AD DS.

## Default Value:

BitLocker recovery information for fixed drives is not backed up to AD DS.

## References:

1. CCE-33072-0

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.9 (BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for fixed data drives' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected fixed data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

Select the "Do not enable BitLocker until recovery information is stored in AD DS for fixed data drives" check box if you want to prevent users from enabling BitLocker unless the computer is connected to the domain and the backup of BitLocker recovery information to AD DS succeeds.

**Note:** If the "Do not enable BitLocker until recovery information is stored in AD DS for fixed data drives" check box is selected, a recovery password is automatically generated.

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker, a Data Recovery Agent will need to be configured for fixed drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVRequireActiveDirectoryBackup
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Choose how BitLocker-protected fixed drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for fixed data drives
```

**Impact:**

None - this is the default configuration.

**Default Value:**

BitLocker can be enabled on fixed drives without the requirement of storing recovery information to Active Directory first.

**References:**

1. CCE-33072-0

**Critical Controls:****10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

**13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



### *18.9.11.1.10 (BL) Ensure 'Configure use of hardware-based encryption for fixed data drives' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on fixed data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVHardwareEncryption
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of  
hardware-based encryption for fixed data drives
```

**Impact:**

Hardware-based encryption can improve performance of both read and write operations to the storage drive.

**Default Value:**

BitLocker will use hardware-based encryption with the encryption algorithm set for fixed drives. If hardware-based encryption is not available, BitLocker software-based encryption will be used instead.

**References:**

1. CCE-33080-3

**Critical Controls:**

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.11 (BL) Ensure 'Configure use of hardware-based encryption for fixed data drives: Use BitLocker software-based encryption when hardware encryption is not available' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on fixed data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

If hardware-based encryption is not available BitLocker software-based encryption will be used instead.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVAAllowSoftwareEncryption  
Failover
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of  
hardware-based encryption for fixed data drives: Use BitLocker software-based  
encryption when hardware encryption is not available
```

**Impact:**

None - this is the default configuration.

**Default Value:**

If hardware-based encryption is not available on fixed drives, BitLocker software-based encryption will be used instead.

**References:**

1. CCE-33080-3

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.12 (BL) Ensure 'Configure use of hardware-based encryption for fixed data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on fixed data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVRestrictHardwareEncryptionAlgorithms
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of hardware-based encryption for fixed data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Encryption algorithms and cipher suites are not restricted for hardware-based encryption on fixed drives.

**References:**

1. CCE-33080-3

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.1.13 (BL) Ensure 'Configure use of hardware-based encryption for fixed data drives: Restrict crypto algorithms or cipher suites to the following:' is set to 'Enabled':*

*2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on fixed data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled:`

`2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42.`

## Rationale:

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVAllowedHardwareEncryptionAlgorithms
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of hardware-based encryption for fixed data drives: Restrict crypto algorithms or cipher suites to the following:
```

## Impact:

None - this value is ignored when the checkbox above it (*Restrict encryption algorithms and cipher suites allowed for hardware-based encryption*) is False (unchecked), as required in 18.9.11.1.12. If that checkbox is **set** to True (checked), then the encryption algorithms permitted on fixed drives would be restricted to the specified object identifiers (OIDs).

## Default Value:

Encryption algorithms and cipher suites are not restricted for hardware-based encryption on fixed drives.

## References:

1. CCE-33080-3

## Critical Controls:

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



### *18.9.11.1.14 (BL) Ensure 'Configure use of passwords for fixed data drives' is set to 'Disabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether a password is required to unlock BitLocker-protected fixed data drives.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a volume. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

Using a dictionary-style attack, passwords can be guessed or discovered by repeatedly attempting to unlock a drive. Since this type of BitLocker password does not include anti-dictionary attack protections provided by a TPM, for example, there is no mechanism to slow down rapid brute-force attacks against them.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVPassphrase
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of passwords for fixed data drives
```

#### **Impact:**

The password option will not be available when configuring BitLocker for fixed drives.

**Default Value:**

Passwords are supported, without complexity requirements and with an 8 character minimum.

**References:**

1. CCE-33165-2

### *18.9.11.1.15 (BL) Ensure 'Configure use of smart cards on fixed data drives' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to specify whether smart cards can be used to authenticate user access to the BitLocker-protected fixed data drives on a computer.

Smart cards can be used to authenticate user access to the drive. You can require smart card authentication by selecting the "Require use of smart cards on fixed data drives" check box.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a drive. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

A drive can be compromised by guessing or finding the authentication information used to access the drive. For example, a password could be guessed, or a drive set to automatically unlock could be lost or stolen with the computer it automatically unlocks with.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVAllowUserCert
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of smart cards on fixed data drives
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (Users are allowed to use smart cards to authenticate their access to BitLocker-protected fixed data drives.)

**References:**

1. CCE-33102-5

**Critical Controls:****16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems**

Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

*18.9.11.1.16 (BL) Ensure 'Configure use of smart cards on fixed data drives: Require use of smart cards on fixed data drives' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to specify whether smart cards *must* be used to authenticate user access to the BitLocker-protected fixed data drives on a computer.

Smart cards can be used to authenticate user access to the drive. You can require a smart card authentication by selecting the "Require use of smart cards on fixed data drives" check box.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a drive. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

A drive can be compromised by guessing or finding the authentication information used to access the drive. For example, a password could be guessed, or a drive set to automatically unlock could be lost or stolen with the computer it automatically unlocks with.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\FDVENforceUserCert
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: True (checked):

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Fixed Data Drives\Configure use of smart cards on fixed data drives: Require use of smart cards on fixed data drives
```

## Impact:

Smart cards will be required to authenticate user access to fixed data drives. Use of smart cards requires PKI infrastructure. Users will need to authenticate with the smart card to unlock the fixed data drive every time they restart the computer.

## Default Value:

Enabled: False (unchecked). (Users are allowed to use smart cards to authenticate their access to BitLocker-protected fixed data drives, but it is not required.)

## References:

1. CCE-33102-5

## Critical Controls:

### 16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems

Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

## 18.9.11.2 Operating System Drives

This section contains recommendations for configuring Operating System Drives in BitLocker.

### 18.9.11.2.1 (BL) Ensure 'Allow enhanced PINs for startup' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

This policy setting allows you to configure whether or not enhanced startup PINs are used with BitLocker.

Enhanced startup PINs permit the use of characters including uppercase and lowercase letters, symbols, numbers, and spaces. This policy setting is applied when you turn on BitLocker.

The recommended state for this setting is: `Enabled`.

#### Rationale:

A numeric-only PIN provides less entropy than a PIN that is alpha-numeric. When not using enhanced PIN for startup, BitLocker requires the use of the function keys [F1-F10] for PIN entry since the PIN is entered in the pre-OS environment before localization support is available. This limits each PIN digit to one of ten possibilities. The TPM has an anti-hammering feature that includes a mechanism to exponentially increase the delay for PIN retry attempts; however, an attacker is able to more effectively mount a brute force attack using a domain of 10 digits of the function keys.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\UseEnhancedPin
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Allow enhanced  
PINs for startup
```

## Impact:

All new BitLocker startup PINs set will be enhanced PINs. **Note:** Not all computers enable full keyboard support in the Pre-OS environment. Some keys may not be available. It is recommended this functionality be tested using the computers in your environment prior to it being deployed.

## Default Value:

Disabled. (Enhanced PINs will not be used.)

## References:

1. CCE-33100-9

## Critical Controls:

16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems  
Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.



### *18.9.11.2.2 (BL) Ensure 'Allow Secure Boot for integrity validation' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to configure whether Secure Boot will be allowed as the platform integrity provider for BitLocker operating system drives.

Secure Boot ensures that the PC's pre-boot environment only loads firmware that is digitally signed by authorized software publishers. Secure Boot also provides more flexibility for managing pre-boot configuration than legacy BitLocker integrity checks.

Secure Boot requires a system that meets the UEFI 2.3.1 Specifications for Class 2 and Class 3 computers.

When this policy is enabled and the hardware is capable of using Secure Boot for BitLocker scenarios, the "Use enhanced Boot Configuration Data validation profile" group policy setting is ignored and Secure Boot verifies BCD settings according to the Secure Boot policy setting, which is configured separately from BitLocker.

**Note:** If the group policy setting "Configure TPM platform validation profile for native UEFI firmware configurations" is enabled and has PCR 7 omitted, BitLocker will be prevented from using Secure Boot for platform or Boot Configuration Data (BCD) integrity validation.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Secure Boot ensures that only firmware digitally signed by authorized software publishers is loaded during computer startup, which reduces the risk of rootkits and other types of malware from gaining control of the system. It also helps provide protection against malicious users booting from an alternate operating system.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSAllowSecureBootForIntegrity
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Allow Secure Boot for integrity validation
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (BitLocker will use Secure Boot for platform integrity if the platform is capable of Secure Boot-based integrity validation.)

**References:**

1. CCE-35393-8

**Critical Controls:**

2 [Inventory of Authorized and Unauthorized Software](#)  
Inventory of Authorized and Unauthorized Software

### *18.9.11.2.3 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

The "Allow certificate-based data recovery agent" check box is used to specify whether a data recovery agent can be used with BitLocker-protected operating system drives. Before a data recovery agent can be used it must be added from the Public Key Policies item in either the Group Policy Management Console or the Local Group Policy Editor. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about adding data recovery agents.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

Select "Omit recovery options from the BitLocker setup wizard" to prevent users from specifying recovery options when they enable BitLocker on a drive. This means that you will not be able to specify which recovery option to use when you enable BitLocker, instead BitLocker recovery options for the drive are determined by the policy setting.

In "Save BitLocker recovery information to Active Directory Domain Services", choose which BitLocker recovery information to store in AD DS for operating system drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. Storing the key package supports recovering data from a drive that has been physically corrupted. If you select "Backup recovery password only," only the recovery password is stored in AD DS.

Select the "Do not enable BitLocker until recovery information is stored in AD DS for operating system drives" check box if you want to prevent users from enabling BitLocker unless the computer is connected to the domain and the backup of BitLocker recovery information to AD DS succeeds.

**Note:** If the "Do not enable BitLocker until recovery information is stored in AD DS for operating system drives" check box is selected, a recovery password is automatically generated.

The recommended state for this setting is: `Enabled`.

**Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recovery the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSRecovery
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Choose how BitLocker-protected operating system drives can be recovered
```

**Impact:**

Users will need to be domain connected to turn on BitLocker. This policy is not FIPS complaint.

**Default Value:**

Disabled. (The default recovery options are supported for BitLocker recovery - a DRA is allowed, and the recovery options can be specified by the user including the recovery password and recovery key, and recovery information is not backed up to AD DS.)

**References:**

- 1. CCE-33101-7

## **Critical Controls:**

### **10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### **13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

#### *18.9.11.2.4 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Allow data recovery agent' is set to 'Enabled: False' (Scored)*

##### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

##### **Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

The "Allow certificate-based data recovery agent" check box is used to specify whether a data recovery agent can be used with BitLocker-protected operating system drives. Before a data recovery agent can be used it must be added from the Public Key Policies item in either the Group Policy Management Console or the Local Group Policy Editor. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about adding data recovery agents.

The recommended state for this setting is: `Enabled: False` (unchecked).

##### **Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recovery the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSManageDRA
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: False` (unchecked):

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Choose how  
BitLocker-protected operating system drives can be recovered: Allow data  
recovery agent
```

## Impact:

A Data Recovery Agent will not be permitted for the operating system drive. Users will need to be domain connected to turn on BitLocker. This policy is not FIPS compliant.

## Default Value:

Enabled: True. (A DRA is allowed.)

## References:

1. CCE-33101-7

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.2.5 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Recovery Password' is set to 'Enabled: Require 48-digit recovery password' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

The recommended state for this setting is: `Enabled: Require 48-digit recovery password`.

#### **Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recover the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSRecoveryPassword
```



## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Require 48-digit recovery password:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Choose how  
BitLocker-protected operating system drives can be recovered: Recovery  
Password
```

## Impact:

A 48-digit recovery password will be required for the operating system drive. Users will need to be domain connected to turn on BitLocker. This policy is not FIPS compliant.

## Default Value:

Recovery options are specified by the user.

## References:

1. CCE-33101-7

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.2.6 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Recovery Key' is set to 'Enabled: Do not allow 256-bit recovery key' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

The recommended state for this setting is: `Enabled: Do not allow 256-bit recovery key`.

#### **Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recover the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSRecoveryKey
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Do not allow 256-bit recovery key:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Choose how  
BitLocker-protected operating system drives can be recovered: Recovery Key
```

## Impact:

A 256-bit recovery key will not be permitted for the operating system drive. Users will need to be domain connected to turn on BitLocker. This policy is not FIPS compliant.

## Default Value:

Recovery options are specified by the user.

## References:

1. CCE-33101-7

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.7 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Omit recovery options from the BitLocker setup wizard' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

Select "Omit recovery options from the BitLocker setup wizard" to prevent users from specifying recovery options when they enable BitLocker on a drive. This means that you will not be able to specify which recovery option to use when you enable BitLocker, instead BitLocker recovery options for the drive are determined by the policy setting.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recover the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

`HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSHideRecoveryPage`

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Choose how  
BitLocker-protected operating system drives can be recovered: Omit recovery  
options from the BitLocker setup wizard
```

## Impact:

The ability to manually select recovery options for the operating drive will not be presented to the user in the BitLocker setup wizard.

## Default Value:

Recovery options for the operating system drive are selectable by the user in the BitLocker setup wizard.

## References:

1. CCE-33101-7

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.8 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Save BitLocker recovery information to AD DS for operating system drives' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

In "Save BitLocker recovery information to Active Directory Domain Services", choose which BitLocker recovery information to store in AD DS for operating system drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. Storing the key package supports recovering data from a drive that has been physically corrupted. If you select "Backup recovery password only," only the recovery password is stored in AD DS.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recover the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSActiveDirectoryBackup
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Choose how  
BitLocker-protected operating system drives can be recovered: Save BitLocker  
recovery information to AD DS for operating system drives
```

## Impact:

BitLocker recovery information for the operating system drive will be backed up to AD DS. Users will need to be domain connected to turn on BitLocker. This policy is not FIPS compliant.

## Default Value:

BitLocker recovery information for the operating system drive is not backed up to AD DS.

## References:

1. CCE-33101-7

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.9 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Configure storage of BitLocker recovery information to AD DS:' is set to 'Enabled: Store recovery passwords and key packages' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

In "Save BitLocker recovery information to Active Directory Domain Services", choose which BitLocker recovery information to store in AD DS for operating system drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. Storing the key package supports recovering data from a drive that has been physically corrupted. If you select "Backup recovery password only," only the recovery password is stored in AD DS.

The recommended state for this setting is: `Enabled: Store recovery passwords and key packages`.

**Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recover the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.



**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSActiveDirectoryInfoToStore
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Store recovery passwords and key packages:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Choose how BitLocker-protected operating system drives can be recovered: Configure storage of BitLocker recovery information to AD DS:
```

**Impact:**

Both the recovery password and the key package for the operating system drive will be saved to AD AS. Users will need to be domain connected to turn on BitLocker. This policy is not FIPS complaint.

**Default Value:**

BitLocker recovery information for the operating system drive is not backed up to AD DS.

**References:**

1. CCE-33101-7

**Critical Controls:****10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

**13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.10 (BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for operating system drives' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected operating system drives are recovered in the absence of the required startup key information. This policy setting is applied when you turn on BitLocker.

Select the "Do not enable BitLocker until recovery information is stored in AD DS for operating system drives" check box if you want to prevent users from enabling BitLocker unless the computer is connected to the domain and the backup of BitLocker recovery information to AD DS succeeds.

**Note:** If the "Do not enable BitLocker until recovery information is stored in AD DS for operating system drives" check box is selected, a recovery password is automatically generated.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

Should a user lose their primary means for accessing an encrypted OS volume, or should the system not pass its boot time integrity checks, the system will go into recovery mode. If the recovery key has not been backed up to Active Directory, the user would need to have saved the recovery key to another location such as a USB flash drive, or have printed the recovery password, and now have access to one of those in order to recovery the system. If the user is unable to produce the recovery key, then the user will be denied access to the encrypted volume and subsequently any data that is stored there.

## **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSRequireActiveDirectoryBackup
```

## **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Choose how BitLocker-protected operating system drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for operating system drives
```

## **Impact:**

Users will need to be domain connected and the back up of BitLocker recovery information for the operating system drive must succeed in order to turn on BitLocker. This policy is not FIPS complaint.

## **Default Value:**

BitLocker can be enabled on the operating system drive without the requirement of storing recovery information to Active Directory first.

## **References:**

1. CCE-33101-7

## **Critical Controls:**

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.2.11 (BL) Ensure 'Configure minimum PIN length for startup' is set to 'Enabled: 7 or more characters' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to configure a minimum length for a Trusted Platform Module (TPM) startup PIN. This policy setting is applied when you turn on BitLocker. The startup PIN must have a minimum length of 4 digits and can have a maximum length of 20 digits.

The recommended state for this setting is: `Enabled: 7 or more characters`.

#### **Rationale:**

BitLocker requires the use of the function keys [F1-F10] for PIN entry since the PIN is entered in the pre-OS environment before localization support is available. This limits each PIN digit to one of ten possibilities. The TPM has an anti-hammering feature that includes a mechanism to exponentially increase the delay for PIN retry attempts; however, using a PIN that is short in length improves an attacker's chances of guessing the correct PIN.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\MinimumPIN
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: 7 or more characters`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Configure minimum PIN length for startup
```

**Impact:**

The minimum length of the startup PIN will be 7 or more digits (up to a maximum of 20 digits), as specified.

**Default Value:**

Disabled. (Users can configure a startup PIN of any length between 4 and 20 digits.)

**References:**

1. CCE-33073-8

**Critical Controls:**

2 Inventory of Authorized and Unauthorized Software  
Inventory of Authorized and Unauthorized Software

### *18.9.11.2.12 (BL) Ensure 'Configure use of hardware-based encryption for operating system drives' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on operating system drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSHardwareEncryption
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Configure use of hardware-based encryption for operating system drives
```

**Impact:**

Hardware-based encryption can improve performance of both read and write operations to the storage drive.

**Default Value:**

BitLocker will use hardware-based encryption with the encryption algorithm set for the operating system drive. If hardware-based encryption is not available, BitLocker software-based encryption will be used instead.

**References:**

1. CCE-33167-8

**Critical Controls:**

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.13 (BL) Ensure 'Configure use of hardware-based encryption for operating system drives: Use BitLocker software-based encryption when hardware encryption is not available' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on operating system drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

If hardware-based encryption is not available BitLocker software-based encryption will be used instead.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSAllowSoftwareEncryptionF  
ailover
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Configure use  
of hardware-based encryption for operating system drives: Use BitLocker  
software-based encryption when hardware encryption is not available
```

**Impact:**

None - this is the default configuration.

**Default Value:**

If hardware-based encryption is not available on the operating system drive, BitLocker software-based encryption will be used instead.

**References:**

1. CCE-33167-8

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.14 (BL) Ensure 'Configure use of hardware-based encryption for operating system drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on operating system drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSRestrictHardwareEncryptionAlgorithms
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Configure use of hardware-based encryption for fixed data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Encryption algorithms and cipher suites are not restricted for hardware-based encryption on the operating system drive.

**References:**

1. CCE-33167-8

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.2.15 (BL) Ensure 'Configure use of hardware-based encryption for operating system drives: Restrict crypto algorithms or cipher suites to the following:' is set to 'Enabled:*

*2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on operating system drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled:`

`2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42.`

## Rationale:

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSAllowedHardwareEncryptionAlgorithms
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Configure use of hardware-based encryption for operating system drives: Restrict crypto algorithms or cipher suites to the following:
```

## Impact:

None - this value is ignored when the checkbox above it (*Restrict encryption algorithms and cipher suites allowed for hardware-based encryption*) is False (unchecked), as required in 18.9.11.2.14. If that checkbox is **set** to True (checked), then the encryption algorithms permitted on the operating system drive would be restricted to the specified object identifiers (OIDs).

## Default Value:

Encryption algorithms and cipher suites are not restricted for hardware-based encryption on the operating system drive.

## References:

1. CCE-33167-8

## Critical Controls:

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.2.16 (BL) Ensure 'Configure use of passwords for operating system drives' is set to 'Disabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies the constraints for passwords used to unlock BitLocker-protected operating system drives.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a volume. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

Using a dictionary-style attack, passwords can be guessed or discovered by repeatedly attempting to unlock a drive. Since this type of BitLocker password does not include anti-dictionary attack protections provided by a TPM, for example, there is no mechanism to slow down rapid brute-force attacks against them.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\OSPassphrase
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Configure use of passwords for operating system drives
```

#### **Impact:**

The password option will not be available when configuring BitLocker for the operating system drive.

**Default Value:**

Passwords are supported, without complexity requirements and with an 8 character minimum.

**References:**

1. CCE-32937-5

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.2.17 (BL) Ensure 'Require additional authentication at startup' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to configure whether BitLocker requires additional authentication each time the computer starts and whether you are using BitLocker with or without a Trusted Platform Module (TPM). This policy setting is applied when you turn on BitLocker.

**Note:** Only one of the additional authentication options can be required at startup, otherwise a policy error occurs.

If you want to use BitLocker on a computer without a TPM, select the "Allow BitLocker without a compatible TPM" check box. In this mode a USB drive is required for start-up and the key information used to encrypt the drive is stored on the USB drive, creating a USB key. When the USB key is inserted the access to the drive is authenticated and the drive is accessible. If the USB key is lost or unavailable you will need to use one of the BitLocker recovery options to access the drive.

On a computer with a compatible TPM, four types of authentication methods can be used at startup to provide added protection for encrypted data. When the computer starts, it can use only the TPM for authentication, or it can also require insertion of a USB flash drive containing a startup key, the entry of a 4-digit to 20-digit personal identification number (PIN), or both.

Users can configure advanced startup options in the BitLocker setup wizard.

**Note:** If you want to require the use of a startup PIN and a USB flash drive, you must configure BitLocker settings using the command-line tool `manage-bde` instead of the BitLocker Drive Encryption setup wizard.

The recommended state for this setting is: `Enabled`.



**Rationale:**

TPM without use of a PIN will only validate early boot components and does not require a user to enter any additional authentication information. If a computer is lost or stolen in this configuration, BitLocker will not provide any additional measure of protection beyond what is provided by native Windows authentication unless the early boot components are tampered with or the encrypted drive is removed from the machine.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\UseAdvancedStartup
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Require additional authentication at startup
```

**Impact:**

A PIN requires physical presence to restart the computer. This functionality is not compatible with Wake on LAN solutions.

**Default Value:**

Disabled. (Users can configure only basic options on computers with a TPM.)

**References:**

1. CCE-33103-3

**Critical Controls:****16.1 Perform Regular Account Reviews**

Review all system accounts and disable any account that cannot be associated with a business process and owner.

*18.9.11.2.18 (BL) Ensure 'Require additional authentication at startup: Allow BitLocker without a compatible TPM' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to configure whether you can use BitLocker without a Trusted Platform Module (TPM), instead using a password or startup key on a USB flash drive. This policy setting is applied when you turn on BitLocker.

The recommended state for this setting is: `Enabled: False (unchecked)`.

**Rationale:**

TPM without use of a PIN will only validate early boot components and does not require a user to enter any additional authentication information. If a computer is lost or stolen in this configuration, BitLocker will not provide any additional measure of protection beyond what is provided by native Windows authentication unless the early boot components are tampered with or the encrypted drive is removed from the machine.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\EnableBDEWithNoTPM
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Operating System Drives\Require additional authentication at startup: Allow BitLocker without a compatible TPM
```

**Impact:**

A compatible TPM will be required in order to use BitLocker.

**Default Value:**

True (checked). (Users can use BitLocker without a compatible TPM by using a password or startup key on a USB flash drive.)

**References:**

1. CCE-33103-3

**Critical Controls:****16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems**

Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

### 18.9.11.2.19 (BL) Ensure 'Require additional authentication at startup: Configure TPM startup:' is set to 'Enabled: Do not allow TPM' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

This policy setting allows you to configure whether BitLocker requires additional authentication each time the computer starts. This policy setting is applied when you turn on BitLocker.

**Note:** Only one of the additional authentication options can be *required* at startup, otherwise a policy error occurs.

On a computer with a compatible TPM, four types of authentication methods can be used at startup to provide added protection for encrypted data. When the computer starts, it can use only the TPM for authentication, or it can also require insertion of a USB flash drive containing a startup key, the entry of a 4-digit to 20-digit personal identification number (PIN), or both.

The recommended state for this setting is: `Enabled: Do not allow TPM.`

#### Rationale:

TPM without use of a PIN will only validate early boot components and does not require a user to enter any additional authentication information. If a computer is lost or stolen in this configuration, BitLocker will not provide any additional measure of protection beyond what is provided by native Windows authentication unless the early boot components are tampered with or the encrypted drive is removed from the machine.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\UseTPM
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Do not allow TPM:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Require  
additional authentication at startup: Configure TPM startup:
```

**Impact:**

A TPM alone will be insufficient authentication for use with BitLocker.

**Default Value:**

Allow TPM. (A TPM can be used without also requiring a startup PIN or key.)

**References:**

1. CCE-33103-3

**Critical Controls:****16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems**

Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

### 18.9.11.2.20 (BL) Ensure 'Require additional authentication at startup: Configure TPM startup PIN:' is set to 'Enabled: Require startup PIN with TPM' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

This policy setting allows you to configure whether BitLocker requires additional authentication each time the computer starts. This policy setting is applied when you turn on BitLocker.

**Note:** Only one of the additional authentication options can be *required* at startup, otherwise a policy error occurs.

On a computer with a compatible TPM, four types of authentication methods can be used at startup to provide added protection for encrypted data. When the computer starts, it can use only the TPM for authentication, or it can also require insertion of a USB flash drive containing a startup key, the entry of a 4-digit to 20-digit personal identification number (PIN), or both.

The recommended state for this setting is: `Enabled: Require startup PIN with TPM.`

#### Rationale:

TPM without use of a PIN will only validate early boot components and does not require a user to enter any additional authentication information. If a computer is lost or stolen in this configuration, BitLocker will not provide any additional measure of protection beyond what is provided by native Windows authentication unless the early boot components are tampered with or the encrypted drive is removed from the machine.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\UseTPMPIN
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Require startup PIN with TPM:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Require  
additional authentication at startup: Configure TPM startup PIN:
```

## Impact:

A startup PIN will be required in addition to a TPM for BitLocker authentication. A PIN requires physical presence to restart the computer. This functionality is not compatible with Wake on LAN solutions.

## Default Value:

Allow (but not require) a startup PIN with TPM.

## References:

1. CCE-33103-3

## Critical Controls:

16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems  
Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

### 18.9.11.2.21 (BL) Ensure 'Require additional authentication at startup: Configure TPM startup key:' is set to 'Enabled: Do not allow startup key with TPM' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

This policy setting allows you to configure whether BitLocker requires additional authentication each time the computer starts. This policy setting is applied when you turn on BitLocker.

**Note:** Only one of the additional authentication options can be *required* at startup, otherwise a policy error occurs.

On a computer with a compatible TPM, four types of authentication methods can be used at startup to provide added protection for encrypted data. When the computer starts, it can use only the TPM for authentication, or it can also require insertion of a USB flash drive containing a startup key, the entry of a 4-digit to 20-digit personal identification number (PIN), or both.

**Note:** If you want to require the use of a startup PIN and a USB flash drive, you must configure BitLocker settings using the command-line tool `manage-bde` instead of the BitLocker Drive Encryption setup wizard.

The recommended state for this setting is: `Enabled: Do not allow startup key with TPM.`

#### Rationale:

TPM without use of a PIN will only validate early boot components and does not require a user to enter any additional authentication information. If a computer is lost or stolen in this configuration, BitLocker will not provide any additional measure of protection beyond what is provided by native Windows authentication unless the early boot components are tampered with or the encrypted drive is removed from the machine.



**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\UseTPMKey
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Do not allow startup key with TPM:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Require  
additional authentication at startup: Configure TPM startup key:
```

**Impact:**

A TPM and a startup key will not be a permitted combination for BitLocker authentication.

**Default Value:**

Allow startup key with TPM. (A TPM can be used in conjunction with a startup key.)

**References:**

1. CCE-33103-3

**Critical Controls:**

16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems  
Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

### 18.9.11.2.22 (BL) Ensure 'Require additional authentication at startup: Configure TPM startup key and PIN:' is set to 'Enabled: Do not allow startup key and PIN with TPM' (Scored)

#### Profile Applicability:

- Level 1 + BitLocker
- Level 2 + BitLocker

#### Description:

This policy setting allows you to configure whether BitLocker requires additional authentication each time the computer starts. This policy setting is applied when you turn on BitLocker.

**Note:** Only one of the additional authentication options can be *required* at startup, otherwise a policy error occurs.

On a computer with a compatible TPM, four types of authentication methods can be used at startup to provide added protection for encrypted data. When the computer starts, it can use only the TPM for authentication, or it can also require insertion of a USB flash drive containing a startup key, the entry of a 4-digit to 20-digit personal identification number (PIN), or both.

**Note:** If you want to require the use of a startup PIN and a USB flash drive, you must configure BitLocker settings using the command-line tool `manage-bde` instead of the BitLocker Drive Encryption setup wizard.

The recommended state for this setting is: `Enabled: Do not allow startup key and PIN with TPM.`

#### Rationale:

TPM without use of a PIN will only validate early boot components and does not require a user to enter any additional authentication information. If a computer is lost or stolen in this configuration, BitLocker will not provide any additional measure of protection beyond what is provided by native Windows authentication unless the early boot components are tampered with or the encrypted drive is removed from the machine.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\UseTPMKeyPIN
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Do not allow startup key and PIN with TPM:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Operating System Drives\Require  
additional authentication at startup: Configure TPM startup key and PIN:
```

**Impact:**

A TPM, PIN *and* startup key will not be a permitted combination for BitLocker authentication. A PIN requires physical presence to restart the computer. This functionality is not compatible with Wake on LAN solutions.

**Default Value:**

Allow startup key and PIN with TPM. (A TPM can be used in conjunction with both a PIN *and* startup key.)

**References:**

1. CCE-33103-3

**Critical Controls:**

16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems  
Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

### 18.9.11.3 Removable Data Drives

This section contains recommendations for configuring Removable Data Drives in BitLocker.

*18.9.11.3.1 (BL) Ensure 'Allow access to BitLocker-protected removable data drives from earlier versions of Windows' is set to 'Disabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting configures whether or not removable data drives formatted with the FAT file system can be unlocked and viewed on computers running Windows Server 2008, Windows Vista, Windows XP with Service Pack 3 (SP3), or Windows XP with Service Pack 2 (SP2) operating systems.

**Note:** This policy setting does not apply to drives that are formatted with the NTFS file system.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

By default BitLocker virtualizes FAT formatted drives to permit access via the BitLocker To Go Reader on previous versions of Windows. Additionally the BitLocker To Go Reader application is applied to the unencrypted portion of the drive.

The BitLocker To Go Reader application, like any other application, is subject to spoofing and could be a mechanism to propagate malware.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVDiscoveryVolumeType
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Allow access to  
BitLocker-protected removable data drives from earlier versions of Windows
```

## Impact:

Removable data drives formatted with the FAT file system that are BitLocker-protected cannot be unlocked on computers running Windows Server 2008, Windows Vista, Windows XP with SP3 or Windows XP with SP2. Bitlockertogo.exe will not be installed.

## Default Value:

Enabled. (Removable data drives formatted with the FAT file system can be unlocked on computers running Windows Server 2008, Windows Vista, Windows XP with SP3 or Windows XP with SP2, and their content can be viewed. These operating systems will only have read-only access to BitLocker-protected drives.)

## References:

1. CCE-33071-2

## Critical Controls:

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.3.2 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

The "Allow data recovery agent" check box is used to specify whether a data recovery agent can be used with BitLocker-protected removable data drives. Before a data recovery agent can be used it must be added from the Public Key Policies item in either the Group Policy Management Console or the Local Group Policy Editor. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about adding data recovery agents.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

Select "Omit recovery options from the BitLocker setup wizard" to prevent users from specifying recovery options when they enable BitLocker on a drive. This means that you will not be able to specify which recovery option to use when you enable BitLocker, instead BitLocker recovery options for the drive are determined by the policy setting.

In "Save BitLocker recovery information to Active Directory Domain Services" choose which BitLocker recovery information to store in AD DS for removable data drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. If you select "Backup recovery password only" only the recovery password is stored in AD DS.

Select the "Do not enable BitLocker until recovery information is stored in AD DS for removable data drives" check box if you want to prevent users from enabling BitLocker unless the computer is connected to the domain and the backup of BitLocker recovery information to AD DS succeeds.

**Note:** If the "Do not enable BitLocker until recovery information is stored in AD DS for removable data drives" check box is selected, a recovery password is automatically generated.

The recommended state for this setting is: `Enabled`.

### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVRecovery
```

### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Choose how  
BitLocker-protected removable drives can be recovered
```

### **Impact:**

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

### **Default Value:**

Disabled. (The default recovery options are supported for BitLocker recovery - a DRA is allowed, and the recovery options can be specified by the user including the recovery password and recovery key, and recovery information is not backed up to AD DS.)

### **References:**

1. CCE-35704-6

## **Critical Controls:**

### **10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### **13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



### *18.9.11.3.3 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Allow data recovery agent' is set to 'Enabled: True' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

The "Allow data recovery agent" check box is used to specify whether a data recovery agent can be used with BitLocker-protected removable data drives. Before a data recovery agent can be used it must be added from the Public Key Policies item in either the Group Policy Management Console or the Local Group Policy Editor. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about adding data recovery agents.

The recommended state for this setting is: `Enabled: True` (checked).

#### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVManageDRA
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Choose how  
BitLocker-protected removable drives can be recovered: Allow data recovery  
agent
```

## Impact:

None - this is the default configuration.

## Default Value:

Enabled: True. (A DRA is allowed.)

## References:

1. CCE-35704-6

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.3.4 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Recovery Password' is set to 'Enabled: Do not allow 48-digit recovery password' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

The recommended state for this setting is: `Enabled: Do not allow 48-digit recovery password`.

#### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVRecoveryPassword
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Do not allow 48-digit recovery password:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Choose how  
BitLocker-protected removable drives can be recovered: Recovery Password
```

**Impact:**

A 48-digit recovery password will not be permitted for removable drives.

**Default Value:**

Recovery options are specified by the user.

**References:**

1. CCE-35704-6

### *18.9.11.3.5 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Recovery Key' is set to 'Enabled: Do not allow 256-bit recovery key' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Configure user storage of BitLocker recovery information" select whether users are allowed, required, or not allowed to generate a 48-digit recovery password or a 256-bit recovery key.

The recommended state for this setting is: `Enabled: Do not allow 256-bit recovery key`.

#### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVRecoveryKey
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

Do not allow 256-bit recovery key:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Choose how  
BitLocker-protected removable drives can be recovered: Recovery Key
```

## Impact:

A 256-bit recovery key will not be permitted for removable drives.

## Default Value:

Recovery options are specified by the user.

## References:

1. CCE-35704-6

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.3.6 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Omit recovery options from the BitLocker setup wizard' is set to 'Enabled: True' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

Select "Omit recovery options from the BitLocker setup wizard" to prevent users from specifying recovery options when they enable BitLocker on a drive. This means that you will not be able to specify which recovery option to use when you enable BitLocker, instead BitLocker recovery options for the drive are determined by the policy setting.

The recommended state for this setting is: `Enabled: True` (checked).

#### **Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVHideRecoveryPage
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: True` (checked):

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Choose how  
BitLocker-protected removable drives can be recovered: Omit recovery options  
from the BitLocker setup wizard
```

## Impact:

The ability to manually select recovery options for removable drives will not be presented to the user in the BitLocker setup wizard.

## Default Value:

Recovery options for removable drives are selectable by the user in the BitLocker setup wizard.

## References:

1. CCE-35704-6

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



*18.9.11.3.7 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Save BitLocker recovery information to AD DS for removable data drives' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Save BitLocker recovery information to Active Directory Domain Services" choose which BitLocker recovery information to store in AD DS for removable data drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. If you select "Backup recovery password only" only the recovery password is stored in AD DS.

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

`HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVActiveDirectoryBackup`

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Removable Data Drives\Choose how  
BitLocker-protected removable drives can be recovered: Save BitLocker  
recovery information to AD DS for removable data drives
```

**Impact:**

None - this is the default configuration.

**Default Value:**

BitLocker recovery information for removable drives is not backed up to AD DS.

**References:**

1. CCE-35704-6

**Critical Controls:****10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

**13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.3.8 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Configure storage of BitLocker recovery information to AD DS:' is set to 'Enabled: Backup recovery passwords and key packages' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

In "Save BitLocker recovery information to Active Directory Domain Services" choose which BitLocker recovery information to store in AD DS for removable data drives. If you select "Backup recovery password and key package", both the BitLocker recovery password and key package are stored in AD DS. If you select "Backup recovery password only" only the recovery password is stored in AD DS.

The recommended state for this setting is: `Enabled: Backup recovery passwords and key packages.`

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVActiveDirectoryInfoToStore
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
Backup recovery passwords and key packages:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Choose how BitLocker-protected removable drives can be recovered: Configure storage of BitLocker recovery information to AD DS:
```

## Impact:

None - this value is ignored when the checkbox above it (Save BitLocker recovery information to AD DS for removable data drives) is False (unchecked), as is required in 18.9.11.3.7. If that checkbox **is** set to True (checked), both recovery passwords and key packages for removable drives will be saved to AD DS.

## Default Value:

BitLocker recovery information for removable drives is not backed up to AD DS.

## References:

1. CCE-35704-6

## Critical Controls:

### 10.3 Properly Protect Backups

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.3.9 (BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for removable data drives' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to control how BitLocker-protected removable data drives are recovered in the absence of the required credentials. This policy setting is applied when you turn on BitLocker.

Select the "Do not enable BitLocker until recovery information is stored in AD DS for removable data drives" check box if you want to prevent users from enabling BitLocker unless the computer is connected to the domain and the backup of BitLocker recovery information to AD DS succeeds.

**Note:** If the "Do not enable BitLocker until recovery information is stored in AD DS for removable data drives" check box is selected, a recovery password is automatically generated.

The recommended state for this setting is: `Enabled: False (unchecked)`.

**Rationale:**

Administrators should always have a safe, secure way to access encrypted data in the event users cannot access their data.

Additionally, as with any authentication method, a drive can be compromised by guessing or finding the authentication information used to access the drive.

To use BitLocker a Data Recovery Agent will need to be configured for removable drives. To recover a drive will require highly-controlled access to the Data Recovery Agent private key.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVRequireActiveDirectoryBackup
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False (unchecked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Choose how BitLocker-protected removable drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for removable data drives
```

**Impact:**

None - this is the default configuration.

**Default Value:**

BitLocker can be enabled on removable drives without the requirement of storing recovery information to Active Directory first.

**References:**

1. CCE-35704-6

**Critical Controls:****10.3 Properly Protect Backups**

Ensure that backups are properly protected via physical security or encryption when they are stored, as well as when they are moved across the network. This includes remote backups and cloud services.

**13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.3.10 (BL) Ensure 'Configure use of hardware-based encryption for removable data drives' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on removable data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVHardwareEncryption
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of hardware-based encryption for removable data drives
```

**Impact:**

Hardware-based encryption can improve performance of both read and write operations to the storage drive.

**Default Value:**

BitLocker will use hardware-based encryption with the encryption algorithm set for removable drives. If hardware-based encryption is not available, BitLocker software-based encryption will be used instead.

**References:**

1. CCE-35540-4

**Critical Controls:**

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



*18.9.11.3.11 (BL) Ensure 'Configure use of hardware-based encryption for removable data drives: Use BitLocker software-based encryption when hardware encryption is not available' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on removable data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

If hardware-based encryption is not available BitLocker software-based encryption will be used instead.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVAllowSoftwareEncryptionFailover
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: True (checked)`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of hardware-based encryption for removable data drives: Use BitLocker software-based encryption when hardware encryption is not available
```

**Impact:**

None - this is the default configuration.

**Default Value:**

If hardware-based encryption is not available on removable drives, BitLocker software-based encryption will be used instead.

**References:**

1. CCE-35540-4

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.3.12 (BL) Ensure 'Configure use of hardware-based encryption for removable data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on removable data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVRestrictHardwareEncryptionAlgorithms
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False` (unchecked):

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of hardware-based encryption for removable data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Encryption algorithms and cipher suites are not restricted for hardware-based encryption on removable drives.

**References:**

1. CCE-35540-4

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

*18.9.11.3.13 (BL) Ensure 'Configure use of hardware-based encryption for removable data drives: Restrict crypto algorithms or cipher suites to the following:' is set to 'Enabled':*

*2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to manage BitLocker's use of hardware-based encryption on removable data drives and specify which encryption algorithms it can use with hardware-based encryption. Using hardware-based encryption can improve performance of drive operations that involve frequent reading or writing of data to the drive.

You can specify additional options that control whether BitLocker software-based encryption is used instead of hardware-based encryption on computers that do not support hardware-based encryption and whether you want to restrict the encryption algorithms and cipher suites used with hardware-based encryption.

**Note:** The "Choose drive encryption method and cipher strength" policy setting does not apply to hardware-based encryption. The encryption algorithm used by hardware-based encryption is set when the drive is partitioned. By default, BitLocker uses the algorithm configured on the drive to encrypt the drive. The "Restrict encryption algorithms and cipher suites allowed for hardware-based encryption" option enables you to restrict the encryption algorithms that BitLocker can use with hardware encryption. If the algorithm set for the drive is not available, BitLocker will disable the use of hardware-based encryption.

Encryption algorithms are specified by object identifiers (OID). For example: - AES 128 in CBC mode OID: 2.16.840.1.101.3.4.1.2 - AES 256 in CBC mode OID: 2.16.840.1.101.3.4.1.42

The recommended state for this setting is: `Enabled:`

`2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42.`

## Rationale:

From a strict security perspective the hardware-based encryption may offer the same, greater, or less protection than what is provided by BitLocker's software-based encryption depending on how the algorithms and key lengths compare.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVAllowedHardwareEncryptionAlgorithms
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of hardware-based encryption for removable data drives: Restrict crypto algorithms or cipher suites to the following:
```

## Impact:

None - this value is ignored when the checkbox above it (*Restrict encryption algorithms and cipher suites allowed for hardware-based encryption*) is False (unchecked), as required in 18.9.11.3.12. If that checkbox is **set** to True (checked), then the encryption algorithms permitted on removable drives would be restricted to the specified object identifiers (OIDs).

## Default Value:

Encryption algorithms and cipher suites are not restricted for hardware-based encryption on removable drives.

## References:

1. CCE-35540-4

## Critical Controls:

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### *18.9.11.3.14 (BL) Ensure 'Configure use of passwords for removable data drives' is set to 'Disabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to specify whether a password is required to unlock BitLocker-protected removable data drives.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a drive. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

Using a dictionary-style attack, passwords can be guessed or discovered by repeatedly attempting to unlock a drive. Since this type of BitLocker password does not include anti-dictionary attack protections provided by a TPM, for example, there is no mechanism to slow down use of rapid brute-force attacks against them.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVPassphrase
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of passwords for removable data drives
```

#### **Impact:**

The password option will not be available when configuring BitLocker for removable drives.

**Default Value:**

Passwords are supported, without complexity requirements and with an 8 character minimum.

**References:**

1. CCE-33075-3

**Critical Controls:****13.2 Deploy Hard Drive Encryption Software**

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.



### *18.9.11.3.15 (BL) Ensure 'Configure use of smart cards on removable data drives' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting specifies whether smart cards can be used to authenticate user access to BitLocker-protected removable data drives on a computer.

Smart cards can be used to authenticate user access to the drive. You can require smart card authentication by selecting the "Require use of smart cards on removable data drives" check box.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a volume. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

A drive can be compromised by guessing or finding the authentication information used to access the drive. For example, a password could be guessed, or a drive set to automatically unlock could be lost or stolen with the computer it automatically unlocks with.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVAllowUserCert
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of smart cards on removable data drives
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled. (Users are allowed to use smart cards to authenticate their access to BitLocker-protected removable data drives.)

**References:**

1. CCE-35705-3

**Critical Controls:**

16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems  
Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

*18.9.11.3.16 (BL) Ensure 'Configure use of smart cards on removable data drives: Require use of smart cards on removable data drives' is set to 'Enabled: True' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting specifies whether smart cards *must* be used to authenticate user access to BitLocker-protected removable data drives on a computer.

Smart cards can be used to authenticate user access to the drive. You can require smart card authentication by selecting the "Require use of smart cards on removable data drives" check box.

**Note:** This setting is enforced when turning on BitLocker, not when unlocking a volume. BitLocker will allow unlocking a drive with any of the protectors available on the drive.

The recommended state for this setting is: `Enabled: True` (checked).

**Rationale:**

A drive can be compromised by guessing or finding the authentication information used to access the drive. For example, a password could be guessed, or a drive set to automatically unlock could be lost or stolen with the computer it automatically unlocks with.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVEnforceUserCert
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: True (checked):

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Configure use of smart cards on removable data drives: Require use of smart cards on removable data drives
```

## Impact:

Smart cards will be required to authenticate user access to removable data drives. Use of smart cards requires PKI infrastructure. Users will need to authenticate with the smart card to unlock the removable data drive every time they restart the computer.

## Default Value:

Enabled: False (unchecked). (Users are allowed to use smart cards to authenticate their access to BitLocker-protected removable data drives, but it is not required.)

## References:

1. CCE-35705-3

## Critical Controls:

16.11 Use Multi-factor Authentication For Accounts Accessing Sensitive Data Or Systems  
Require multi-factor authentication for all user accounts that have access to sensitive data or systems. Multi-factor authentication can be achieved using smart cards, certificates, One Time Password (OTP) tokens, or biometrics.

### *18.9.11.3.17 (BL) Ensure 'Deny write access to removable drives not protected by BitLocker' is set to 'Enabled' (Scored)*

#### **Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

#### **Description:**

This policy setting configures whether BitLocker protection is required for a computer to be able to write data to a removable data drive.

All removable data drives that are not BitLocker-protected will be mounted as read-only. If the drive is protected by BitLocker, it will be mounted with read and write access.

The recommended state for this setting is: `Enabled`.

#### **Rationale:**

Users may not voluntarily encrypt removable drives prior to saving important data to the drive.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\Microsoft\FVE\RDVDenyWriteAccess
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Deny write access to removable drives not protected by BitLocker
```

#### **Impact:**

All removable data drives that are not BitLocker-protected will be mounted as read-only. If the drive is protected by BitLocker, it will be mounted with read and write access.

**Default Value:**

Disabled. (All removable data drives on the computer will be mounted with read and write access.)

**References:**

1. CCE-33077-9

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.

*18.9.11.3.18 (BL) Ensure 'Deny write access to removable drives not protected by BitLocker: Do not allow write access to devices configured in another organization' is set to 'Enabled: False' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting configures whether the computer will be able to write data to BitLocker-protected removable drives that were configured in another organization.

The recommended state for this setting is: `Enabled: False` (unchecked).

**Rationale:**

Restricting write access to BitLocker-protected removable drives that were configured in another organization can hinder legitimate business operations where encrypted data sharing is necessary.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE\RDVDenyCrossOrg
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled: False` (unchecked):

```
Computer Configuration\Policies\Administrative Templates\Windows Components\BitLocker Drive Encryption\Removable Data Drives\Deny write access to removable drives not protected by BitLocker: Do not allow write access to devices configured in another organization
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Enabled: False (unchecked). (Write access will be permitted to BitLocker-protected removable drives that were configured in another organization.)

**References:**

1. CCE-33077-9

**Critical Controls:****13.5 Disable Write Capabilities To USB Devices**

If there is no business need for supporting such devices, configure systems so that they will not write data to USB tokens or USB hard drives. If such devices are required, enterprise software should be used that can configure systems to allow only specific USB devices (based on serial number or other unique property) to be accessed, and that can automatically encrypt all data placed on such devices. An inventory of all authorized devices must be maintained.



*18.9.11.4 (BL) Ensure 'Choose drive encryption method and cipher strength (Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, Windows 10 [Version 1507])' is set to 'Enabled: AES 256-bit' (Scored)*

**Profile Applicability:**

- Level 1 + BitLocker
- Level 2 + BitLocker

**Description:**

This policy setting allows you to configure the algorithm and cipher strength used by BitLocker Drive Encryption. This policy setting is applied when you turn on BitLocker. Changing the encryption method has no effect if the drive is already encrypted or if encryption is in progress. Consult the BitLocker Drive Encryption Deployment Guide on Microsoft TechNet for more information about the encryption methods available. This policy is only applicable to computers running Windows 8 through Windows 10 (Release 1507).

The recommended state for this setting is: `Enabled: AES 256-bit`.

**Rationale:**

The use of the AES 128-bit encryption method is likely to be strong enough for the majority of applications, but those requiring the highest level of security may find this setting suboptimal.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\FVE:EncryptionMethodNoDiffuser
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

AES 256-bit:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\BitLocker Drive Encryption\Choose drive encryption method and  
cipher strength (Windows 8, Windows Server 2012, Windows 8.1, Windows Server  
2012 R2, Windows 10 [Version 1507])
```

## Impact:

Using AES 256-bit will not significantly impact initial encryption speed and overall computer performance in most cases.

## Default Value:

Disabled. (BitLocker will use the default encryption method of AES 128-bit or the encryption method specified by the setup script.)

## References:

1. CCE-32952-4

## Critical Controls:

### 13.2 Deploy Hard Drive Encryption Software

Deploy approved hard drive encryption software to mobile devices and systems that hold sensitive data.

### ***18.9.12 Camera***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `Camera.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***18.9.13 Cloud Content***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.14 Connect***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WirelessDisplay.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

## 18.9.15 Credential User Interface

This section contains recommendations related to the Credential User Interface.

### 18.9.15.1 (L1) Ensure 'Do not display the password reveal button' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to configure the display of the password reveal button in password entry user experiences.

The recommended state for this setting is: `Enabled`.

#### Rationale:

This is a useful feature when entering a long and complex password, especially when using a touchscreen. The potential risk is that someone else may see your password while surreptitiously observing your screen.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\CredUI:DisablePasswordReveal
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Credential User Interface\Do not display the password reveal button
```

#### Impact:

The password reveal button will not be displayed after a user types a password in the password entry text box.

**Default Value:**

Disabled. (The password reveal button is displayed after a user types a password in the password entry text box. If the user clicks on the button, the typed password is displayed on-screen in plain text.)

**References:**

1. CCE-32965-6

**Critical Controls:**

16 Account Monitoring and Control  
Account Monitoring and Control

## 18.9.15.2 (L1) Ensure 'Enumerate administrator accounts on elevation' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting controls whether administrator accounts are displayed when a user attempts to elevate a running application.

The recommended state for this setting is: `Disabled`.

### Rationale:

Users could see the list of administrator accounts, making it slightly easier for a malicious user who has logged onto a console session to try to crack the passwords of those accounts.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\CredUI:EnumerateAdministrators
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Credential User Interface\Enumerate administrator accounts on elevation
```

### Impact:

None - this is the default configuration.

### Default Value:

Disabled. (Users will be required to always type in a username and password to elevate.)

## References:

1. CCE-35194-0

## Critical Controls:

### 16 Account Monitoring and Control

Account Monitoring and Control

## ***18.9.16 Data Collection and Preview Builds***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.17 Delivery Optimization***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.18 Desktop Gadgets***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.19 Desktop Window Manager***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.20 Device and Driver Compatibility***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.21 Device Registration (formerly Workplace Join)***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WorkplaceJoin.admx/adml` that is included with the Microsoft Windows 10 Administrative Templates.

### ***18.9.22 Digital Locker***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.23 Edge UI***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## 18.9.24 EMET

This section contains recommendations for configuring Microsoft Enhanced Mitigation Experience Toolkit (EMET).

The Group Policy settings contained within this section are provided by the Group Policy template `EMET.admx/adml` that is included with Microsoft EMET.

**Note:** EMET has been reported to be very problematic on 32-bit OSes - we only recommend using it with 64-bit OSes.

**Note #2:** Microsoft has announced that EMET will be End-Of-Life (EOL) on July 31, 2018.

### 18.9.24.1 (L1) Ensure 'EMET 5.51' or higher is installed (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

The Enhanced Mitigation Experience Toolkit (EMET) is free, supported, software developed by Microsoft that allows an enterprise to apply exploit mitigations to applications that run on Windows.

**Note:** EMET has been reported to be very problematic on 32-bit OSes - we only recommend using it with 64-bit OSes.

**Note #2:** Microsoft has announced that EMET will be End-Of-Life (EOL) on July 31, 2018.

#### Rationale:

EMET mitigations help reduce the reliability of exploits that target vulnerable software running on Windows

#### Audit:

Navigate to `Control Panel\Program\Programs and Features` and confirm "EMET 5.51" or higher is listed in the `Name` column.

**Remediation:**

Install EMET 5.51 or higher.

**Critical Controls:****8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

## 18.9.24.2 (L1) Ensure 'Default Action and Mitigation Settings' is set to 'Enabled' (plus subsettings) (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting configures the default action after detection and advanced ROP mitigation.

The recommended state for this setting is:

Default Action and Mitigation Settings - Enabled Deep Hooks - Enabled Anti Detours - Enabled Banned Functions - Enabled Exploit Action -User Configured

### Rationale:

These advanced mitigations for ROP mitigations apply to all configured software in EMET.

**Deep Hooks** protects critical APIs and the subsequent lower level APIs used by the top level critical API. **Anti Detours** renders ineffective exploits that evade hooks by executing a copy of the hooked function prologue and then jump to the function past the prologue.

**Banned Functions** will block calls to `ntdll!LdrHotPatchRoutine` to mitigate potential exploits abusing the API.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:AntiDetours
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:BannedFunctions
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:DeepHooks
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:ExploitAction
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\EMET\Default Action and Mitigation Settings
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (EMET.admx/adml) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

## Default Value:

User configured.

## References:

1. CCE-35473-8

## Critical Controls:

### 8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

### 18.9.24.3 (L1) Ensure 'Default Protections for Internet Explorer' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This settings determine if EMET mitigations are applied to Internet Explorer.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Applying EMET mitigations to Internet Explorer will help reduce the reliability of exploits that target it.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\Defaults\IE
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\EMET\Default Protections for Internet Explorer
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`EMET.admx/adml`) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

#### References:

1. CCE-35474-6

## **Critical Controls:**

### **8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

#### 18.9.24.4 (L1) Ensure 'Default Protections for Popular Software' is set to 'Enabled' (Scored)

##### Profile Applicability:

- Level 1
- Level 1 + BitLocker

##### Description:

This settings determine if EMET mitigations are applied to other popular software.

The recommended state for this setting is: `Enabled`.

##### Rationale:

Applying EMET mitigations to popular software packages will help reduce the reliability of exploits that target them.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by many registry values (for the various popular software that EMET supports) under the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\Defaults
```

##### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\EMET\Default Protections for Popular Software
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`EMET.admx/adml`) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

##### References:

1. CCE-35476-1

## **Critical Controls:**

### **8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.



### 18.9.24.5 (L1) Ensure 'Default Protections for Recommended Software' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This settings determine if recommended EMET mitigations are applied to WordPad, applications that are part of the Microsoft Office suite, Adobe Acrobat, Adobe Reader, and Oracle Java.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Applying EMET mitigations to recommended software will help reduce the reliability of exploits that target them.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by many registry values (for the various recommended software that EMET supports) under the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\Defaults
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\EMET\Default Protections for Recommended Software
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`EMET.admx/adml`) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

#### References:

1. CCE-35479-5

## **Critical Controls:**

### **8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

### 18.9.24.6 (L1) Ensure 'System ASLR' is set to 'Enabled: Application Opt-In' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting determines how applications become enrolled in address space layout randomization (ASLR).

The recommended state for this setting is: Enabled: Application Opt-In.

#### Rationale:

ASLR reduces the predictability of process memory, which in-turn helps reduce the reliability of exploits targeting memory corruption vulnerabilities.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:ASLR
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: Application Opt-In:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\EMET\System ASLR
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (EMET.admx/adml) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

#### References:

1. CCE-35483-7

## **Critical Controls:**

### **8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

## 18.9.24.7 (L1) Ensure 'System DEP' is set to 'Enabled: Application Opt-Out' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting determines how applications become enrolled in data execution protection (DEP).

The recommended state for this setting is: Enabled: Application Opt-Out.

### Rationale:

DEP marks pages of application memory as non-executable, which reduces a given exploit's ability to run attacker-controlled code.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:DEP
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: Application Opt-Out:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\EMET\System DEP
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (EMET.admx/adml) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

### References:

1. CCE-35484-5

## **Critical Controls:**

### **8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

## 18.9.24.8 (L1) Ensure 'System SEHOP' is set to 'Enabled: Application Opt-Out' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting determines how applications become enrolled in structured exception handler overwrite protection (SEHOP).

The recommended state for this setting is: Enabled: Application Opt-Out.

### Rationale:

When a software component suffers from a memory corruption vulnerability, an exploit may be able to overwrite memory that contains data structures that control how the software handles exceptions. By corrupting these structures in a controlled manner, an exploit may be able to execute arbitrary code. SEHOP verifies the integrity of those structures before they are used to handle exceptions, which reduces the reliability of exploits that leverage structured exception handler overwrites.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\EMET\SysSettings:SEHOP
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: Application Opt-Out:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\EMET\System SEHOP
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (EMET.admx/adml) is required - it is included with Microsoft Enhanced Mitigation Experience Toolkit (EMET).

**References:**

1. CCE-35485-2

**Critical Controls:****8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

***18.9.25 Event Forwarding***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## 18.9.26 Event Log Service

This section contains recommendations for configuring the Event Log Service.

### 18.9.26.1 Application

This section contains recommendations for configuring the Application Event Log.

#### 18.9.26.1.1 (L1) Ensure 'Application: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)

##### Profile Applicability:

- Level 1
- Level 1 + BitLocker

##### Description:

This policy setting controls Event Log behavior when the log file reaches its maximum size.

The recommended state for this setting is: `Disabled`.

**Note:** Old events may or may not be retained according to the "Backup log automatically when full" policy setting.

##### Rationale:

If new events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\Application:Retention
```

**Remediation:**

To establish the recommended configuration via GP, set the following Group Policy setting to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Event Log Service\Application\Control Event Log behavior when the  
log file reaches its maximum size
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (When a log file reaches its maximum size, new events overwrite old events.)

**References:**

1. CCE-34169-3

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

## 18.9.26.1.2 (L1) Ensure 'Application: Specify the maximum log file size (KB)' is set to 'Enabled: 32,768 or greater' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting specifies the maximum size of the log file in kilobytes. The maximum log file size can be configured between 1 megabyte (1,024 kilobytes) and 2 terabytes (2,147,483,647 kilobytes) in kilobyte increments.

The recommended state for this setting is: Enabled: 32,768 or greater.

### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\Application:MaxSize
```

### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled: 32,768 or greater:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\Application\Specify the maximum log file size (KB)
```

**Impact:**

When event logs fill to capacity, they will stop recording information unless the retention method for each is set so that the computer will overwrite the oldest entries with the most recent ones. To mitigate the risk of loss of recent data, you can configure the retention method so that older events are overwritten as needed.

The consequence of this configuration is that older events will be removed from the logs. Attackers can take advantage of such a configuration, because they can generate a large number of extraneous events to overwrite any evidence of their attack. These risks can be somewhat reduced if you automate the archival and backup of event log data.

Ideally, all specifically monitored events should be sent to a server that uses Microsoft System Center Operations Manager (SCOM) or some other automated monitoring tool. Such a configuration is particularly important because an attacker who successfully compromises a server could clear the Security log. If all events are sent to a monitoring server, then you will be able to gather forensic information about the attacker's activities.

**Default Value:**

Disabled. (The default log size is 20,480 KB - this value can be changed by the local administrator using the Log Properties dialog.)

**References:**

1. CCE-33975-4

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

## 18.9.26.2 Security

This section contains recommendations for configuring the Security Event Log.

### 18.9.26.2.1 (L1) Ensure 'Security: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls Event Log behavior when the log file reaches its maximum size.

The recommended state for this setting is: Disabled.

**Note:** Old events may or may not be retained according to the "Backup log automatically when full" policy setting.

#### Rationale:

If new events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\Security:Retention
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\Security\Control Event Log behavior when the log file reaches its maximum size
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (When a log file reaches its maximum size, new events overwrite old events.)

**References:**

1. CCE-35090-0

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

## 18.9.26.2.2 (L1) Ensure 'Security: Specify the maximum log file size (KB)' is set to 'Enabled: 196,608 or greater' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting specifies the maximum size of the log file in kilobytes. The maximum log file size can be configured between 1 megabyte (1,024 kilobytes) and 2 terabytes (2,147,483,647 kilobytes) in kilobyte increments.

The recommended state for this setting is: Enabled: 196,608 or greater.

### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\Security:MaxSize
```

### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled: 196,608 or greater:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\Security\Specify the maximum log file size (KB)
```

**Impact:**

When event logs fill to capacity, they will stop recording information unless the retention method for each is set so that the computer will overwrite the oldest entries with the most recent ones. To mitigate the risk of loss of recent data, you can configure the retention method so that older events are overwritten as needed.

The consequence of this configuration is that older events will be removed from the logs. Attackers can take advantage of such a configuration, because they can generate a large number of extraneous events to overwrite any evidence of their attack. These risks can be somewhat reduced if you automate the archival and backup of event log data.

Ideally, all specifically monitored events should be sent to a server that uses Microsoft System Center Operations Manager (SCOM) or some other automated monitoring tool. Such a configuration is particularly important because an attacker who successfully compromises a server could clear the Security log. If all events are sent to a monitoring server, then you will be able to gather forensic information about the attacker's activities.

**Default Value:**

Disabled. (The default log size is 20,480 KB - this value can be changed by the local administrator using the Log Properties dialog.)

**References:**

1. CCE-33428-4

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.



## 18.9.26.3 Setup

This section contains recommendations for configuring the Setup Event Log.

### 18.9.26.3.1 (L1) Ensure 'Setup: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls Event Log behavior when the log file reaches its maximum size.

The recommended state for this setting is: Disabled.

**Note:** Old events may or may not be retained according to the "Backup log automatically when full" policy setting.

#### Rationale:

If new events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\Setup:Retention
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\Setup\Control Event Log behavior when the log file reaches its maximum size
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (When a log file reaches its maximum size, new events overwrite old events.)

**References:**

1. CCE-34170-1

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

### 18.9.26.3.2 (L1) Ensure 'Setup: Specify the maximum log file size (KB)' is set to 'Enabled: 32,768 or greater' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting specifies the maximum size of the log file in kilobytes. The maximum log file size can be configured between 1 megabyte (1,024 kilobytes) and 2 terabytes (2,147,483,647 kilobytes) in kilobyte increments.

The recommended state for this setting is: Enabled: 32,768 or greater.

#### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\Setup:MaxSize
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled: 32,768 or greater:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\Setup\Specify the maximum log file size (KB)
```

**Impact:**

When event logs fill to capacity, they will stop recording information unless the retention method for each is set so that the computer will overwrite the oldest entries with the most recent ones. To mitigate the risk of loss of recent data, you can configure the retention method so that older events are overwritten as needed.

The consequence of this configuration is that older events will be removed from the logs. Attackers can take advantage of such a configuration, because they can generate a large number of extraneous events to overwrite any evidence of their attack. These risks can be somewhat reduced if you automate the archival and backup of event log data.

Ideally, all specifically monitored events should be sent to a server that uses Microsoft System Center Operations Manager (SCOM) or some other automated monitoring tool. Such a configuration is particularly important because an attacker who successfully compromises a server could clear the Security log. If all events are sent to a monitoring server, then you will be able to gather forensic information about the attacker's activities.

**Default Value:**

Disabled. (The default log size is 20,480 KB - this value can be changed by the local administrator using the Log Properties dialog.)

**References:**

1. CCE-35091-8

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

## 18.9.26.4 System

This section contains recommendations for configuring the System Event Log.

### 18.9.26.4.1 (L1) Ensure 'System: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls Event Log behavior when the log file reaches its maximum size.

The recommended state for this setting is: `Disabled`.

**Note:** Old events may or may not be retained according to the "Backup log automatically when full" policy setting.

#### Rationale:

If new events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\System:Retention
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\System\Control Event Log behavior when the log file reaches its maximum size
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (When a log file reaches its maximum size, new events overwrite old events.)

**References:**

1. CCE-33729-5

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.

## 18.9.26.4.2 (L1) Ensure 'System: Specify the maximum log file size (KB)' is set to 'Enabled: 32,768 or greater' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting specifies the maximum size of the log file in kilobytes. The maximum log file size can be configured between 1 megabyte (1,024 kilobytes) and 2 terabytes (2,147,483,647 kilobytes) in kilobyte increments.

The recommended state for this setting is: Enabled: 32,768 or greater.

### Rationale:

If events are not recorded it may be difficult or impossible to determine the root cause of system problems or the unauthorized activities of malicious users

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\EventLog\System:MaxSize
```

### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled: 32,768 or greater:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Event Log Service\System\Specify the maximum log file size (KB)
```

**Impact:**

When event logs fill to capacity, they will stop recording information unless the retention method for each is set so that the computer will overwrite the oldest entries with the most recent ones. To mitigate the risk of loss of recent data, you can configure the retention method so that older events are overwritten as needed.

The consequence of this configuration is that older events will be removed from the logs. Attackers can take advantage of such a configuration, because they can generate a large number of extraneous events to overwrite any evidence of their attack. These risks can be somewhat reduced if you automate the archival and backup of event log data.

Ideally, all specifically monitored events should be sent to a server that uses Microsoft System Center Operations Manager (SCOM) or some other automated monitoring tool. Such a configuration is particularly important because an attacker who successfully compromises a server could clear the Security log. If all events are sent to a monitoring server, then you will be able to gather forensic information about the attacker's activities.

**Default Value:**

Disabled. (The default log size is 20,480 KB - this value can be changed by the local administrator using the Log Properties dialog.)

**References:**

1. CCE-35288-0

**Critical Controls:****6.3 Ensure Audit Logging Systems Are Not Subject To Loss (i.e. rotation/archive)**

Ensure that all systems that store logs have adequate storage space for the logs generated on a regular basis, so that log files will not fill up between log rotation intervals. The logs must be archived and digitally signed on a periodic basis.



### ***18.9.27 Event Logging***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `eventlogging.admx/adml` that is included with the Microsoft Windows 10 Administrative Templates.

### ***18.9.28 Event Viewer***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.29 Family Safety***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **18.9.30 File Explorer**

This section contains recommendations to control the availability of options such as menu items and tabs in dialog boxes.

### **18.9.30.1 Previous Versions**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.9.30.2 (L1) Ensure 'Configure Windows SmartScreen' is set to 'Enabled: Require approval from an administrator before running downloaded unknown software' (Scored)**

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting allows you to manage the behavior of Windows SmartScreen. Windows SmartScreen helps keep PCs safer by warning users before running unrecognized programs downloaded from the Internet. Some information is sent to Microsoft about files and programs run on PCs with this feature enabled.

Windows SmartScreen behavior may be controlled by setting one of the following options:

- Require approval from an administrator before running downloaded unknown software
- Give user a warning before running downloaded unknown software
- Turn off SmartScreen

The recommended state for this setting is: `Enabled: Require approval from an administrator before running downloaded unknown software.`

## Rationale:

Windows SmartScreen helps keep PCs safer by warning users before running unrecognized programs downloaded from the Internet. However, due to the fact that some information is sent to Microsoft about files and programs run on PCs some organizations may prefer to disable it.

## Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\System:EnableSmartScreen
```

## Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled: Require approval from an administrator before running downloaded unknown software:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\File Explorer\Configure Windows SmartScreen
```

## Impact:

Only administrators will be able to run unrecognized programs downloaded from the Internet. If users with a standard account try, they won't be able to unless they get an administrator to authorize it.

## Default Value:

Disabled. (Windows SmartScreen behavior is managed by administrators on the PC by using Windows SmartScreen Settings in Action Center.)

## References:

1. CCE-34026-5

## Critical Controls:

2 [Inventory of Authorized and Unauthorized Software](#)  
Inventory of Authorized and Unauthorized Software

### 18.9.30.3 (L1) Ensure 'Turn off Data Execution Prevention for Explorer' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Disabling data execution prevention can allow certain legacy plug-in applications to function without terminating Explorer.

The recommended state for this setting is: `Disabled`.

**Note:** Some legacy plug-in applications and other software may not function with Data Execution Prevention and will require an exception to be defined for that specific plug-in/software.

#### Rationale:

Data Execution Prevention is an important security feature supported by Explorer that helps to limit the impact of certain types of malware.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Explorer:NoDataExecutionPrevention
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\File Explorer\Turn off Data Execution Prevention for Explorer
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Disabled. (Data Execution Prevention will block certain types of malware from exploiting Explorer.)

**References:**

1. CCE-33608-1

**Critical Controls:****8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

### 18.9.30.4 (L1) Ensure 'Turn off heap termination on corruption' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Without heap termination on corruption, legacy plug-in applications may continue to function when a File Explorer session has become corrupt. Ensuring that heap termination on corruption is active will prevent this.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Allowing an application to function after its session has become corrupt increases the risk posture to the system.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Explorer:NoHeapTerminationOnCorruption
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\File Explorer\Turn off heap termination on corruption
```

#### Impact:

None - this is the default configuration.

#### Default Value:

Disabled. (Heap termination on corruption is enabled.)

**References:**

1. CCE-33745-1

**Critical Controls:****8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

### 18.9.30.5 (L1) Ensure 'Turn off shell protocol protected mode' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to configure the amount of functionality that the shell protocol can have. When using the full functionality of this protocol applications can open folders and launch files. The protected mode reduces the functionality of this protocol allowing applications to only open a limited set of folders. Applications are not able to open files with this protocol when it is in the protected mode. It is recommended to leave this protocol in the protected mode to increase the security of Windows.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Limiting the opening of files and folders to a limited set reduces the attack surface of the system.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:PreXPSP2ShellProtocolBehavior
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\File Explorer\Turn off shell protocol protected mode
```

#### Impact:

None - this is the default configuration.



**Default Value:**

Disabled. (The protocol is in the protected mode, allowing applications to only open a limited set of folders.)

**References:**

1. CCE-33764-2

**Critical Controls:****8.4 Enable Anti-exploitation Features (i.e. DEP, ASLR, EMET)**

Enable anti-exploitation features such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), virtualization/containerization, etc. For increased protection, deploy capabilities such as Enhanced Mitigation Experience Toolkit (EMET) that can be configured to apply these protections to a broader set of applications and executables.

***18.9.31 File History***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.32 Game Explorer***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.33 HomeGroup

This section contains recommendations related to the HomeGroup feature, which is available in Windows 7 and later workstation versions.

### 18.9.33.1 (L1) Ensure 'Prevent the computer from joining a homegroup' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

By default, users can add their computer to a HomeGroup on a home network.

The recommended state for this setting is: `Enabled`.

#### Rationale:

While resources on a domain-joined computer cannot be shared with a HomeGroup, information from the domain-joined computer can be leaked to other computers in the HomeGroup.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\HomeGroup\DisableHomeGroup
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\HomeGroup\Prevent the computer from joining a homegroup
```

**Impact:**

A user on this computer will not be able to add this computer to a HomeGroup. This setting does not affect other network sharing features. Mobile users who access printers and other shared devices on their home networks will not be able to leverage the ease of use provided by HomeGroup functionality.

**Default Value:**

Disabled. (A user can add their computer to a HomeGroup. However, data on a domain-joined computer is not shared with the HomeGroup.)

**References:**

1. CCE-34776-5

**Critical Controls:****14.1 Implement Network Segmentation Based On Information Class**

Segment the network based on the label or classification level of the information stored on the servers. Locate all sensitive information on separated VLANs with firewall filtering to ensure that only authorized individuals are only able to communicate with systems necessary to fulfill their specific responsibilities.

***18.9.34 Import Video***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `CaptureWizard.admx/adml` that is included with the Microsoft Windows Vista & 2008 Administrative Templates.

***18.9.35 Internet Explorer***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.36 Internet Information Services***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.37 Location and Sensors

This section contains settings for Locations and Sensors.

### 18.9.37.1 (L2) Ensure 'Turn off location' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting turns off the location feature for the computer.

The recommended state for this setting is: `Enabled`.

#### Rationale:

This setting affects the location feature (e.g. GPS or other location tracking). From a security perspective, it's not a good idea to reveal your location to software in most cases, but there are legitimate uses, such as mapping software.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\LocationAndSensors:DisableLocation
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Location and Sensors\Turn off location
```

#### Impact:

The location feature is turned off, and all programs on this computer are prevented from using location information from the location feature.

**Default Value:**

Disabled. (Programs on the computer will not be prevented from using location information from the location feature.)

**References:**

1. CCE-33743-6

### ***18.9.38 Maintenance Scheduler***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.39 Maps***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WinMaps.admx/adml` that is included with the Microsoft Windows 10 Release 1511 Administrative Templates.

### ***18.9.40 MDM***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `MDM.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***18.9.41 Microsoft Edge***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.42 Microsoft Secondary Authentication Factor***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `DeviceCredential.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***18.9.43 Microsoft User Experience Virtualization***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `UserExperienceVirtualization.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***18.9.44 NetMeeting***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.45 Network Access Protection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `NAPXPQec.admx/adml` that is included with the Microsoft Windows 2008, 7/2008R2, 8/2012 & 8.1/2012R2 Administrative Templates.

### ***18.9.46 Network Projector***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.47 OneDrive (formerly SkyDrive)

This section contains recommendations related to OneDrive, which was formerly known as SkyDrive.

The Group Policy settings contained within this section are provided by the Group Policy template `SkyDrive.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### 18.9.47.1 (L1) Ensure 'Prevent the usage of OneDrive for file storage' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting lets you prevent apps and features from working with files on OneDrive using the Next Generation Sync Client.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Enabling this setting prevents users from accidentally uploading confidential or sensitive corporate information to the OneDrive cloud service using the Next Generation Sync Client.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\OneDrive:DisableFileSyncNGSC
```

## Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\OneDrive\Prevent the usage of OneDrive for file storage
```

**Note:** This Group Policy path may not exist by default. An additional Group Policy template (SkyDrive.admx/adml) may be required - we strongly recommend you only use the version included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates (or newer). Older versions of the templates had conflicting settings in different template files for both OneDrive & SkyDrive, until it was cleaned up properly in the above version.

## Impact:

Users can't access OneDrive from the OneDrive app and file picker. Windows Store apps can't access OneDrive using the WinRT API. OneDrive doesn't appear in the navigation pane in File Explorer. OneDrive files aren't kept in sync with the cloud. Users can't automatically upload photos and videos from the camera roll folder.

**Note:** If your organization uses Office 365, be aware that this setting will prevent users from saving files to OneDrive/SkyDrive.

## Default Value:

Disabled. (Apps and features can work with OneDrive file storage using the Next Generation Sync Client.)

## References:

1. CCE-33826-9

## Critical Controls:

13 Data Protection  
Data Protection



## 18.9.47.2 (L1) Ensure 'Prevent the usage of OneDrive for file storage on Windows 8.1' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting lets you prevent apps and features from working with files on OneDrive using the legacy OneDrive/SkyDrive client.

The recommended state for this setting is: `Enabled`.

**Note:** Despite the name of this setting, it is applicable to the legacy OneDrive client on any Windows OS.

### Rationale:

Enabling this setting prevents users from accidentally uploading confidential or sensitive corporate information to the OneDrive cloud service using the legacy OneDrive/SkyDrive client.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Skydrive:DisableFileSync
```

## Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\SkyDrive\Prevent the usage of OneDrive for file storage on Windows 8.1
```

**Note:** This Group Policy path may not exist by default. An additional Group Policy template (SkyDrive.admx/adml) may be required - we strongly recommend you only use the version included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates (or newer). Older versions of the templates had conflicting settings in different template files for both OneDrive & SkyDrive, until it was cleaned up properly in the above version.

## Impact:

Users can't access OneDrive from the OneDrive app and file picker. Windows Store apps can't access OneDrive using the WinRT API. OneDrive doesn't appear in the navigation pane in File Explorer. OneDrive files aren't kept in sync with the cloud. Users can't automatically upload photos and videos from the camera roll folder.

**Note:** If your organization uses Office 365, be aware that this setting will prevent users from saving files to OneDrive/SkyDrive.

## Default Value:

Disabled. (Apps and features can work with OneDrive file storage using the legacy OneDrive/SkyDrive client.)

## References:

1. CCE-33826-9

## Critical Controls:

13 Data Protection  
Data Protection

### ***18.9.48 Online Assistance***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.49 Password Synchronization***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `PswdSync.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012 & 8.1/2012R2 Administrative Templates.

### ***18.9.50 Portable Operating System***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.51 Presentation Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.52 Remote Desktop Services (formerly Terminal Services)***

This section contains recommendations related to Remote Desktop Services (formerly Terminal Services).

### ***18.9.52.1 RD Licensing***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.52.2 Remote Desktop Connection Client***

This section contains recommendations for the Remote Desktop Connection Client.

#### ***18.9.52.2.1 RemoteFX USB Device Redirection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

#### ***18.9.52.2.2 (L1) Ensure 'Do not allow passwords to be saved' is set to 'Enabled' (Scored)***

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting helps prevent Remote Desktop Services / Terminal Services clients from saving passwords on a computer.

The recommended state for this setting is: `Enabled`.

**Note:** If this policy setting was previously configured as Disabled or Not configured, any previously saved passwords will be deleted the first time a Terminal Services client disconnects from any server.

**Rationale:**

An attacker with physical access to the computer may be able to break the protection guarding saved passwords. An attacker who compromises a user's account and connects to their computer could use saved passwords to gain access to additional hosts.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:DisablePasswordSaving
```

**Remediation:**

To establish the recommended configuration via GP, set the following Group Policy setting to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Connection Client\Do not  
allow passwords to be saved
```

**Impact:**

The password saving checkbox will be disabled for Remote Desktop Services / Terminal Services clients and users will not be able to save passwords.

**Default Value:**

Disabled. (Users will be able to save passwords using Remote Desktop Connection.)

**References:**

1. CCE-34506-6

**Critical Controls:****16.4 Automatically Log Off Users After Standard Period Of Inactivity**

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.

### ***18.9.52.3 Remote Desktop Session Host***

This section contains recommendations for the Remote Desktop Session Host.

#### ***18.9.52.3.1 Application Compatibility***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

#### ***18.9.52.3.2 Connections***

This section contains recommendations for Connections to the Remote Desktop Session Host.

##### ***18.9.52.3.2.1 (L2) Ensure 'Allow users to connect remotely by using Remote Desktop Services' is set to 'Disabled' (Scored)***

###### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

###### **Description:**

This policy setting allows you to configure remote access to computers by using Remote Desktop Services.

The recommended state for this setting is: `Disabled`.

###### **Rationale:**

Any account with the Allow log on through Remote Desktop Services user right can log on to the remote console of the computer. If you do not restrict access to legitimate users who need to log on to the console of the computer, unauthorized users could download and execute malicious code to elevate their privileges.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal  
Server:fDenyTSConnections
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session  
Host\Connections\Allow users to connect remotely by using Remote Desktop  
Services
```

**Impact:**

None - this is the default configuration, unless Remote Desktop Services has been manually enabled on the Remote tab in the System Properties sheet.

**Default Value:**

Disabled. (Users cannot connect remotely to the target computer by using Remote Desktop Services, unless it has been manually enabled from the Remote tab in the System Properties sheet.)

**References:**

1. CCE-35255-9

### **18.9.52.3.3 Device and Resource Redirection**

This section contains recommendations related to Remote Desktop Session Host Device and Resource Redirection.

#### **18.9.52.3.3.1 (L2) Ensure 'Do not allow COM port redirection' is set to 'Enabled' (Scored)**

##### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

##### **Description:**

This policy setting specifies whether to prevent the redirection of data to client COM ports from the remote computer in a Remote Desktop Services session.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

In a more security-sensitive environment, it is desirable to reduce the possible attack surface. The need for COM port redirection within a Remote Desktop session is very rare, so makes sense to reduce the number of unexpected avenues for data exfiltration and/or malicious code transfer.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal Services:fDisableCcm
```

##### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Device and Resource Redirection\Do not allow COM port redirection
```



**Impact:**

Users in a Remote Desktop Services session will not be able to redirect server data to local (client) COM ports.

**Default Value:**

Disabled. (Remote Desktop Services allows COM port redirection.)

**References:**

1. CCE-34496-0

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

### 18.9.52.3.3.2 (L1) Ensure 'Do not allow drive redirection' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting prevents users from sharing the local drives on their client computers to Terminal Servers that they access. Mapped drives appear in the session folder tree in Windows Explorer in the following format:

```
\\TSCClient\<<driveletter>$
```

If local drives are shared they are left vulnerable to intruders who want to exploit the data that is stored on them.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Data could be forwarded from the user's Terminal Server session to the user's local computer without any direct user interaction. Malicious software already present on a compromised server would have direct and stealthy disk access to the user's local computer during the Remote Desktop session.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fDisableCdm
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session Host\Device and  
Resource Redirection\Do not allow drive redirection
```

**Impact:**

Drive redirection will not be possible. In most situations, traditional network drive mapping to file shares (including administrative shares) performed manually by the connected user will serve as a capable substitute to still allow file transfers when needed.

**Default Value:**

Disabled. (An RD Session Host maps client drives automatically upon connection.)

**References:**

1. CCE-34697-3

**Critical Controls:**

13 Data Protection

Data Protection

### 18.9.52.3.3.3 (L2) Ensure 'Do not allow LPT port redirection' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting specifies whether to prevent the redirection of data to client LPT ports during a Remote Desktop Services session.

The recommended state for this setting is: Enabled.

#### Rationale:

In a more security-sensitive environment, it is desirable to reduce the possible attack surface. The need for LPT port redirection within a Remote Desktop session is very rare, so makes sense to reduce the number of unexpected avenues for data exfiltration and/or malicious code transfer.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fDisableLPT
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session Host\Device and  
Resource Redirection\Do not allow LPT port redirection
```

#### Impact:

Users in a Remote Desktop Services session will not be able to redirect server data to local (client) LPT ports.

**Default Value:**

Disabled. (Remote Desktop Services allows LPT port redirection.)

**References:**

1. CCE-34698-1

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

### 18.9.52.3.3.4 (L2) Ensure 'Do not allow supported Plug and Play device redirection' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting allows you to control the redirection of supported Plug and Play devices, such as Windows Portable Devices, to the remote computer in a Remote Desktop Services session.

The recommended state for this setting is: `Enabled`.

#### Rationale:

In a more security-sensitive environment, it is desirable to reduce the possible attack surface. The need for Plug and Play device redirection within a Remote Desktop session is very rare, so makes sense to reduce the number of unexpected avenues for data exfiltration and/or malicious code transfer.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fDisablePNPRedir
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session Host\Device and  
Resource Redirection\Do not allow supported Plug and Play device redirection
```

#### Impact:

Users in a Remote Desktop Services session will not be able to redirect their supported (local client) Plug and Play devices to the remote computer.

**Default Value:**

Disabled. (Remote Desktop Services allows redirection of supported Plug and Play devices.)

**References:**

1. CCE-34790-6

**Critical Controls:****9.1 Limit Open Ports, Protocols, and Services**

Ensure that only ports, protocols, and services with validated business needs are running on each system.

***18.9.52.3.4 Licensing***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.52.3.5 Printer Redirection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.52.3.6 Profiles***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.52.3.7 RD Connection Broker***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.52.3.8 Remote Session Environment***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.9.52.3.9 Security**

This section contains recommendations related to Remote Desktop Session Host Security.

#### **18.9.52.3.9.1 (L1) Ensure 'Always prompt for password upon connection' is set to 'Enabled' (Scored)**

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting specifies whether Terminal Services always prompts the client computer for a password upon connection. You can use this policy setting to enforce a password prompt for users who log on to Terminal Services, even if they already provided the password in the Remote Desktop Connection client.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

Users have the option to store both their username and password when they create a new Remote Desktop connection shortcut. If the server that runs Terminal Services allows users who have used this feature to log on to the server but not enter their password, then it is possible that an attacker who has gained physical access to the user's computer could connect to a Terminal Server through the Remote Desktop connection shortcut, even though they may not know the user's password.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fPromptForPassword
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session  
Host\Security\Always prompt for password upon connection
```

**Impact:**

Users cannot automatically log on to Terminal Services by supplying their passwords in the Remote Desktop Connection client. They will be prompted for a password to log on.

**Default Value:**

Disabled. (Remote Desktop Services / Terminal Services allows users to automatically log on if they enter a password in the Remote Desktop Connection client.)

**References:**

1. CCE-33960-6

**Critical Controls:****16.14 Encrypt/Hash All Authentication Files And Monitor Their Access**

Verify that all authentication files are encrypted or hashed and that these files cannot be accessed without root or administrator privileges. Audit all access to password files in the system.

### 18.9.52.3.9.2 (L1) Ensure 'Require secure RPC communication' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to specify whether a terminal server requires secure remote procedure call (RPC) communication with all clients or allows unsecured communication.

You can use this policy setting to strengthen the security of RPC communication with clients by allowing only authenticated and encrypted requests.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Allowing unsecure RPC communication can expose the server to man in the middle attacks and data disclosure attacks.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:fEncryptRPCTraffic
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session  
Host\Security\Require secure RPC communication
```

#### Impact:

Remote Desktop Services accepts requests from RPC clients that support secure requests, and does not allow unsecured communication with untrusted clients.

**Default Value:**

Disabled. (Remote Desktop Services always requests security for all RPC traffic. However, unsecured communication is allowed for RPC clients that do not respond to the request.)

**References:**

1. CCE-35723-6

**Critical Controls:****3.4 Use Only Secure Channels For Remote System Administration**

Perform all remote administration of servers, workstation, network devices, and similar equipment over secure channels. Protocols such as telnet, VNC, RDP, or others that do not actively support strong encryption should only be used if they are performed over a secondary encryption channel, such as SSL, TLS or IPSEC.

### 18.9.52.3.9.3 (L1) Ensure 'Set client connection encryption level' is set to 'Enabled: High Level' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting specifies whether to require the use of a specific encryption level to secure communications between client computers and RD Session Host servers during Remote Desktop Protocol (RDP) connections. This policy only applies when you are using native RDP encryption. However, native RDP encryption (as opposed to SSL encryption) is not recommended. This policy does not apply to SSL encryption.

The recommended state for this setting is: Enabled: High Level.

#### Rationale:

If Terminal Server client connections are allowed that use low level encryption, it is more likely that an attacker will be able to decrypt any captured Terminal Services network traffic.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal Services:MinEncryptionLevel
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: High Level:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Security\Set client connection encryption level
```

#### Impact:

None - this is the default configuration.

**Default Value:**

Enabled: High Level. (All communications between clients and RD Session Host servers during remote connections using native RDP encryption must be 128-bit strength. Clients that do not support 128-bit encryption will be unable to establish Terminal Server sessions.)

**References:**

1. CCE-35578-4

**Critical Controls:****3.4 Use Only Secure Channels For Remote System Administration**

Perform all remote administration of servers, workstation, network devices, and similar equipment over secure channels. Protocols such as telnet, VNC, RDP, or others that do not actively support strong encryption should only be used if they are performed over a secondary encryption channel, such as SSL, TLS or IPSEC.

### **18.9.52.3.10 Session Time Limits**

This section contains recommendations related to Remote Desktop Session Host Session Time Limits.

#### **18.9.52.3.10.1 (L2) Ensure 'Set time limit for active but idle Remote Desktop Services sessions' is set to 'Enabled: 15 minutes or less' (Scored)**

##### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

##### **Description:**

This policy setting allows you to specify the maximum amount of time that an active Remote Desktop Services session can be idle (without user input) before it is automatically disconnected.

The recommended state for this setting is: `Enabled: 15 minutes or less.`

##### **Rationale:**

This setting helps to prevent active Remote Desktop sessions from tying up the computer for long periods of time while not in use, preventing computing resources from being consumed by large numbers of inactive sessions. In addition, old, forgotten Remote Desktops session that are still active can cause password lockouts if the user's password has changed but the old session is still running. For systems that limit the number of connected users (e.g. servers in the default Administrative mode - 2 sessions only), other users' old but still active sessions can prevent another user from connecting, resulting in an effective denial of service.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal Services:MaxIdleTime
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:  
15 minutes or less:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session Host\Session Time  
Limits\Set time limit for active but idle Remote Desktop Services sessions
```

**Impact:**

Remote Desktop Services will automatically disconnect active but idle sessions after 15 minutes (or the specified amount of time). The user receives a warning two minutes before the session disconnects, which allows the user to press a key or move the mouse to keep the session active. If you have a console session, idle session time limits do not apply.

**Default Value:**

Disabled. (Remote Desktop Services allows sessions to remain active but idle for an unlimited amount of time.)

**References:**

1. CCE-35595-8

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### 18.9.52.3.10.2 (L2) Ensure 'Set time limit for disconnected sessions' is set to 'Enabled: 1 minute' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting allows you to configure a time limit for disconnected Remote Desktop Services sessions.

The recommended state for this setting is: Enabled: 1 minute.

#### Rationale:

This setting helps to prevent active Remote Desktop sessions from tying up the computer for long periods of time while not in use, preventing computing resources from being consumed by large numbers of disconnected but still active sessions. In addition, old, forgotten Remote Desktops session that are still active can cause password lockouts if the user's password has changed but the old session is still running. For systems that limit the number of connected users (e.g. servers in the default Administrative mode - 2 sessions only), other users' old but still active sessions can prevent another user from connecting, resulting in an effective denial of service. This setting is important to ensure a disconnected session is properly terminated.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal Services:MaxDisconnectionTime
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: 1 minute:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Session Time Limits\Set time limit for disconnected sessions
```



**Impact:**

Disconnected Remote Desktop sessions are deleted from the server after 1 minute. If you have a console session, disconnected session time limits do not apply.

**Default Value:**

Disabled. (Disconnected Remote Desktop sessions are maintained for an unlimited time on the server.)

**References:**

1. CCE-35599-0

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### **18.9.52.3.11 Temporary folders**

This section contains recommendations related to Remote Desktop Session Host Session Temporary folders.

#### **18.9.52.3.11.1 (L1) Ensure 'Do not delete temp folders upon exit' is set to 'Disabled' (Scored)**

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting specifies whether Remote Desktop Services retains a user's per-session temporary folders at logoff.

The recommended state for this setting is: `Disabled`.

##### **Rationale:**

Sensitive information could be contained inside the temporary folders and shared with other administrators that log into the system.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal Services>DeleteTempDirsOnExit
```

##### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Temporary Folders\Do not delete temp folders upon exit
```

##### **Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Temporary folders are deleted when a user logs off.)

**References:**

1. CCE-34136-2

**Critical Controls:****14.4 Protect Information With Access Control Lists**

All information stored on systems shall be protected with file system, network share, claims, application, or database specific access control lists. These controls will enforce the principal that only authorized individuals should have access to the information based on their need to access the information as a part of their responsibilities.

### 18.9.52.3.11.2 (L1) Ensure 'Do not use temporary folders per session' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

By default, Remote Desktop Services creates a separate temporary folder on the RD Session Host server for each active session that a user maintains on the RD Session Host server. The temporary folder is created on the RD Session Host server in a Temp folder under the user's profile folder and is named with the "sessionid." This temporary folder is used to store individual temporary files.

To reclaim disk space, the temporary folder is deleted when the user logs off from a session.

The recommended state for this setting is: Disabled.

#### Rationale:

By Disabling this setting you are keeping the cached data independent for each session, both reducing the chance of problems from shared cached data between sessions, and keeping possibly sensitive data separate to each user session.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Terminal  
Services:PerSessionTempDir
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Remote Desktop Services\Remote Desktop Session Host\Temporary  
Folders\Do not use temporary folders per session
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Per-session temporary folders are created.)

**References:**

1. CCE-34531-4

**Critical Controls:****14.4 Protect Information With Access Control Lists**

All information stored on systems shall be protected with file system, network share, claims, application, or database specific access control lists. These controls will enforce the principal that only authorized individuals should have access to the information based on their need to access the information as a part of their responsibilities.

## 18.9.53 RSS Feeds

This section contains recommendations related to RSS feeds.

### 18.9.53.1 (L1) Ensure 'Prevent downloading of enclosures' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting prevents the user from having enclosures (file attachments) downloaded from a feed to the user's computer.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Allowing attachments to be downloaded through the RSS feed can introduce files that could have malicious intent.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Internet Explorer\Feeds:DisableEnclosureDownload
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\RSS Feeds\Prevent downloading of enclosures
```

#### Impact:

Users cannot set the Feed Sync Engine to download an enclosure through the Feed property page. Developers cannot change the download setting through feed APIs.

**Default Value:**

Disabled. (Users can set the Feed Sync Engine to download an enclosure through the Feed property page. Developers can change the download setting through the Feed APIs.)

**References:**

1. CCE-34822-7

**Critical Controls:****7.2 Uninstall/Disable Unnecessary or Unauthorized Browser Or Email Client Plugins**

Uninstall or disable any unnecessary or unauthorized browser or email client plugins or add-on applications. Each plugin shall utilize application / URL whitelisting and only allow the use of the application for pre-approved domains.

## **18.9.54 Search**

This section contains recommendations for Search settings.

The Group Policy settings contained within this section are provided by the Group Policy template `Search.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### **18.9.54.1 OCR**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `SearchOCR.admx/adml` that is included with the Microsoft Windows 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

#### **18.9.54.2 (L1) Ensure 'Allow indexing of encrypted files' is set to 'Disabled' (Scored)**

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This policy setting controls whether encrypted items are allowed to be indexed. When this setting is changed, the index is rebuilt completely. Full volume encryption (such as BitLocker Drive Encryption or a non-Microsoft solution) must be used for the location of the index to maintain security for encrypted files.

The recommended state for this setting is: `Disabled`.

##### **Rationale:**

Indexing and allowing users to search encrypted files could potentially reveal confidential data stored within the encrypted files.



**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Windows  
Search:AllowIndexingEncryptedStoresOrItems
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Search\Allow indexing of encrypted files
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (Search.admx/adml) is required - it is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Search service components (including non-Microsoft components) are expected not to index encrypted items or encrypted stores.)

**References:**

1. CCE-35314-4

**Critical Controls:****13.1 Assess Data To Identify Sensitive Information**

Perform an assessment of data to identify sensitive information that requires the application of encryption and integrity controls.

### 18.9.54.3 (L2) Ensure 'Set what information is shared in Search' is set to 'Enabled: Anonymous info' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

Various levels of information can be shared with Bing in Search, to include user information and location. Configuring this setting prevents users from selecting the level of information shared and enables the most restrictive selection.

The recommended state for this setting is: `Enabled: Anonymous info`.

#### Rationale:

Limiting the search information shared with Microsoft Bing enhances privacy and security.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Windows  
Search:ConnectedSearchPrivacy
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled: Anonymous info`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Search\Set what information is shared in Search
```

**Note:** This Group Policy path does not exist by default. An additional Group Policy template (`Search.admx/adml`) is required - it is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

**Impact:**

Usage information from Search is shared with Microsoft Bing, but search history, Microsoft account information and specific location information will not be shared with Microsoft Bing. This setting may impact the end user search experience and results when using Microsoft Bing.

**Default Value:**

Disabled. (Users can choose what information is shared in Search.)

**References:**

1. CCE-35788-9

**Critical Controls:**

13 [Data Protection](#)

Data Protection

### ***18.9.55 Security Center***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.56 Server for NIS***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `Snis.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012 & 8.1/2012R2 Administrative Templates.

### ***18.9.57 Shutdown Options***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.58 Smart Card***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.59 Software Protection Platform

This section contains recommendations related to the Software Protection Platform.

The Group Policy settings contained within this section are provided by the Group Policy template `avsvalidationgp.admx/adml` that is included with the Microsoft Windows 10 Administrative Templates.

### 18.9.59.1 (L2) Ensure 'Turn off KMS Client Online AVS Validation' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

The Key Management Service (KMS) is a Microsoft license activation method that entails setting up a local server that stores the licenses. The server itself needs to connect to Microsoft to activate the KMS service, but subsequent on-network clients can activate Microsoft Windows OS and/or their Microsoft Office via the KMS server instead of connecting directly to Microsoft. This policy setting lets you opt-out of sending KMS client activation data to Microsoft automatically.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Even though the KMS licensing method does not *require* a connection to Microsoft, the clients using KMS licensing still send KMS client activation state data to Microsoft automatically. Preventing this information from being sent can help reduce privacy concerns.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows  
NT\CurrentVersion\Software Protection Platform:NoGenTicket
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Software Protection Platform\Turn off KMS Client Online AVS  
Validation
```

**Note:** This Group Policy setting is provided by the Group Policy template "`avsvvalidationgp.admx/adml`" that is included with the Microsoft Windows 10 Administrative Templates.

## Impact:

The computer is prevented from sending data to Microsoft regarding its KMS client activation state.

## Default Value:

Disabled. (KMS client activation data will automatically be sent to Microsoft when the device activates.)

## ***18.9.60 Sound Recorder***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 18.9.61 Store

This section contains recommendations related to the Windows Store.

The Group Policy settings contained within this section are provided by the Group Policy template `WinStoreUI.admx/adml` that is included with the Microsoft Windows 8/2012 & 8.1/2012R2 Administrative Templates and the Group Policy template `WindowsStore.admx/adml` that is included with Windows 10 Release 1511 Administrative Templates.

### 18.9.61.1 (L1) Ensure 'Turn off Automatic Download and Install of updates' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting enables or disables the automatic download and installation of Windows Store app updates.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Keeping your system properly patched can help protect against 0 day vulnerabilities.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsStore:AutoDownload
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Store\Turn off Automatic Download and Install of updates
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Windows Store automatically downloads and installs updates for Windows Store apps.)

**References:**

1. CCE-35807-7

**Critical Controls:****3.1 Establish Standard Secure Configurations For OS And Software**

Establish standard secure configurations of operating systems and software applications. Standardized images should represent hardened versions of the underlying operating system and the applications installed on the system. These images should be validated and refreshed on a regular basis to update their security configuration in light of recent vulnerabilities and attack vectors.

**4.5 Use Automated Patch Management And Software Update Tools**

Deploy automated patch management tools and software update tools for operating system and software/applications on all systems for which such tools are available and safe. Patches should be applied to all systems, even systems that are properly air gapped.

## 18.9.61.2 (L1) Ensure 'Turn off the offer to update to the latest version of Windows' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

Enables or disables the Windows Store offer to update to the latest version of Windows.

The recommended state for this setting is: `Enabled`.

### Rationale:

Unplanned OS upgrades can lead to more preventable support calls. The IT department should be managing and approving all updates.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsStore:DisableOSUpgrade
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Store\Turn off the offer to update to the latest version of Windows
```

### Impact:

The Windows Store application will not offer updates to the latest version of Windows.

### Default Value:

Disabled. (The Windows Store application will offer updates to the latest version of Windows.)



**References:**

1. CCE-35809-3

**Critical Controls:****3.1 Establish Standard Secure Configurations For OS And Software**

Establish standard secure configurations of operating systems and software applications. Standardized images should represent hardened versions of the underlying operating system and the applications installed on the system. These images should be validated and refreshed on a regular basis to update their security configuration in light of recent vulnerabilities and attack vectors.

**4.5 Use Automated Patch Management And Software Update Tools**

Deploy automated patch management tools and software update tools for operating system and software/applications on all systems for which such tools are available and safe. Patches should be applied to all systems, even systems that are properly air gapped.

### 18.9.61.3 (L2) Ensure 'Turn off the Store application' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This setting denies or allows access to the Store application.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Only applications approved by an IT department should be installed. Allowing users to install 3rd party applications can lead to missed patches and potential zero day vulnerabilities.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsStore:RemoveWindowsStore
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Store\Turn off the Store application
```

#### Impact:

Access to the Windows Store application is denied.

#### Default Value:

Disabled. (Access to the Windows Store application is allowed.)

**References:**

1. CCE-35811-9

**Critical Controls:**

- 2 Inventory of Authorized and Unauthorized Software  
Inventory of Authorized and Unauthorized Software

### ***18.9.62 Sync your settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.63 Tablet PC***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.64 Task Scheduler***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.65 Text Input***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `textinput.admx/adml` that is included with the Microsoft Windows 10 Administrative Templates.

### ***18.9.66 Windows Calendar***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.67 Windows Color System***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.68 Windows Customer Experience Improvement Program***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***18.9.69 Windows Defender***

This section contains recommendations related to Windows Defender.

### ***18.9.69.1 Client Interface***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.69.2 Exclusions***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **18.9.69.3 MAPS**

This section contains recommendations related to Microsoft MAPS.

### **18.9.69.3.1 (L2) Ensure 'Join Microsoft MAPS' is set to 'Disabled' (Scored)**

#### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

#### **Description:**

This policy setting allows you to join Microsoft MAPS. Microsoft MAPS is the online community that helps you choose how to respond to potential threats. The community also helps stop the spread of new malicious software infections. You can choose to send basic or additional information about detected software. Additional information helps Microsoft create new definitions and help it to protect your computer.

Possible options are: (0x0) Disabled (default) (0x1) Basic membership (0x2) Advanced membership

Basic membership will send basic information to Microsoft about software that has been detected including where the software came from the actions that you apply or that are applied automatically and whether the actions were successful.

Advanced membership in addition to basic information will send more information to Microsoft about malicious software spyware and potentially unwanted software including the location of the software file names how the software operates and how it has impacted your computer.

The recommended state for this setting is: `Disabled`.

#### **Rationale:**

This information can include things like location of detected items on your computer if harmful software was removed. The information will be automatically collected and sent. In some instances personal information might unintentionally be sent to Microsoft. However Microsoft will not use this information to identify you or contact you.

**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is in effect when the following registry value does not exist, or when it exists with a value of 0:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows  
Defender\SpyNet:SpyNetReporting
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Windows Defender\MAPS\Join Microsoft MAPS
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Microsoft MAPS will not be joined.)

## **18.9.70 Windows Error Reporting**

This section contains recommendations related to Windows Error Reporting.

### **18.9.70.1 Advanced Error Reporting Settings**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **18.9.70.2 Consent**

This section contains recommendations related to Windows Error Reporting consent.

#### **18.9.70.2.1 (L1) Ensure 'Configure Default consent' is set to 'Enabled: Always ask before sending data' (Scored)**

##### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

##### **Description:**

This setting allows you to set the default consent handling for error reports.

The recommended state for this setting is: `Enabled: Always ask before sending data`

##### **Rationale:**

Error reports may contain sensitive information and should not be sent to anyone automatically.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Windows Error Reporting\Consent:DefaultConsent
```



**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:  
Always ask before sending data:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Windows Error Reporting\Consent\Configure Default consent
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Always ask before sending data. (Windows prompts users for consent to send reports.)

**References:**

1. CCE-34330-1

**Critical Controls:**

13 Data Protection

Data Protection

### 18.9.70.3 (L1) Ensure 'Automatically send memory dumps for OS-generated error reports' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls whether memory dumps in support of OS-generated error reports can be sent to Microsoft automatically. This policy does not apply to error reports generated by 3rd-party products, or additional data other than memory dumps.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Memory dumps may contain sensitive information and should not be automatically sent to anyone.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Windows Error Reporting:AutoApproveOSDumps
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Error Reporting\Automatically send memory dumps for OS-generated error reports
```

#### Impact:

All memory dumps are uploaded according to the default consent and notification settings.

**Default Value:**

Enabled. (Any memory dumps generated for error reports by Microsoft Windows are automatically uploaded, without notification to the user.)

**References:**

1. CCE-33927-5

**Critical Controls:**

13 Data Protection

Data Protection

***18.9.71 Windows Game Recording and Broadcasting***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.72 Windows Hello for Business (formerly Microsoft Passport for Work)***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `passport.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

***18.9.73 Windows Ink Workspace***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WindowsInkWorkspace.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

## 18.9.74 Windows Installer

This section contains recommendations related to Windows Installer.

### 18.9.74.1 (L1) Ensure 'Allow user control over installs' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

Permits users to change installation options that typically are available only to system administrators. The security features of Windows Installer prevent users from changing installation options typically reserved for system administrators, such as specifying the directory to which files are installed. If Windows Installer detects that an installation package has permitted the user to change a protected option, it stops the installation and displays a message. These security features operate only when the installation program is running in a privileged security context in which it has access to directories denied to the user.

The recommended state for this setting is: `Disabled`.

#### Rationale:

In an Enterprise environment, only IT staff with administrative rights should be installing or changing software on a system. Allowing users the ability can risk unapproved software from being installed or removed from a system which could cause the system to become vulnerable.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Installer:EnableUserControl
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Windows Installer\Allow user control over installs
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The security features of Windows Installer will prevent users from changing installation options typically reserved for system administrators, such as specifying the directory to which files are installed.)

**References:**

1. CCE-35431-6

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## 18.9.74.2 (L1) Ensure 'Always install with elevated privileges' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This setting controls whether or not Windows Installer should use system permissions when it installs any program on the system.

**Note:** This setting appears both in the Computer Configuration and User Configuration folders. To make this setting effective, you must enable the setting in both folders.

**Caution:** If enabled, skilled users can take advantage of the permissions this setting grants to change their privileges and gain permanent access to restricted files and folders. Note that the User Configuration version of this setting is not guaranteed to be secure.

The recommended state for this setting is: `Disabled`.

### Rationale:

Users with limited privileges can exploit this feature by creating a Windows Installer installation package that creates a new local account that belongs to the local built-in Administrators group, adds their current account to the local built-in Administrators group, installs malicious software, or performs other unauthorized activities.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Installer:AlwaysInstallElevated
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Installer\Always install with elevated privileges
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Windows Installer will apply the current user's permissions when it installs programs that a system administrator does not distribute or offer. This will prevent standard users from installing applications that affect system-wide configuration items.)

**References:**

1. CCE-35400-1

**Critical Controls:****5.1 Minimize And Sparingly Use Administrative Privileges**

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

### 18.9.74.3 (L2) Ensure 'Prevent Internet Explorer security prompt for Windows Installer scripts' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting controls whether Web-based programs are allowed to install software on the computer without notifying the user.

The recommended state for this setting is: Disabled.

#### Rationale:

Suppressing the system warning can pose a security risk and increase the attack surface on the system.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Installer:SafeForScripting
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Installer\Prevent Internet Explorer security prompt for Windows Installer scripts
```

#### Impact:

None - this is the default configuration.

#### Default Value:

Disabled. (When a script hosted by an Internet browser tries to install a program on the system, the system warns users and allows them to select or refuse the installation.)



**References:**

1. CCE-35086-8

**Critical Controls:**

7 Email and Web Browser Protections

Email and Web Browser Protections

## 18.9.75 Windows Logon Options

This section contains recommendations related to Windows Logon Options.

### 18.9.75.1 (L1) Ensure 'Sign-in last interactive user automatically after a system-initiated restart' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting controls whether a device will automatically sign-in the last interactive user after Windows Update restarts the system.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Disabling this feature will prevent the caching of user's credentials and unauthorized use of the device, and also ensure the user is aware of the restart.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System:
DisableAutomaticRestartSignOn
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows
Components\Windows Logon Options\Sign-in last interactive user automatically
after a system-initiated restart
```

**Impact:**

The device does not store the user's credentials for automatic sign-in after a Windows Update restart. The users' lock screen apps are not restarted after the system restarts. The user is required to present the logon credentials in order to proceed after restart.

**Default Value:**

Enabled. (The device securely saves the user's credentials (including the user name, domain and encrypted password) to configure automatic sign-in after a Windows Update restart. After the Windows Update restart, the user is automatically signed-in and the session is automatically locked with all the lock screen apps configured for that user.)

**References:**

1. CCE-33891-3

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

***18.9.76 Windows Mail***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.77 Windows Media Center***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.78 Windows Media Digital Rights Management***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***18.9.79 Windows Media Player***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.80 Windows Meeting Space***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WindowsCollaboration.admx/adml` that is included with the Microsoft Windows Vista & 2008 Administrative Templates.

### ***18.9.81 Windows Messenger***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.82 Windows Mobility Center***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***18.9.83 Windows Movie Maker***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `MovieMaker.admx/adml` that is included with the Microsoft Windows Vista & 2008 Administrative Templates.

## 18.9.84 Windows PowerShell

This section contains recommendations related to Windows PowerShell.

### 18.9.84.1 (L1) Ensure 'Turn on PowerShell Script Block Logging' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting enables logging of all PowerShell script input to the Microsoft-Windows-PowerShell/Operational event log.

The recommended state for this setting is: `Disabled`.

#### Rationale:

There are potential risks of capturing passwords in the PowerShell logs. This setting should only be needed for debugging purposes, and not in normal operation, it is important to ensure this is set to `Disabled`.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\PowerShell\ScriptBlock  
Logging:EnableScriptBlockLogging
```

#### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Windows PowerShell\Turn on PowerShell Script Block Logging
```

**Note:** This Group Policy path does not exist by default. A newer version of the "powershellexecutionpolicy.admx/adml" Administrative Template is required - it is included with the Microsoft Windows 10 Administrative Templates.

**Impact:**

Logging of PowerShell script input is disabled.

**Default Value:**

Enabled. (PowerShell will log script blocks the first time they are used.)

**Critical Controls:****16.4 Automatically Log Off Users After Standard Period Of Inactivity**

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.

## 18.9.84.2 (L1) Ensure 'Turn on PowerShell Transcription' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This Policy setting lets you capture the input and output of Windows PowerShell commands into text-based transcripts.

The recommended state for this setting is: `Disabled`.

### Rationale:

If this setting is enabled there is a risk that passwords could get stored in plain text in the PowerShell\_transcript output file.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\PowerShell\Transcription:EnableTranscripting
```

### Remediation:

To establish the recommended configuration via GP, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows PowerShell\Turn on PowerShell Transcription
```

**Note:** This Group Policy path does not exist by default. A newer version of the "powershellexecutionpolicy.admx/adml" Administrative Template is required - it is included with the Microsoft Windows 10 Administrative Templates.

### Impact:

None - this is the default configuration.

**Default Value:**

Disabled. (Transcription of PowerShell-based applications is disabled by default, although transcription can still be enabled through the `Start-Transcript` cmdlet.)

**Critical Controls:****16.4 Automatically Log Off Users After Standard Period Of Inactivity**

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.

***18.9.85 Windows Reliability Analysis***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## 18.9.86 Windows Remote Management (WinRM)

This section contains recommendations related to Windows Remote Management (WinRM).

### 18.9.86.1 WinRM Client

This section contains recommendations related to the WinRM client.

#### 18.9.86.1.1 (L1) Ensure 'Allow Basic authentication' is set to 'Disabled' (Scored)

##### Profile Applicability:

- Level 1
- Level 1 + BitLocker

##### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) client uses Basic authentication.

The recommended state for this setting is: `Disabled`.

**Note:** Clients that use Microsoft's Exchange Online service (Office 365) may require this setting to be set to `Enabled`.

##### Rationale:

Basic authentication is less robust than other authentication methods available in WinRM because credentials including passwords are transmitted in plain text. An attacker who is able to capture packets on the network where WinRM is running may be able to determine the credentials used for accessing remote hosts via WinRM.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Client:AllowBasic
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Windows Remote Management (WinRM)\WinRM Client\Allow Basic  
authentication
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The WinRM client does not use Basic authentication.)

**References:**

1. CCE-35258-3

**Critical Controls:****16.13 User/Account Authentication Must Be Performed Over Encrypted Channels**

Ensure that all account usernames and authentication credentials are transmitted across networks using encrypted channels.

## 18.9.86.1.2 (L1) Ensure 'Allow unencrypted traffic' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) client sends and receives unencrypted messages over the network.

The recommended state for this setting is: `Disabled`.

### Rationale:

Encrypting WinRM network traffic reduces the risk of an attacker viewing or modifying WinRM messages as they transit the network.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Client:AllowUnencryptedTraffic
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Remote Management (WinRM)\WinRM Client\Allow unencrypted traffic
```

### Impact:

None - this is the default configuration.

### Default Value:

Disabled. (The WinRM client sends or receives only encrypted messages over the network.)

**References:**

1. CCE-34458-0

**Critical Controls:****16.13 User/Account Authentication Must Be Performed Over Encrypted Channels**

Ensure that all account usernames and authentication credentials are transmitted across networks using encrypted channels.

### 18.9.86.1.3 (L1) Ensure 'Disallow Digest authentication' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) client will not use Digest authentication.

The recommended state for this setting is: `Enabled`.

#### Rationale:

Digest authentication is less robust than other authentication methods available in WinRM, an attacker who is able to capture packets on the network where WinRM is running may be able to determine the credentials used for accessing remote hosts via WinRM.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Client:AllowDigest
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows  
Components\Windows Remote Management (WinRM)\WinRM Client\Disallow Digest  
authentication
```

#### Impact:

The WinRM client will not use Digest authentication.

#### Default Value:

Disabled. (The WinRM client will use Digest authentication.)

**References:**

1. CCE-34778-1

**Critical Controls:****16.13 User/Account Authentication Must Be Performed Over Encrypted Channels**

Ensure that all account usernames and authentication credentials are transmitted across networks using encrypted channels.

## 18.9.86.2 WinRM Service

This section contains recommendations related to the WinRM service.

### 18.9.86.2.1 (L1) Ensure 'Allow Basic authentication' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) service accepts Basic authentication from a remote client.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Basic authentication is less robust than other authentication methods available in WinRM because credentials including passwords are transmitted in plain text. An attacker who is able to capture packets on the network where WinRM is running may be able to determine the credentials used for accessing remote hosts via WinRM.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Service:AllowBasic
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Remote Management (WinRM)\WinRM Service\Allow Basic authentication
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (The WinRM service will not accept Basic authentication from a remote client.)

**References:**

1. CCE-34779-9

**Critical Controls:****16.13 User/Account Authentication Must Be Performed Over Encrypted Channels**

Ensure that all account usernames and authentication credentials are transmitted across networks using encrypted channels.



## 18.9.86.2.2 (L2) Ensure 'Allow remote server management through WinRM' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 2
- Level 2 + BitLocker

### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) service automatically listens on the network for requests on the HTTP transport over the default HTTP port.

The recommended state for this setting is: `Disabled`.

### Rationale:

Any feature is a potential avenue of attack, those that enable inbound network connections are particularly risky. Only enable the use of the Windows Remote Management (WinRM) service on trusted networks and when feasible employ additional controls such as IPsec.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy object is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Service:AllowAutoConfig
```

### Remediation:

To implement the recommended configuration state, set the following Group Policy setting to `Disabled`:

```
Computer Configuration\Administrative Templates\Windows Components\Windows Remote Management (WinRM)\WinRM Service\Allow remote server management through WinRM
```

### Impact:

None - this is the default behavior.

**Default Value:**

Disabled. (The WinRM service will not respond to requests from a remote computer, regardless of whether or not any WinRM listeners are configured.)

**References:**

1. CCE-33146-2

**Critical Controls:****3.4 Use Only Secure Channels For Remote System Administration**

Perform all remote administration of servers, workstation, network devices, and similar equipment over secure channels. Protocols such as telnet, VNC, RDP, or others that do not actively support strong encryption should only be used if they are performed over a secondary encryption channel, such as SSL, TLS or IPSEC.

### 18.9.86.2.3 (L1) Ensure 'Allow unencrypted traffic' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) service sends and receives unencrypted messages over the network.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Encrypting WinRM network traffic reduces the risk of an attacker viewing or modifying WinRM messages as they transit the network.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Service:AllowUnencryptedTraffic
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Remote Management (WinRM)\WinRM Service\Allow unencrypted traffic
```

#### Impact:

None - this is the default configuration.

#### Default Value:

Disabled. (The WinRM client sends or receives only encrypted messages over the network.)

**References:**

1. CCE-35054-6

**Critical Controls:****16.13 User/Account Authentication Must Be Performed Over Encrypted Channels**

Ensure that all account usernames and authentication credentials are transmitted across networks using encrypted channels.

## 18.9.86.2.4 (L1) Ensure 'Disallow WinRM from storing RunAs credentials' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows you to manage whether the Windows Remote Management (WinRM) service will not allow RunAs credentials to be stored for any plug-ins.

The recommended state for this setting is: `Enabled`.

**Note:** If you enable and then disable this policy setting, any values that were previously configured for RunAsPassword will need to be reset.

### Rationale:

Although the ability to store RunAs credentials is a convenient feature it increases the risk of account compromise slightly. For example, if you forget to lock your desktop before leaving it unattended for a few minutes another person could access not only the desktop of your computer but also any hosts you manage via WinRM with cached RunAs credentials.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Service:DisableRunAs
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Remote Management (WinRM)\WinRM Service\Disallow WinRM from storing RunAs credentials
```

**Impact:**

The WinRM service will not allow the RunAsUser or RunAsPassword configuration values to be set for any plug-ins. If a plug-in has already set the RunAsUser and RunAsPassword configuration values, the RunAsPassword configuration value will be erased from the credential store on the computer.

If this setting is later Disabled again, any values that were previously configured for RunAsPassword will need to be reset.

**Default Value:**

Disabled. (The WinRM service will allow the RunAsUser and RunAsPassword configuration values to be set for plug-ins and the RunAsPassword value will be stored securely.)

**References:**

1. CCE-35416-7

**Critical Controls:****16.4 Automatically Log Off Users After Standard Period Of Inactivity**

Regularly monitor the use of all accounts, automatically logging off users after a standard period of inactivity.

## 18.9.87 Windows Remote Shell

This section contains settings related to Windows Remote Shell.

### 18.9.87.1 (L2) Ensure 'Allow Remote Shell Access' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 2
- Level 2 + BitLocker

#### Description:

This policy setting allows you to manage configuration of remote access to all supported shells to execute scripts and commands.

The recommended state for this setting is: `Disabled`.

**Note:** The GPME help text for this setting is incorrectly worded, implying that configuring it to Enabled will reject new remote shell connections, and setting it to Disabled will allow remote shell connections. The opposite is true (and is consistent with the title of the setting). This is a wording mistake by Microsoft in the Administrative Template.

#### Rationale:

Any feature is a potential avenue of attack, those that enable inbound network connections are particularly risky. Only enable the use of the Windows Remote Shell on trusted networks and when feasible employ additional controls such as IPsec.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy object is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WinRM\Service\WinRS:AllowRemoteShellAccess
```

**Remediation:**

To implement the recommended configuration state, set the following Group Policy setting to Disabled:

```
Computer Configuration\Administrative Templates\Windows Components\Windows Remote Shell\Allow Remote Shell Access
```

**Impact:**

New Remote Shell connections are not allowed and are rejected by the server.

**Default Value:**

Enabled. (New remote shell connections are allowed.)

**References:**

1. CCE-33740-2

**Critical Controls:****3.4 Use Only Secure Channels For Remote System Administration**

Perform all remote administration of servers, workstation, network devices, and similar equipment over secure channels. Protocols such as telnet, VNC, RDP, or others that do not actively support strong encryption should only be used if they are performed over a secondary encryption channel, such as SSL, TLS or IPSEC.



## ***18.9.88 Windows SideShow***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `Sideshow.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2 & 8/2012 Administrative Templates.

## ***18.9.89 Windows System Resource Manager***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `SystemResourceManager.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2 & 8/2012 Administrative Templates.

## **18.9.90 Windows Update**

This section contains recommendations related to Windows Update.

### **18.9.90.1 Defer Windows Updates**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WindowsUpdate.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### **18.9.90.2 (L1) Ensure 'Configure Automatic Updates' is set to 'Enabled' (Scored)**

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting specifies whether computers in your environment will receive security updates from Windows Update or WSUS. If you configure this policy setting to Enabled, the operating system will recognize when a network connection is available and then use the network connection to search Windows Update or your designated intranet site for updates that apply to them.

After you configure this policy setting to Enabled, select one of the following three options in the Configure Automatic Updates Properties dialog box to specify how the service will work: - Notify before downloading any updates and notify again before installing them. - Download the updates automatically and notify when they are ready to be installed. (Default setting) - Automatically download updates and install them on the schedule specified below.

The recommended state for this setting is: `Enabled`.

**Note:** The sub-setting "*Configure automatic updating:*" has 4 possible values – all of them are valid depending on organizational needs, however if feasible we suggest using a value

of 4 - Auto download and schedule the install. This suggestion is not a scored requirement.

### **Rationale:**

Although each version of Windows is thoroughly tested before release, it is possible that problems will be discovered after the products are shipped. The Configure Automatic Updates setting can help you ensure that the computers in your environment will always have the most recent critical operating system updates and service packs installed.

### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU:NoAutoUpdate
```

### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Update\Configure Automatic Updates
```

### **Impact:**

Critical operating system updates and service packs will be installed as necessary.

### **Default Value:**

Enabled: 3 - Auto download and notify for install. (Windows finds updates that apply to the computer and downloads them in the background (the user is not notified or interrupted during this process). When the downloads are complete, users will be notified that they are ready to install. After going to Windows Update, users can install them.)

### **References:**

1. CCE-35111-4

### **Critical Controls:**

#### 4.5 Use Automated Patch Management And Software Update Tools

Deploy automated patch management tools and software update tools for operating system and software/applications on all systems for which such tools are available and safe. Patches should be applied to all systems, even systems that are properly air gapped.

### *18.9.90.3 (L1) Ensure 'Configure Automatic Updates: Scheduled install day' is set to '0 - Every day' (Scored)*

#### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

#### **Description:**

This policy setting specifies when computers in your environment will receive security updates from Windows Update or WSUS.

The recommended state for this setting is: 0 - Every day.

**Note:** This setting is only applicable if **4 - Auto download and schedule the install** is selected in 18.9.85.1. It will have no impact if any other option is selected.

#### **Rationale:**

Although each version of Windows is thoroughly tested before release, it is possible that problems will be discovered after the products are shipped. The Configure Automatic Updates setting can help you ensure that the computers in your environment will always have the most recent critical operating system updates and service packs installed.

#### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU:ScheduledInstallDay
```

#### **Remediation:**

To establish the recommended configuration via GP, set the following UI path to 0 - Every day:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Update\Configure Automatic Updates: Scheduled install day
```

**Impact:**

If **4 - Auto download and schedule the install** is selected in 18.9.85.1, critical operating system updates and service packs will automatically download every day (at 3:00 A.M., by default).

**Default Value:**

Not Defined. (Since the default value of Configure automatic updating is **3 - Auto download and notify for install**, this setting is not applicable by default.)

**References:**

1. CCE-35111-4

**Critical Controls:****4.5 Use Automated Patch Management And Software Update Tools**

Deploy automated patch management tools and software update tools for operating system and software/applications on all systems for which such tools are available and safe. Patches should be applied to all systems, even systems that are properly air gapped.

## 18.9.90.4 (L1) Ensure 'No auto-restart with logged on users for scheduled automatic updates installations' is set to 'Disabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting specifies that Automatic Updates will wait for computers to be restarted by the users who are logged on to them to complete a scheduled installation.

The recommended state for this setting is: `Disabled`.

**Note:** This setting applies only when you configure Automatic Updates to perform scheduled update installations. If you configure the Configure Automatic Updates setting to Disabled, this setting has no effect.

### Rationale:

Sometimes updates require updated computers to be restarted to complete an installation. If the computer cannot restart automatically, then the most recent update will not completely install and no new updates will download to the computer until it is restarted.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU:NoAutoRebootWithLoggedOnUsers
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
Computer Configuration\Policies\Administrative Templates\Windows Components\Windows Update\No auto-restart with logged on users for scheduled automatic updates installations
```

### Impact:

None - this is the default configuration.

**Default Value:**

Enabled

**References:**

1. CCE-33813-7

**Critical Controls:****4.5 Use Automated Patch Management And Software Update Tools**

Deploy automated patch management tools and software update tools for operating system and software/applications on all systems for which such tools are available and safe. Patches should be applied to all systems, even systems that are properly air gapped.

## ***19 Administrative Templates (User)***

This section contains recommendations for user-based administrative templates.

### ***19.1 Control Panel***

This section contains recommendations for Control Panel settings.

#### ***19.1.1 Add or Remove Programs***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

#### ***19.1.2 Display***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

#### ***19.1.3 Personalization***

This section contains recommendations for personalization settings.

##### ***19.1.3.1 (L1) Ensure 'Enable screen saver' is set to 'Enabled' (Scored)***

###### **Profile Applicability:**

- Level 1
- Level 1 + BitLocker

###### **Description:**

This policy setting enables/disables the use of desktop screen savers.

The recommended state for this setting is: `Enabled`.

###### **Rationale:**

If a user forgets to lock their computer when they walk away it's possible that a passerby will hijack it.



**Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER SID]\SOFTWARE\Policies\Microsoft\Windows\Control  
Panel\Desktop:ScreenSaveActive
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
User Configuration\Policies\Administrative Templates\Control  
Panel\Personalization\Enable screen saver
```

**Impact:**

A screen saver runs, provided that the following two conditions hold: First, a valid screen saver on the client is specified through the "Force specific screen saver" setting (19.1.3.2) or through Control Panel on the client computer. Second, the "Screen saver timeout" is set to a nonzero value through the setting (19.1.3.4) or the Control Panel.

**Default Value:**

Enabling/disabling the screen saver is managed locally by the user.

**References:**

1. CCE-33164-5

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### 19.1.3.2 (L1) Ensure 'Force specific screen saver: Screen saver executable name' is set to 'Enabled: scrnsave.scr' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting specifies the screen saver for the user's desktop.

The recommended state for this setting is: Enabled: scrnsave.scr.

**Note:** If the specified screen saver is not installed on a computer to which this setting applies, the setting is ignored.

#### Rationale:

If a user forgets to lock their computer when they walk away it's possible that a passerby will hijack it.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER SID]\SOFTWARE\Policies\Microsoft\Windows\Control  
Panel\Desktop:SCRNSAVE.EXE
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: scrnsave.scr:

```
User Configuration\Policies\Administrative Templates\Control  
Panel\Personalization\Force specific screen saver
```

#### Impact:

The system displays the specified screen saver on the user's desktop. The drop-down list of screen savers in the Screen Saver dialog in the Personalization or Display Control Panel will be disabled, preventing users from changing the screen saver.

**Default Value:**

Disabled. (Users can select any screen saver.)

**References:**

1. CCE-33105-8

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### 19.1.3.3 (L1) Ensure 'Password protect the screen saver' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting determines whether screen savers used on the computer are password protected.

The recommended state for this setting is: Enabled.

#### Rationale:

If a user forgets to lock their computer when they walk away it is possible that a passerby will hijack it.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER SID]\SOFTWARE\Policies\Microsoft\Windows\Control  
Panel\Desktop:ScreenSaverIsSecure
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
User Configuration\Policies\Administrative Templates\Control  
Panel\Personalization>Password protect the screen saver
```

#### Impact:

All screen savers are password protected. The "Password protected" checkbox on the Screen Saver dialog in the Personalization or Display Control Panel will be disabled, preventing users from changing the password protection setting.

#### Default Value:

Whether or not to password protect each screen saver is managed locally by the user.

**References:**

1. CCE-32938-3

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

### 19.1.3.4 (L1) Ensure 'Screen saver timeout' is set to 'Enabled: 900 seconds or fewer, but not 0' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting specifies how much user idle time must elapse before the screen saver is launched.

The recommended state for this setting is: Enabled: 900 seconds or fewer, but not 0.

**Note:** This setting has no effect under the following circumstances: - The wait time is set to zero - The "Enable Screen Saver" setting is disabled - A valid screen saver is not selected manually or via the "Screen saver executable name" setting

#### Rationale:

If a user forgets to lock their computer when they walk away it is possible that a passerby will hijack it.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER SID]\SOFTWARE\Policies\Microsoft\Windows\Control  
Panel\Desktop:ScreenSaveTimeout
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to Enabled: 900 or fewer, but not 0:

```
User Configuration\Policies\Administrative Templates\Control  
Panel\Personalization\Screen saver timeout
```

#### Impact:

The screen saver will automatically activate when the computer has been unattended for the amount of time specified.

**Default Value:**

The screen saver timeout is managed locally by the user.

**References:**

1. CCE-33168-6

**Critical Controls:****16.5 Ensure Workstation Screen Locks Are Configured**

Configure screen locks on systems to limit access to unattended workstations.

***19.2 Desktop***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***19.3 Network***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***19.4 Shared Folders***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



## 19.5 Start Menu and Taskbar

This section contains recommendations for Start Menu and Taskbar settings.

### 19.5.1 Notifications

This section contains recommendations for Notification settings.

#### 19.5.1.1 (L1) Ensure 'Turn off toast notifications on the lock screen' is set to 'Enabled' (Scored)

##### Profile Applicability:

- Level 1
- Level 1 + BitLocker

##### Description:

This policy setting turns off toast notifications on the lock screen.

The recommended state for this setting is `Enabled`.

##### Rationale:

While this feature can be handy for users applications that provide toast notifications might display sensitive personal or business data while the device is unattended.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Policies\Microsoft\Windows\CurrentVersion\PushNotifications:NoT  
oastApplicationNotificationOnLockScreen
```

##### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
User Configuration\Policies\Administrative Templates\Start Menu and  
Taskbar\Notifications\Turn off toast notifications on the lock screen
```

**Impact:**

Applications will not be able to raise toast notifications on the lock screen.

**Default Value:**

Disabled. (Toast notifications on the lock screen are enabled and can be turned off by the administrator or user.)

**References:**

1. CCE-33727-9

**Critical Controls:**

16.5 Ensure Workstation Screen Locks Are Configured

Configure screen locks on systems to limit access to unattended workstations.

## ***19.6 System***

This section contains recommendations for System settings.

### ***19.6.1 Ctrl+Alt+Del Options***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.6.2 Driver Installation***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.6.3 Folder Redirection***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.6.4 Group Policy***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 19.6.5 Internet Communication Management

This section contains recommendations related to Internet Communication Management.

### 19.6.5.1 Internet Communication settings

This section contains recommendations related to Internet Communication settings.

#### 19.6.5.1.1 (L2) Ensure 'Turn off Help Experience Improvement Program' is set to 'Enabled' (Scored)

##### Profile Applicability:

- Level 2
- Level 2 + BitLocker

##### Description:

This policy setting specifies whether users can participate in the Help Experience Improvement program. The Help Experience Improvement program collects information about how customers use Windows Help so that Microsoft can improve it.

The recommended state for this setting is: `Enabled`.

##### Rationale:

Large enterprise environments may not want to have information collected from managed client computers.

##### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Policies\Microsoft\Assistance\Client\1.0:NoImplicitFeedback
```

##### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
User Configuration\Policies\Administrative Templates\System\Internet  
Communication Management\Internet Communication Settings\Turn off Help  
Experience Improvement Program
```

**Impact:**

Users cannot participate in the Help Experience Improvement program.

**Default Value:**

Disabled. (Users can turn on the Help Experience Improvement program feature from the Help and Support settings page.)

**References:**

1. CCE-33349-2

**Critical Controls:**

13 Data Protection

Data Protection

## ***19.7 Windows Components***

This section contains recommendations for Windows Component settings.

### ***19.7.1 Add features to Windows 8 / 8.1 / 10***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WindowsAnytimeUpgrade.admx/adml` that is included with the Microsoft Windows 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### ***19.7.2 App runtime***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.3 Application Compatibility***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 19.7.4 Attachment Manager

This section contains recommendations related to Attachment Manager.

### 19.7.4.1 (L1) Ensure 'Do not preserve zone information in file attachments' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting allows you to manage whether Windows marks file attachments with information about their zone of origin (such as restricted, Internet, intranet, local). This requires NTFS in order to function correctly, and will fail without notice on FAT32. By not preserving the zone information, Windows cannot make proper risk assessments.

The recommended state for this setting is: `Disabled`.

#### Rationale:

A file that is downloaded from a computer in the Internet or Restricted Sites zone may be moved to a location that makes it appear safe, like an intranet file share, and executed by an unsuspecting user.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Attachments:SaveZoneI  
nformation
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Disabled`:

```
User Configuration\Policies\Administrative Templates\Windows  
Components\Attachment Manager\Do not preserve zone information in file  
attachments
```

**Impact:**

None - this is the default configuration.

**Default Value:**

Disabled. (Windows marks file attachments with their zone information.)

**References:**

1. CCE-34810-2

**Critical Controls:**

7 Email and Web Browser Protections

Email and Web Browser Protections



## 19.7.4.2 (L1) Ensure 'Notify antivirus programs when opening attachments' is set to 'Enabled' (Scored)

### Profile Applicability:

- Level 1
- Level 1 + BitLocker

### Description:

This policy setting allows you to manage the behavior for notifying registered antivirus programs. If multiple programs are registered, they will all be notified.

The recommended state for this setting is: `Enabled`.

**Note:** An updated antivirus program must be installed for this policy setting to function properly.

### Rationale:

Antivirus programs that do not perform on-access checks may not be able to scan downloaded files.

### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Attachments:ScanWithA  
ntiVirus
```

### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
User Configuration\Policies\Administrative Templates\Windows  
Components\Attachment Manager\Notify antivirus programs when opening  
attachments
```

### Impact:

Windows tells the registered antivirus program(s) to scan the file when a user opens a file attachment. If the antivirus program files, the attachment is blocked from being opened.

**Default Value:**

Disabled. (Windows does not call the registered antivirus program(s) when file attachments are opened.)

**References:**

1. CCE-33799-8

**Critical Controls:****7.8 Scan All Inbound E-mail Attachments For Malicious Code**

Scan and block all e-mail attachments entering the organization's e-mail gateway if they contain malicious code or file types that are unnecessary for the organization's business. This scanning should be done before the e-mail is placed in the user's inbox. This includes e-mail content filtering and web content filtering.

**19.7.5 AutoPlay Policies**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

**19.7.6 Backup**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WindowsBackup.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012 and 8.1/2012R2 Administrative Templates, or the Group Policy template `UserDataBackup.admx/adml` included with the Microsoft Windows 10 Administrative Templates.

**19.7.7 Cloud Content**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `CloudContent.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***19.7.8 Credential User Interface***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.9 Data Collection and Preview Builds***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `DataCollection.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***19.7.10 Desktop Gadgets***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.11 Desktop Window Manager***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.12 Digital Locker***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.13 Edge UI***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.14 File Explorer***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.15 File Revocation***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.16 IME***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.17 Import Video***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `CaptureWizard.admx/adml` that is included with the Microsoft Windows Vista & 2008 Administrative Templates.

### ***19.7.18 Instant Search***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.19 Internet Explorer***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.20 Location and Sensors***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.21 Microsoft Edge***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `microsoftedge.admx/adml` that is included with the Microsoft Windows 10 Administrative Templates.

### ***19.7.22 Microsoft Management Console***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.23 Microsoft User Experience Virtualization***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `UserExperienceVirtualization.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

### ***19.7.24 NetMeeting***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.25 Network Projector***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## 19.7.26 Network Sharing

This section contains recommendations related to Network Sharing.

### 19.7.26.1 (L1) Ensure 'Prevent users from sharing files within their profile.' is set to 'Enabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This policy setting specifies whether users can share files within their profile. By default users are allowed to share files within their profile to other users on their network after an administrator opts in the computer. An administrator can opt in the computer by using the sharing wizard to share a file within their profile.

The recommended state for this setting is: `Enabled`.

#### Rationale:

If not properly controlled a user could accidentally share sensitive data with unauthorized users. In a corporate environment, the company should provide a managed location for file sharing, such as a file server or SharePoint.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer:NoInplaceSha  
ring
```

#### Remediation:

To establish the recommended configuration via GP, set the following UI path to `Enabled`:

```
User Configuration\Policies\Administrative Templates\Windows  
Components\Network Sharing\Prevent users from sharing files within their  
profile.
```

**Impact:**

Users cannot share files within their profile using the sharing wizard. Also, the sharing wizard cannot create a share at %root%\Users and can only be used to create SMB shares on folders.

**Default Value:**

Disabled. (Users can share files out of their user profile after an administrator has opted in the computer.

**References:**

1. CCE-33490-4

**Critical Controls:****14.4 Protect Information With Access Control Lists**

All information stored on systems shall be protected with file system, network share, claims, application, or database specific access control lists. These controls will enforce the principal that only authorized individuals should have access to the information based on their need to access the information as a part of their responsibilities.

***19.7.27 Presentation Settings***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***19.7.28 Remote Desktop Services***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

***19.7.29 RSS Feeds***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **19.7.30 Search**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `Search.admx/adml` that is included with the Microsoft Windows Vista, 2008, 7/2008R2, 8/2012, 8.1/2012R2 and Windows 10 Administrative Templates.

### **19.7.31 Sound Recorder**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **19.7.32 Store**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `WinStoreUI.admx/adml` that is included with the Microsoft Windows 8/2012 & 8.1/2012R2 Administrative Templates.

### **19.7.33 Tablet PC**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **19.7.34 Task Scheduler**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **19.7.35 Windows Calendar**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.



### ***19.7.36 Windows Color System***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.37 Windows Error Reporting***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### ***19.7.38 Windows Hello for Business (formerly Microsoft Passport for Work)***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

The Group Policy settings contained within this section are provided by the Group Policy template `passport.admx/adml` that is included with the Microsoft Windows 10 Release 1607 & Server 2016 Administrative Templates.

## 19.7.39 Windows Installer

This section contains recommendations related to Windows Installer.

### 19.7.39.1 (L1) Ensure 'Always install with elevated privileges' is set to 'Disabled' (Scored)

#### Profile Applicability:

- Level 1
- Level 1 + BitLocker

#### Description:

This setting controls whether or not Windows Installer should use system permissions when it installs any program on the system.

**Note:** This setting appears both in the Computer Configuration and User Configuration folders. To make this setting effective, you must enable the setting in both folders.

**Caution:** If enabled, skilled users can take advantage of the permissions this setting grants to change their privileges and gain permanent access to restricted files and folders. Note that the User Configuration version of this setting is not guaranteed to be secure.

The recommended state for this setting is: `Disabled`.

#### Rationale:

Users with limited privileges can exploit this feature by creating a Windows Installer installation package that creates a new local account that belongs to the local built-in Administrators group, adds their current account to the local built-in Administrators group, installs malicious software, or performs other unauthorized activities.

#### Audit:

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Policies\Microsoft\Windows\Installer:AlwaysInstallElevated
```

## Remediation:

To establish the recommended configuration via GP, set the following UI path to Disabled:

```
User Configuration\Policies\Administrative Templates\Windows  
Components\Windows Installer\Always install with elevated privileges
```

## Impact:

None - this is the default configuration.

## Default Value:

Disabled. (Windows Installer will apply the current user's permissions when it installs programs that a system administrator does not distribute or offer. This will prevent standard users from installing applications that affect system-wide configuration items.)

## References:

1. CCE-34788-0

## Critical Controls:

### 5.1 Minimize And Sparingly Use Administrative Privileges

Minimize administrative privileges and only use administrative accounts when they are required. Implement focused auditing on the use of administrative privileged functions and monitor for anomalous behavior.

## ***19.7.40 Windows Logon Options***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***19.7.41 Windows Mail***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## ***19.7.42 Windows Media Center***

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

## **19.7.43 Windows Media Player**

This section contains recommendations related to Windows Media Player.

### **19.7.43.1 Networking**

This section is intentionally blank and exists to ensure the structure of Windows benchmarks is consistent.

### **19.7.43.2 Playback**

This section contains recommendations related to Windows Media Player Playback.

#### **19.7.43.2.1 (L2) Ensure 'Prevent Codec Download' is set to 'Enabled' (Scored)**

##### **Profile Applicability:**

- Level 2
- Level 2 + BitLocker

##### **Description:**

This setting controls whether Windows Media Player is allowed to download additional codecs for decoding media files it does not already understand.

The recommended state for this setting is: `Enabled`.

##### **Rationale:**

This has some potential for risk if a malicious data file is opened in Media Player that requires an additional codec to be installed. If a special codec is required for a necessary job function, then that codec should be tested and supplied by the IT department in the organization.

##### **Audit:**

Navigate to the UI Path articulated in the Remediation section and confirm it is set as prescribed. This group policy setting is backed by the following registry location:

```
HKEY_USERS\[USER  
SID]\SOFTWARE\Policies\Microsoft\WindowsMediaPlayer:PreventCodecDownload
```

**Remediation:**

To establish the recommended configuration via GP, set the following UI path to Enabled:

```
User Configuration\Policies\Administrative Templates\Windows  
Components\Windows Media Player\Playback\Prevent Codec Download
```

**Impact:**

The Player is prevented from automatically downloading codecs to your computer. In addition, the Download codecs automatically check box on the Player tab in the Player is not available.

**Default Value:**

Users can change the setting for the Download codecs automatically check box.

**References:**

1. CCE-33793-1

**Critical Controls:**

2 [Inventory of Authorized and Unauthorized Software](#)  
Inventory of Authorized and Unauthorized Software

# Appendix: Summary Table

Control		Set Correctly	
		Yes	No
<b>1</b>	<b>Account Policies</b>		
<b>1.1</b>	<b>Password Policy</b>		
1.1.1	(L1) Ensure 'Enforce password history' is set to '24 or more password(s)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.1.2	(L1) Ensure 'Maximum password age' is set to '60 or fewer days, but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.1.3	(L1) Ensure 'Minimum password age' is set to '1 or more day(s)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.1.4	(L1) Ensure 'Minimum password length' is set to '14 or more character(s)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.1.5	(L1) Ensure 'Password must meet complexity requirements' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.1.6	(L1) Ensure 'Store passwords using reversible encryption' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.2</b>	<b>Account Lockout Policy</b>		
1.2.1	(L1) Ensure 'Account lockout duration' is set to '15 or more minute(s)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.2.2	(L1) Ensure 'Account lockout threshold' is set to '10 or fewer invalid logon attempt(s), but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
1.2.3	(L1) Ensure 'Reset account lockout counter after' is set to '15 or more minute(s)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>Local Policies</b>		
<b>2.1</b>	<b>Audit Policy</b>		
<b>2.2</b>	<b>User Rights Assignment</b>		
2.2.1	(L1) Ensure 'Access Credential Manager as a trusted caller' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.2	(L1) Ensure 'Access this computer from the network' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.3	(L1) Ensure 'Act as part of the operating system' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.4	(L1) Ensure 'Adjust memory quotas for a process' is set to 'Administrators, LOCAL SERVICE, NETWORK SERVICE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.5	(L1) Ensure 'Allow log on locally' is set to 'Administrators, Users' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.6	(L1) Ensure 'Allow log on through Remote Desktop Services' is set to 'Administrators, Remote Desktop Users' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
2.2.7	(L1) Ensure 'Back up files and directories' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.8	(L1) Ensure 'Change the system time' is set to 'Administrators, LOCAL SERVICE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.9	(L1) Ensure 'Change the time zone' is set to 'Administrators, LOCAL SERVICE, Users' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.10	(L1) Ensure 'Create a pagefile' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.11	(L1) Ensure 'Create a token object' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.12	(L1) Ensure 'Create global objects' is set to 'Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.13	(L1) Ensure 'Create permanent shared objects' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.14	(L1) Configure 'Create symbolic links' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.15	(L1) Ensure 'Debug programs' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.16	(L1) Ensure 'Deny access to this computer from the network' to include 'Guests, Local account' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.17	(L1) Ensure 'Deny log on as a batch job' to include 'Guests' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.18	(L1) Ensure 'Deny log on as a service' to include 'Guests' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.19	(L1) Ensure 'Deny log on locally' to include 'Guests' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.20	(L1) Ensure 'Deny log on through Remote Desktop Services' to include 'Guests, Local account' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.21	(L1) Ensure 'Enable computer and user accounts to be trusted for delegation' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.22	(L1) Ensure 'Force shutdown from a remote system' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.23	(L1) Ensure 'Generate security audits' is set to 'LOCAL SERVICE, NETWORK SERVICE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.24	(L1) Ensure 'Impersonate a client after authentication' is set to 'Administrators, LOCAL SERVICE, NETWORK SERVICE, SERVICE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.25	(L1) Ensure 'Increase scheduling priority' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.26	(L1) Ensure 'Load and unload device drivers' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.27	(L1) Ensure 'Lock pages in memory' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
2.2.28	(L2) Ensure 'Log on as a batch job' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.29	(L2) Ensure 'Log on as a service' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.30	(L1) Ensure 'Manage auditing and security log' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.31	(L1) Ensure 'Modify an object label' is set to 'No One' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.32	(L1) Ensure 'Modify firmware environment values' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.33	(L1) Ensure 'Perform volume maintenance tasks' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.34	(L1) Ensure 'Profile single process' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.35	(L1) Ensure 'Profile system performance' is set to 'Administrators, NT SERVICE\WdiServiceHost' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.36	(L1) Ensure 'Replace a process level token' is set to 'LOCAL SERVICE, NETWORK SERVICE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.37	(L1) Ensure 'Restore files and directories' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.38	(L1) Ensure 'Shut down the system' is set to 'Administrators, Users' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.2.39	(L1) Ensure 'Take ownership of files or other objects' is set to 'Administrators' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3</b>	<b>Security Options</b>		
<b>2.3.1</b>	<b>Accounts</b>		
2.3.1.1	(L1) Ensure 'Accounts: Administrator account status' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.1.2	(L1) Ensure 'Accounts: Block Microsoft accounts' is set to 'Users can't add or log on with Microsoft accounts' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.1.3	(L1) Ensure 'Accounts: Guest account status' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.1.4	(L1) Ensure 'Accounts: Limit local account use of blank passwords to console logon only' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.1.5	(L1) Configure 'Accounts: Rename administrator account' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.1.6	(L1) Configure 'Accounts: Rename guest account' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.2</b>	<b>Audit</b>		
2.3.2.1	(L1) Ensure 'Audit: Force audit policy subcategory settings (Windows Vista or later) to override audit policy category settings' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.2.2	(L1) Ensure 'Audit: Shut down system immediately if unable to log security audits' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>



Control		Set Correctly	
		Yes	No
<b>2.3.3</b>	<b>DCOM</b>		
<b>2.3.4</b>	<b>Devices</b>		
2.3.4.1	(L1) Ensure 'Devices: Allowed to format and eject removable media' is set to 'Administrators and Interactive Users' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.4.2	(L2) Ensure 'Devices: Prevent users from installing printer drivers' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.5</b>	<b>Domain controller</b>		
<b>2.3.6</b>	<b>Domain member</b>		
2.3.6.1	(L1) Ensure 'Domain member: Digitally encrypt or sign secure channel data (always)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.6.2	(L1) Ensure 'Domain member: Digitally encrypt secure channel data (when possible)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.6.3	(L1) Ensure 'Domain member: Digitally sign secure channel data (when possible)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.6.4	(L1) Ensure 'Domain member: Disable machine account password changes' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.6.5	(L1) Ensure 'Domain member: Maximum machine account password age' is set to '30 or fewer days, but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.6.6	(L1) Ensure 'Domain member: Require strong (Windows 2000 or later) session key' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.7</b>	<b>Interactive logon</b>		
2.3.7.1	(L1) Ensure 'Interactive logon: Do not display last user name' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.2	(L1) Ensure 'Interactive logon: Do not require CTRL+ALT+DEL' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.3	(BL) Ensure 'Interactive logon: Machine account lockout threshold' is set to '10 or fewer invalid logon attempts, but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.4	(L1) Ensure 'Interactive logon: Machine inactivity limit' is set to '900 or fewer second(s), but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.5	(L1) Configure 'Interactive logon: Message text for users attempting to log on' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.6	(L1) Configure 'Interactive logon: Message title for users attempting to log on' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.7	(L2) Ensure 'Interactive logon: Number of previous logons to cache (in case domain controller is not available)' is set to '4 or fewer logon(s)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.7.8	(L1) Ensure 'Interactive logon: Prompt user to change password before expiration' is set to 'between 5 and 14 days' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
2.3.7.9	(L1) Ensure 'Interactive logon: Smart card removal behavior' is set to 'Lock Workstation' or higher (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.8</b>	<b>Microsoft network client</b>		
2.3.8.1	(L1) Ensure 'Microsoft network client: Digitally sign communications (always)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.8.2	(L1) Ensure 'Microsoft network client: Digitally sign communications (if server agrees)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.8.3	(L1) Ensure 'Microsoft network client: Send unencrypted password to third-party SMB servers' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.9</b>	<b>Microsoft network server</b>		
2.3.9.1	(L1) Ensure 'Microsoft network server: Amount of idle time required before suspending session' is set to '15 or fewer minute(s), but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.9.2	(L1) Ensure 'Microsoft network server: Digitally sign communications (always)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.9.3	(L1) Ensure 'Microsoft network server: Digitally sign communications (if client agrees)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.9.4	(L1) Ensure 'Microsoft network server: Disconnect clients when logon hours expire' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.9.5	(L1) Ensure 'Microsoft network server: Server SPN target name validation level' is set to 'Accept if provided by client' or higher (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.10</b>	<b>Network access</b>		
2.3.10.1	(L1) Ensure 'Network access: Allow anonymous SID/Name translation' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.2	(L1) Ensure 'Network access: Do not allow anonymous enumeration of SAM accounts' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.3	(L1) Ensure 'Network access: Do not allow anonymous enumeration of SAM accounts and shares' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.4	(L1) Ensure 'Network access: Do not allow storage of passwords and credentials for network authentication' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.5	(L1) Ensure 'Network access: Let Everyone permissions apply to anonymous users' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.6	(L1) Ensure 'Network access: Named Pipes that can be accessed anonymously' is set to 'None' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.7	(L1) Ensure 'Network access: Remotely accessible registry paths' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
2.3.10.8	(L1) Ensure 'Network access: Remotely accessible registry paths and sub-paths' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.9	(L1) Ensure 'Network access: Restrict anonymous access to Named Pipes and Shares' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.10	(L1) Ensure 'Network access: Shares that can be accessed anonymously' is set to 'None' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.10.11	(L1) Ensure 'Network access: Sharing and security model for local accounts' is set to 'Classic - local users authenticate as themselves' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.11</b>	<b>Network security</b>		
2.3.11.1	(L1) Ensure 'Network security: Allow Local System to use computer identity for NTLM' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.2	(L1) Ensure 'Network security: Allow LocalSystem NULL session fallback' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.3	(L1) Ensure 'Network Security: Allow PKU2U authentication requests to this computer to use online identities' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.4	(L1) Ensure 'Network Security: Configure encryption types allowed for Kerberos' is set to 'RC4_HMAC_MD5, AES128_HMAC_SHA1, AES256_HMAC_SHA1, Future encryption types' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.5	(L1) Ensure 'Network security: Do not store LAN Manager hash value on next password change' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.6	(L1) Ensure 'Network security: Force logoff when logon hours expire' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.7	(L1) Ensure 'Network security: LAN Manager authentication level' is set to 'Send NTLMv2 response only. Refuse LM & NTLM' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.8	(L1) Ensure 'Network security: LDAP client signing requirements' is set to 'Negotiate signing' or higher (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.9	(L1) Ensure 'Network security: Minimum session security for NTLM SSP based (including secure RPC) clients' is set to 'Require NTLMv2 session security, Require 128-bit encryption' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.11.10	(L1) Ensure 'Network security: Minimum session security for NTLM SSP based (including secure RPC) servers' is set to 'Require NTLMv2 session security, Require 128-bit encryption' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.12</b>	<b>Recovery console</b>		
<b>2.3.13</b>	<b>Shutdown</b>		

Control		Set Correctly	
		Yes	No
<b>2.3.14</b>	<b>System cryptography</b>		
2.3.14.1	(L2) Ensure 'System cryptography: Force strong key protection for user keys stored on the computer' is set to 'User is prompted when the key is first used' or higher (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.15</b>	<b>System objects</b>		
2.3.15.1	(L1) Ensure 'System objects: Require case insensitivity for non-Windows subsystems' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.15.2	(L1) Ensure 'System objects: Strengthen default permissions of internal system objects (e.g. Symbolic Links)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.16</b>	<b>System settings</b>		
<b>2.3.17</b>	<b>User Account Control</b>		
2.3.17.1	(L1) Ensure 'User Account Control: Admin Approval Mode for the Built-in Administrator account' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.2	(L1) Ensure 'User Account Control: Allow UIAccess applications to prompt for elevation without using the secure desktop' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.3	(L1) Ensure 'User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode' is set to 'Prompt for consent on the secure desktop' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.4	(L1) Ensure 'User Account Control: Behavior of the elevation prompt for standard users' is set to 'Automatically deny elevation requests' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.5	(L1) Ensure 'User Account Control: Detect application installations and prompt for elevation' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.6	(L1) Ensure 'User Account Control: Only elevate UIAccess applications that are installed in secure locations' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.7	(L1) Ensure 'User Account Control: Run all administrators in Admin Approval Mode' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.8	(L1) Ensure 'User Account Control: Switch to the secure desktop when prompting for elevation' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
2.3.17.9	(L1) Ensure 'User Account Control: Virtualize file and registry write failures to per-user locations' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Event Log</b>		
<b>4</b>	<b>Restricted Groups</b>		

Control		Set Correctly	
		Yes	No
5	<b>System Services</b>		
6	<b>Registry</b>		
7	<b>File System</b>		
8	<b>Wired Network (IEEE 802.3) Policies</b>		
9	<b>Windows Firewall With Advanced Security</b>		
9.1	<b>Domain Profile</b>		
9.1.1	(L1) Ensure 'Windows Firewall: Domain: Firewall state' is set to 'On (recommended)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.2	(L1) Ensure 'Windows Firewall: Domain: Inbound connections' is set to 'Block (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.3	(L1) Ensure 'Windows Firewall: Domain: Outbound connections' is set to 'Allow (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.4	(L1) Ensure 'Windows Firewall: Domain: Settings: Display a notification' is set to 'No' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.5	(L1) Ensure 'Windows Firewall: Domain: Settings: Apply local firewall rules' is set to 'Yes (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.6	(L1) Ensure 'Windows Firewall: Domain: Settings: Apply local connection security rules' is set to 'Yes (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.7	(L1) Ensure 'Windows Firewall: Domain: Logging: Name' is set to '%SYSTEMROOT%\System32\logfiles\firewall\domainfw.log' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.8	(L1) Ensure 'Windows Firewall: Domain: Logging: Size limit (KB)' is set to '16,384 KB or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.9	(L1) Ensure 'Windows Firewall: Domain: Logging: Log dropped packets' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.1.10	(L1) Ensure 'Windows Firewall: Domain: Logging: Log successful connections' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2	<b>Private Profile</b>		
9.2.1	(L1) Ensure 'Windows Firewall: Private: Firewall state' is set to 'On (recommended)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.2	(L1) Ensure 'Windows Firewall: Private: Inbound connections' is set to 'Block (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.3	(L1) Ensure 'Windows Firewall: Private: Outbound connections' is set to 'Allow (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.4	(L1) Ensure 'Windows Firewall: Private: Settings: Display a notification' is set to 'No' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.5	(L1) Ensure 'Windows Firewall: Private: Settings: Apply local firewall rules' is set to 'Yes (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.6	(L1) Ensure 'Windows Firewall: Private: Settings: Apply local connection security rules' is set to 'Yes (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
9.2.7	(L1) Ensure 'Windows Firewall: Private: Logging: Name' is set to '%SYSTEMROOT%\System32\logfiles\firewall\privatefw.log' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.8	(L1) Ensure 'Windows Firewall: Private: Logging: Size limit (KB)' is set to '16,384 KB or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.9	(L1) Ensure 'Windows Firewall: Private: Logging: Log dropped packets' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.2.10	(L1) Ensure 'Windows Firewall: Private: Logging: Log successful connections' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.3</b>	<b>Public Profile</b>		
9.3.1	(L1) Ensure 'Windows Firewall: Public: Firewall state' is set to 'On (recommended)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.2	(L1) Ensure 'Windows Firewall: Public: Inbound connections' is set to 'Block (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.3	(L1) Ensure 'Windows Firewall: Public: Outbound connections' is set to 'Allow (default)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.4	(L1) Ensure 'Windows Firewall: Public: Settings: Display a notification' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.5	(L1) Ensure 'Windows Firewall: Public: Settings: Apply local firewall rules' is set to 'No' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.6	(L1) Ensure 'Windows Firewall: Public: Settings: Apply local connection security rules' is set to 'No' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.7	(L1) Ensure 'Windows Firewall: Public: Logging: Name' is set to '%SYSTEMROOT%\System32\logfiles\firewall\publicfw.log' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.8	(L1) Ensure 'Windows Firewall: Public: Logging: Size limit (KB)' is set to '16,384 KB or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.9	(L1) Ensure 'Windows Firewall: Public: Logging: Log dropped packets' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
9.3.10	(L1) Ensure 'Windows Firewall: Public: Logging: Log successful connections' is set to 'Yes' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>10</b>	<b>Network List Manager Policies</b>		
<b>11</b>	<b>Wireless Network (IEEE 802.11) Policies</b>		
<b>12</b>	<b>Public Key Policies</b>		
<b>13</b>	<b>Software Restriction Policies</b>		
<b>14</b>	<b>Network Access Protection NAP Client Configuration</b>		
<b>15</b>	<b>Application Control Policies</b>		
<b>16</b>	<b>IP Security Policies</b>		
<b>17</b>	<b>Advanced Audit Policy Configuration</b>		

Control		Set Correctly	
		Yes	No
<b>17.1</b>	<b>Account Logon</b>		
17.1.1	(L1) Ensure 'Audit Credential Validation' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.2</b>	<b>Account Management</b>		
17.2.1	(L1) Ensure 'Audit Application Group Management' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.2.2	(L1) Ensure 'Audit Computer Account Management' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.2.3	(L1) Ensure 'Audit Other Account Management Events' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.2.4	(L1) Ensure 'Audit Security Group Management' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.2.5	(L1) Ensure 'Audit User Account Management' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.3</b>	<b>Detailed Tracking</b>		
17.3.1	(L1) Ensure 'Audit Process Creation' is set to 'Success' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.4</b>	<b>DS Access</b>		
<b>17.5</b>	<b>Logon/Logoff</b>		
17.5.1	(L1) Ensure 'Audit Account Lockout' is set to 'Success' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.5.2	(L1) Ensure 'Audit Logoff' is set to 'Success' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.5.3	(L1) Ensure 'Audit Logon' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.5.4	(L1) Ensure 'Audit Other Logon/Logoff Events' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.5.5	(L1) Ensure 'Audit Special Logon' is set to 'Success' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.6</b>	<b>Object Access</b>		
17.6.1	(L1) Ensure 'Audit Removable Storage' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.7</b>	<b>Policy Change</b>		
17.7.1	(L1) Ensure 'Audit Audit Policy Change' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.7.2	(L1) Ensure 'Audit Authentication Policy Change' is set to 'Success' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.8</b>	<b>Privilege Use</b>		
17.8.1	(L1) Ensure 'Audit Sensitive Privilege Use' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.9</b>	<b>System</b>		

Control		Set Correctly	
		Yes	No
17.9.1	(L1) Ensure 'Audit IPsec Driver' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.9.2	(L1) Ensure 'Audit Other System Events' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.9.3	(L1) Ensure 'Audit Security State Change' is set to 'Success' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.9.4	(L1) Ensure 'Audit Security System Extension' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
17.9.5	(L1) Ensure 'Audit System Integrity' is set to 'Success and Failure' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18</b>	<b>Administrative Templates (Computer)</b>		
<b>18.1</b>	<b>Control Panel</b>		
<b>18.1.1</b>	<b>Personalization</b>		
18.1.1.1	(L1) Ensure 'Prevent enabling lock screen camera' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.1.1.2	(L1) Ensure 'Prevent enabling lock screen slide show' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.2</b>	<b>LAPS</b>		
18.2.1	(L1) Ensure LAPS AdmPwd GPO Extension / CSE is installed (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.2.2	(L1) Ensure 'Do not allow password expiration time longer than required by policy' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.2.3	(L1) Ensure 'Enable Local Admin Password Management' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.2.4	(L1) Ensure 'Password Settings: Password Complexity' is set to 'Enabled: Large letters + small letters + numbers + special characters' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.2.5	(L1) Ensure 'Password Settings: Password Length' is set to 'Enabled: 15 or more' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.2.6	(L1) Ensure 'Password Settings: Password Age (Days)' is set to 'Enabled: 30 or fewer' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.3</b>	<b>MSS (Legacy)</b>		
18.3.1	(L1) Ensure 'MSS: (AutoAdminLogon) Enable Automatic Logon (not recommended)' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.2	(L1) Ensure 'MSS: (DisableIPSourceRouting IPv6) IP source routing protection level (protects against packet spoofing)' is set to 'Enabled: Highest protection, source routing is completely disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>



Control		Set Correctly	
		Yes	No
18.3.3	(L1) Ensure 'MSS: (DisableIPSourceRouting) IP source routing protection level (protects against packet spoofing)' is set to 'Enabled: Highest protection, source routing is completely disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.4	(L2) Ensure 'MSS: (DisableSavePassword) Prevent the dial-up password from being saved' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.5	(L1) Ensure 'MSS: (EnableICMPRedirect) Allow ICMP redirects to override OSPF generated routes' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.6	(L2) Ensure 'MSS: (KeepAliveTime) How often keep-alive packets are sent in milliseconds' is set to 'Enabled: 300,000 or 5 minutes (recommended)' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.7	(L1) Ensure 'MSS: (NoNameReleaseOnDemand) Allow the computer to ignore NetBIOS name release requests except from WINS servers' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.8	(L2) Ensure 'MSS: (PerformRouterDiscovery) Allow IRDP to detect and configure Default Gateway addresses (could lead to DoS)' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.9	(L1) Ensure 'MSS: (SafeDllSearchMode) Enable Safe DLL search mode (recommended)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.10	(L1) Ensure 'MSS: (ScreenSaverGracePeriod) The time in seconds before the screen saver grace period expires (0 recommended)' is set to 'Enabled: 5 or fewer seconds' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.11	(L2) Ensure 'MSS: (TcpMaxDataRetransmissions IPv6) How many times unacknowledged data is retransmitted' is set to 'Enabled: 3' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.12	(L2) Ensure 'MSS: (TcpMaxDataRetransmissions) How many times unacknowledged data is retransmitted' is set to 'Enabled: 3' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.3.13	(L1) Ensure 'MSS: (WarningLevel) Percentage threshold for the security event log at which the system will generate a warning' is set to 'Enabled: 90% or less' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4</b>	<b>Network</b>		
<b>18.4.1</b>	<b>Background Intelligent Transfer Service (BITS)</b>		
<b>18.4.2</b>	<b>BranchCache</b>		
<b>18.4.3</b>	<b>DirectAccess Client Experience Settings</b>		
<b>18.4.4</b>	<b>DNS Client</b>		
<b>18.4.5</b>	<b>Fonts</b>		
<b>18.4.6</b>	<b>Hotspot Authentication</b>		
<b>18.4.7</b>	<b>Lanman Server</b>		

Control		Set Correctly	
		Yes	No
<b>18.4.8</b>	<b>Lanman Workstation</b>		
<b>18.4.9</b>	<b>Link-Layer Topology Discovery</b>		
18.4.9.1	(L2) Ensure 'Turn on Mapper I/O (LLTDIO) driver' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.4.9.2	(L2) Ensure 'Turn on Responder (RSPNDR) driver' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4.10</b>	<b>Microsoft Peer-to-Peer Networking Services</b>		
<b>18.4.10.1</b>	<b>Peer Name Resolution Protocol</b>		
18.4.10.2	(L2) Ensure 'Turn off Microsoft Peer-to-Peer Networking Services' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4.11</b>	<b>Network Connections</b>		
<b>18.4.11.1</b>	<b>Windows Firewall</b>		
18.4.11.2	(L1) Ensure 'Prohibit installation and configuration of Network Bridge on your DNS domain network' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.4.11.3	(L1) Ensure 'Require domain users to elevate when setting a network's location' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4.12</b>	<b>Network Connectivity Status Indicator</b>		
<b>18.4.13</b>	<b>Network Isolation</b>		
<b>18.4.14</b>	<b>Network Provider</b>		
18.4.14.1	(L1) Ensure 'Hardened UNC Paths' is set to 'Enabled, with "Require Mutual Authentication" and "Require Integrity" set for all NETLOGON and SYSVOL shares' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4.15</b>	<b>Offline Files</b>		
<b>18.4.16</b>	<b>QoS Packet Scheduler</b>		
<b>18.4.17</b>	<b>SNMP</b>		
<b>18.4.18</b>	<b>SSL Configuration Settings</b>		
<b>18.4.19</b>	<b>TCPIP Settings</b>		
<b>18.4.19.1</b>	<b>IPv6 Transition Technologies</b>		
<b>18.4.19.2</b>	<b>Parameters</b>		
18.4.19.2.1	(L2) Disable IPv6 (Ensure TCPIP6 Parameter 'DisabledComponents' is set to '0xff (255)') (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4.20</b>	<b>Windows Connect Now</b>		
18.4.20.1	(L2) Ensure 'Configuration of wireless settings using Windows Connect Now' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.4.20.2	(L2) Ensure 'Prohibit access of the Windows Connect Now wizards' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.4.21</b>	<b>Windows Connection Manager</b>		

Control		Set Correctly	
		Yes	No
18.4.21.1	(L1) Ensure 'Minimize the number of simultaneous connections to the Internet or a Windows Domain' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.4.21.2	(L1) Ensure 'Prohibit connection to non-domain networks when connected to domain authenticated network' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.5</b>	<b>Printers</b>		
<b>18.6</b>	<b>SCM: Pass the Hash Mitigations</b>		
18.6.1	(L1) Ensure 'Apply UAC restrictions to local accounts on network logons' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.6.2	(L1) Ensure 'WDigest Authentication' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.7</b>	<b>Start Menu and Taskbar</b>		
<b>18.8</b>	<b>System</b>		
<b>18.8.1</b>	<b>Access-Denied Assistance</b>		
<b>18.8.2</b>	<b>App-V</b>		
<b>18.8.3</b>	<b>Audit Process Creation</b>		
18.8.3.1	(L1) Ensure 'Include command line in process creation events' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.4</b>	<b>Credentials Delegation</b>		
<b>18.8.5</b>	<b>Device Guard</b>		
<b>18.8.6</b>	<b>Device Installation</b>		
<b>18.8.6.1</b>	<b>Device Installation Restrictions</b>		
18.8.6.1.1	(BL) Ensure 'Prevent installation of devices that match any of these device IDs' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.6.1.2	(BL) Ensure 'Prevent installation of devices that match any of these device IDs: Prevent installation of devices that match any of these device IDs' is set to 'PCI\CC_0C0A' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.6.1.3	(BL) Ensure 'Prevent installation of devices that match any of these device IDs: Also apply to matching devices that are already installed.' is set to 'True' (checked) (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.6.1.4	(BL) Ensure 'Prevent installation of devices using drivers that match these device setup classes' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.6.1.5	(BL) Ensure 'Prevent installation of devices using drivers that match these device setup classes: Prevent installation of devices using drivers for these device setup' is set to '-11' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.6.1.6	(BL) Ensure 'Prevent installation of devices using drivers that match these device setup classes: Also apply to matching devices that are already installed.' is set to 'True' (checked) (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
<b>18.8.7</b>	<b>Device Redirection</b>		
<b>18.8.8</b>	<b>Disk NV Cache</b>		
<b>18.8.9</b>	<b>Disk Quotas</b>		
<b>18.8.10</b>	<b>Distributed COM</b>		
<b>18.8.11</b>	<b>Driver Installation</b>		
<b>18.8.12</b>	<b>Early Launch Antimalware</b>		
18.8.12.1	(L1) Ensure 'Boot-Start Driver Initialization Policy' is set to 'Enabled: Good, unknown and bad but critical' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.13</b>	<b>Enhanced Storage Access</b>		
<b>18.8.14</b>	<b>File Classification Infrastructure</b>		
<b>18.8.15</b>	<b>File Share Shadow Copy Agent</b>		
<b>18.8.16</b>	<b>File Share Shadow Copy Provider</b>		
<b>18.8.17</b>	<b>Filesystem</b>		
<b>18.8.18</b>	<b>Folder Redirection</b>		
<b>18.8.19</b>	<b>Group Policy</b>		
<b>18.8.19.1</b>	<b>Logging and tracing</b>		
18.8.19.2	(L1) Ensure 'Configure registry policy processing: Do not apply during periodic background processing' is set to 'Enabled: FALSE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.19.3	(L1) Ensure 'Configure registry policy processing: Process even if the Group Policy objects have not changed' is set to 'Enabled: TRUE' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.19.4	(L1) Ensure 'Turn off background refresh of Group Policy' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.20</b>	<b>Internet Communication Management</b>		
<b>18.8.20.1</b>	<b>Internet Communication settings</b>		
18.8.20.1.1	(L2) Ensure 'Turn off access to the Store' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.2	(L2) Ensure 'Turn off downloading of print drivers over HTTP' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.3	(L2) Ensure 'Turn off handwriting personalization data sharing' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.4	(L2) Ensure 'Turn off handwriting recognition error reporting' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.5	(L2) Ensure 'Turn off Internet Connection Wizard if URL connection is referring to Microsoft.com' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.6	(L2) Ensure 'Turn off Internet download for Web publishing and online ordering wizards' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
18.8.20.1.7	(L2) Ensure 'Turn off printing over HTTP' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.8	(L2) Ensure 'Turn off Registration if URL connection is referring to Microsoft.com' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.9	(L2) Ensure 'Turn off Search Companion content file updates' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.10	(L2) Ensure 'Turn off the "Order Prints" picture task' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.11	(L2) Ensure 'Turn off the "Publish to Web" task for files and folders' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.12	(L2) Ensure 'Turn off the Windows Messenger Customer Experience Improvement Program' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.13	(L2) Ensure 'Turn off Windows Customer Experience Improvement Program' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.20.1.14	(L2) Ensure 'Turn off Windows Error Reporting' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.21</b>	<b>iSCSI</b>		
<b>18.8.22</b>	<b>KDC</b>		
<b>18.8.23</b>	<b>Kerberos</b>		
<b>18.8.24</b>	<b>Locale Services</b>		
18.8.24.1	(L2) Ensure 'Disallow copying of user input methods to the system account for sign-in' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.25</b>	<b>Logon</b>		
18.8.25.1	(L1) Ensure 'Do not display network selection UI' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.25.2	(L1) Ensure 'Do not enumerate connected users on domain-joined computers' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.25.3	(L1) Ensure 'Enumerate local users on domain-joined computers' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.25.4	(L1) Ensure 'Turn off app notifications on the lock screen' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.25.5	(L1) Ensure 'Turn on convenience PIN sign-in' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.26</b>	<b>Mitigation Options</b>		
<b>18.8.27</b>	<b>Net Logon</b>		
<b>18.8.28</b>	<b>Performance Control Panel</b>		
<b>18.8.29</b>	<b>Power Management</b>		
<b>18.8.29.1</b>	<b>Button Settings</b>		
<b>18.8.29.2</b>	<b>Energy Saver Settings</b>		

Control		Set Correctly	
		Yes	No
<b>18.8.29.3</b>	<b>Hard Disk Settings</b>		
<b>18.8.29.4</b>	<b>Notification Settings</b>		
<b>18.8.29.5</b>	<b>Sleep Settings</b>		
18.8.29.5.1	(BL) Ensure 'Allow standby states (S1-S3) when sleeping (on battery)' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.29.5.2	(BL) Ensure 'Allow standby states (S1-S3) when sleeping (plugged in)' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.29.5.3	(L1) Ensure 'Require a password when a computer wakes (on battery)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.29.5.4	(L1) Ensure 'Require a password when a computer wakes (plugged in)' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.30</b>	<b>Recovery</b>		
<b>18.8.31</b>	<b>Remote Assistance</b>		
18.8.31.1	(L1) Ensure 'Configure Offer Remote Assistance' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.31.2	(L1) Ensure 'Configure Solicited Remote Assistance' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.32</b>	<b>Remote Procedure Call</b>		
18.8.32.1	(L1) Ensure 'Enable RPC Endpoint Mapper Client Authentication' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.32.2	(L1) Ensure 'Restrict Unauthenticated RPC clients' is set to 'Enabled: Authenticated' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.33</b>	<b>Removable Storage Access</b>		
<b>18.8.34</b>	<b>Scripts</b>		
<b>18.8.35</b>	<b>Server Manager</b>		
<b>18.8.36</b>	<b>Shutdown</b>		
<b>18.8.37</b>	<b>Shutdown Options</b>		
<b>18.8.38</b>	<b>System Restore</b>		
<b>18.8.39</b>	<b>Troubleshooting and Diagnostics</b>		
<b>18.8.39.1</b>	<b>Application Compatibility Diagnostics</b>		
<b>18.8.39.2</b>	<b>Corrupted File Recovery</b>		
<b>18.8.39.3</b>	<b>Disk Diagnostic</b>		
<b>18.8.39.4</b>	<b>Fault Tolerant Heap</b>		
<b>18.8.39.5</b>	<b>Microsoft Support Diagnostic Tool</b>		
18.8.39.5.1	(L2) Ensure 'Microsoft Support Diagnostic Tool: Turn on MSDT interactive communication with support provider' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.39.6</b>	<b>MSI Corrupted File Recovery</b>		
<b>18.8.39.7</b>	<b>Scheduled Maintenance</b>		
<b>18.8.39.8</b>	<b>Scripted Diagnostics</b>		

Control		Set Correctly	
		Yes	No
<b>18.8.39.9</b>	<b>Windows Boot Performance Diagnostics</b>		
<b>18.8.39.10</b>	<b>Windows Memory Leak Diagnosis</b>		
<b>18.8.39.11</b>	<b>Windows Performance PerfTrack</b>		
18.8.39.11.1	(L2) Ensure 'Enable/Disable PerfTrack' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.40</b>	<b>Trusted Platform Module Services</b>		
<b>18.8.41</b>	<b>User Profiles</b>		
18.8.41.1	(L2) Ensure 'Turn off the advertising ID' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.8.42</b>	<b>Windows File Protection</b>		
<b>18.8.43</b>	<b>Windows HotStart</b>		
<b>18.8.44</b>	<b>Windows Time Service</b>		
<b>18.8.44.1</b>	<b>Time Providers</b>		
18.8.44.1.1	(L2) Ensure 'Enable Windows NTP Client' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.8.44.1.2	(L2) Ensure 'Enable Windows NTP Server' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9</b>	<b>Windows Components</b>		
<b>18.9.1</b>	<b>Active Directory Federation Services</b>		
<b>18.9.2</b>	<b>ActiveX Installer Service</b>		
<b>18.9.3</b>	<b>Add features to Windows 8 / 8.1 / 10</b>		
<b>18.9.4</b>	<b>App Package Deployment</b>		
<b>18.9.5</b>	<b>App Privacy</b>		
<b>18.9.6</b>	<b>App runtime</b>		
18.9.6.1	(L1) Ensure 'Allow Microsoft accounts to be optional' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.7</b>	<b>Application Compatibility</b>		
<b>18.9.8</b>	<b>AutoPlay Policies</b>		
18.9.8.1	(L1) Ensure 'Disallow Autoplay for non-volume devices' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.8.2	(L1) Ensure 'Set the default behavior for AutoRun' is set to 'Enabled: Do not execute any autorun commands' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.8.3	(L1) Ensure 'Turn off Autoplay' is set to 'Enabled: All drives' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.9</b>	<b>Backup</b>		
<b>18.9.10</b>	<b>Biometrics</b>		
<b>18.9.11</b>	<b>BitLocker Drive Encryption</b>		
<b>18.9.11.1</b>	<b>Fixed Data Drives</b>		

Control		Set Correctly	
		Yes	No
18.9.11.1.1	(BL) Ensure 'Allow access to BitLocker-protected fixed data drives from earlier versions of Windows' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.2	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.3	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Allow data recovery agent' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.4	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Recovery Password' is set to 'Enabled: Allow 48-digit recovery password' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.5	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Recovery Key' is set to 'Enabled: Allow 256-bit recovery key' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.6	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Omit recovery options from the BitLocker setup wizard' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.7	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Save BitLocker recovery information to AD DS for fixed data drives' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.8	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Configure storage of BitLocker recovery information to AD DS' is set to 'Enabled: Backup recovery passwords and key packages' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.9	(BL) Ensure 'Choose how BitLocker-protected fixed drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for fixed data drives' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.10	(BL) Ensure 'Configure use of hardware-based encryption for fixed data drives' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.11	(BL) Ensure 'Configure use of hardware-based encryption for fixed data drives: Use BitLocker software-based encryption when hardware encryption is not available' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.12	(BL) Ensure 'Configure use of hardware-based encryption for fixed data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>



Control		Set Correctly	
		Yes	No
18.9.11.1.13	(BL) Ensure 'Configure use of hardware-based encryption for fixed data drives: Restrict crypto algorithms or cipher suites to the following:' is set to 'Enabled: 2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.14	(BL) Ensure 'Configure use of passwords for fixed data drives' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.15	(BL) Ensure 'Configure use of smart cards on fixed data drives' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.1.16	(BL) Ensure 'Configure use of smart cards on fixed data drives: Require use of smart cards on fixed data drives' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.11.2</b>	<b>Operating System Drives</b>		
18.9.11.2.1	(BL) Ensure 'Allow enhanced PINs for startup' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.2	(BL) Ensure 'Allow Secure Boot for integrity validation' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.3	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.4	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Allow data recovery agent' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.5	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Recovery Password' is set to 'Enabled: Require 48-digit recovery password' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.6	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Recovery Key' is set to 'Enabled: Do not allow 256-bit recovery key' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.7	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Omit recovery options from the BitLocker setup wizard' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.8	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Save BitLocker recovery information to AD DS for operating system drives' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.9	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Configure storage of BitLocker recovery information to AD DS:' is set to 'Enabled: Store recovery passwords and key packages' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
18.9.11.2.10	(BL) Ensure 'Choose how BitLocker-protected operating system drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for operating system drives' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.11	(BL) Ensure 'Configure minimum PIN length for startup' is set to 'Enabled: 7 or more characters' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.12	(BL) Ensure 'Configure use of hardware-based encryption for operating system drives' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.13	(BL) Ensure 'Configure use of hardware-based encryption for operating system drives: Use BitLocker software-based encryption when hardware encryption is not available' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.14	(BL) Ensure 'Configure use of hardware-based encryption for operating system drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.15	(BL) Ensure 'Configure use of hardware-based encryption for operating system drives: Restrict crypto algorithms or cipher suites to the following:' is set to 'Enabled: 2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.16	(BL) Ensure 'Configure use of passwords for operating system drives' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.17	(BL) Ensure 'Require additional authentication at startup' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.18	(BL) Ensure 'Require additional authentication at startup: Allow BitLocker without a compatible TPM' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.19	(BL) Ensure 'Require additional authentication at startup: Configure TPM startup:' is set to 'Enabled: Do not allow TPM' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.20	(BL) Ensure 'Require additional authentication at startup: Configure TPM startup PIN:' is set to 'Enabled: Require startup PIN with TPM' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.21	(BL) Ensure 'Require additional authentication at startup: Configure TPM startup key:' is set to 'Enabled: Do not allow startup key with TPM' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.2.22	(BL) Ensure 'Require additional authentication at startup: Configure TPM startup key and PIN:' is set to 'Enabled: Do not allow startup key and PIN with TPM' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.11.3</b>	<b>Removable Data Drives</b>		

Control		Set Correctly	
		Yes	No
18.9.11.3.1	(BL) Ensure 'Allow access to BitLocker-protected removable data drives from earlier versions of Windows' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.2	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.3	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Allow data recovery agent' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.4	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Recovery Password' is set to 'Enabled: Do not allow 48-digit recovery password' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.5	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Recovery Key' is set to 'Enabled: Do not allow 256-bit recovery key' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.6	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Omit recovery options from the BitLocker setup wizard' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.7	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Save BitLocker recovery information to AD DS for removable data drives' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.8	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Configure storage of BitLocker recovery information to AD DS:' is set to 'Enabled: Backup recovery passwords and key packages' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.9	(BL) Ensure 'Choose how BitLocker-protected removable drives can be recovered: Do not enable BitLocker until recovery information is stored to AD DS for removable data drives' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.10	(BL) Ensure 'Configure use of hardware-based encryption for removable data drives' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.11	(BL) Ensure 'Configure use of hardware-based encryption for removable data drives: Use BitLocker software-based encryption when hardware encryption is not available' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.12	(BL) Ensure 'Configure use of hardware-based encryption for removable data drives: Restrict encryption algorithms and cipher suites allowed for hardware-based encryption' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
18.9.11.3.13	(BL) Ensure 'Configure use of hardware-based encryption for removable data drives: Restrict crypto algorithms or cipher suites to the following:' is set to 'Enabled: 2.16.840.1.101.3.4.1.2;2.16.840.1.101.3.4.1.42' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.14	(BL) Ensure 'Configure use of passwords for removable data drives' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.15	(BL) Ensure 'Configure use of smart cards on removable data drives' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.16	(BL) Ensure 'Configure use of smart cards on removable data drives: Require use of smart cards on removable data drives' is set to 'Enabled: True' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.17	(BL) Ensure 'Deny write access to removable drives not protected by BitLocker' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.3.18	(BL) Ensure 'Deny write access to removable drives not protected by BitLocker: Do not allow write access to devices configured in another organization' is set to 'Enabled: False' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.11.4	(BL) Ensure 'Choose drive encryption method and cipher strength (Windows 8, Windows Server 2012, Windows 8.1, Windows Server 2012 R2, Windows 10 [Version 1507])' is set to 'Enabled: AES 256-bit' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.12</b>	<b>Camera</b>		
<b>18.9.13</b>	<b>Cloud Content</b>		
<b>18.9.14</b>	<b>Connect</b>		
<b>18.9.15</b>	<b>Credential User Interface</b>		
18.9.15.1	(L1) Ensure 'Do not display the password reveal button' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.15.2	(L1) Ensure 'Enumerate administrator accounts on elevation' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.16</b>	<b>Data Collection and Preview Builds</b>		
<b>18.9.17</b>	<b>Delivery Optimization</b>		
<b>18.9.18</b>	<b>Desktop Gadgets</b>		
<b>18.9.19</b>	<b>Desktop Window Manager</b>		
<b>18.9.20</b>	<b>Device and Driver Compatibility</b>		
<b>18.9.21</b>	<b>Device Registration (formerly Workplace Join)</b>		
<b>18.9.22</b>	<b>Digital Locker</b>		
<b>18.9.23</b>	<b>Edge UI</b>		
<b>18.9.24</b>	<b>EMET</b>		
18.9.24.1	(L1) Ensure 'EMET 5.51' or higher is installed (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.24.2	(L1) Ensure 'Default Action and Mitigation Settings' is set to 'Enabled' (plus subsettings) (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
18.9.24.3	(L1) Ensure 'Default Protections for Internet Explorer' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.24.4	(L1) Ensure 'Default Protections for Popular Software' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.24.5	(L1) Ensure 'Default Protections for Recommended Software' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.24.6	(L1) Ensure 'System ASLR' is set to 'Enabled: Application Opt-In' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.24.7	(L1) Ensure 'System DEP' is set to 'Enabled: Application Opt-Out' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.24.8	(L1) Ensure 'System SEHOP' is set to 'Enabled: Application Opt-Out' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.25</b>	<b>Event Forwarding</b>		
<b>18.9.26</b>	<b>Event Log Service</b>		
<b>18.9.26.1</b>	<b>Application</b>		
18.9.26.1.1	(L1) Ensure 'Application: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.26.1.2	(L1) Ensure 'Application: Specify the maximum log file size (KB)' is set to 'Enabled: 32,768 or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.26.2</b>	<b>Security</b>		
18.9.26.2.1	(L1) Ensure 'Security: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.26.2.2	(L1) Ensure 'Security: Specify the maximum log file size (KB)' is set to 'Enabled: 196,608 or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.26.3</b>	<b>Setup</b>		
18.9.26.3.1	(L1) Ensure 'Setup: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.26.3.2	(L1) Ensure 'Setup: Specify the maximum log file size (KB)' is set to 'Enabled: 32,768 or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.26.4</b>	<b>System</b>		
18.9.26.4.1	(L1) Ensure 'System: Control Event Log behavior when the log file reaches its maximum size' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.26.4.2	(L1) Ensure 'System: Specify the maximum log file size (KB)' is set to 'Enabled: 32,768 or greater' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.27</b>	<b>Event Logging</b>		
<b>18.9.28</b>	<b>Event Viewer</b>		
<b>18.9.29</b>	<b>Family Safety</b>		
<b>18.9.30</b>	<b>File Explorer</b>		
<b>18.9.30.1</b>	<b>Previous Versions</b>		

Control		Set Correctly	
		Yes	No
18.9.30.2	(L1) Ensure 'Configure Windows SmartScreen' is set to 'Enabled: Require approval from an administrator before running downloaded unknown software' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.30.3	(L1) Ensure 'Turn off Data Execution Prevention for Explorer' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.30.4	(L1) Ensure 'Turn off heap termination on corruption' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.30.5	(L1) Ensure 'Turn off shell protocol protected mode' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.31</b>	<b>File History</b>		
<b>18.9.32</b>	<b>Game Explorer</b>		
<b>18.9.33</b>	<b>HomeGroup</b>		
18.9.33.1	(L1) Ensure 'Prevent the computer from joining a homegroup' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.34</b>	<b>Import Video</b>		
<b>18.9.35</b>	<b>Internet Explorer</b>		
<b>18.9.36</b>	<b>Internet Information Services</b>		
<b>18.9.37</b>	<b>Location and Sensors</b>		
18.9.37.1	(L2) Ensure 'Turn off location' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.38</b>	<b>Maintenance Scheduler</b>		
<b>18.9.39</b>	<b>Maps</b>		
<b>18.9.40</b>	<b>MDM</b>		
<b>18.9.41</b>	<b>Microsoft Edge</b>		
<b>18.9.42</b>	<b>Microsoft Secondary Authentication Factor</b>		
<b>18.9.43</b>	<b>Microsoft User Experience Virtualization</b>		
<b>18.9.44</b>	<b>NetMeeting</b>		
<b>18.9.45</b>	<b>Network Access Protection</b>		
<b>18.9.46</b>	<b>Network Projector</b>		
<b>18.9.47</b>	<b>OneDrive (formerly SkyDrive)</b>		
18.9.47.1	(L1) Ensure 'Prevent the usage of OneDrive for file storage' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.47.2	(L1) Ensure 'Prevent the usage of OneDrive for file storage on Windows 8.1' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.48</b>	<b>Online Assistance</b>		
<b>18.9.49</b>	<b>Password Synchronization</b>		
<b>18.9.50</b>	<b>Portable Operating System</b>		
<b>18.9.51</b>	<b>Presentation Settings</b>		
<b>18.9.52</b>	<b>Remote Desktop Services (formerly Terminal Services)</b>		
<b>18.9.52.1</b>	<b>RD Licensing</b>		
<b>18.9.52.2</b>	<b>Remote Desktop Connection Client</b>		

Control		Set Correctly	
		Yes	No
<b>18.9.52.2.1</b>	<b>RemoteFX USB Device Redirection</b>		
18.9.52.2.2	(L1) Ensure 'Do not allow passwords to be saved' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.52.3</b>	<b>Remote Desktop Session Host</b>		
<b>18.9.52.3.1</b>	<b>Application Compatibility</b>		
<b>18.9.52.3.2</b>	<b>Connections</b>		
18.9.52.3.2.1	(L2) Ensure 'Allow users to connect remotely by using Remote Desktop Services' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.52.3.3</b>	<b>Device and Resource Redirection</b>		
18.9.52.3.3.1	(L2) Ensure 'Do not allow COM port redirection' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.3.2	(L1) Ensure 'Do not allow drive redirection' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.3.3	(L2) Ensure 'Do not allow LPT port redirection' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.3.4	(L2) Ensure 'Do not allow supported Plug and Play device redirection' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.52.3.4</b>	<b>Licensing</b>		
<b>18.9.52.3.5</b>	<b>Printer Redirection</b>		
<b>18.9.52.3.6</b>	<b>Profiles</b>		
<b>18.9.52.3.7</b>	<b>RD Connection Broker</b>		
<b>18.9.52.3.8</b>	<b>Remote Session Environment</b>		
<b>18.9.52.3.9</b>	<b>Security</b>		
18.9.52.3.9.1	(L1) Ensure 'Always prompt for password upon connection' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.9.2	(L1) Ensure 'Require secure RPC communication' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.9.3	(L1) Ensure 'Set client connection encryption level' is set to 'Enabled: High Level' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.52.3.10</b>	<b>Session Time Limits</b>		
18.9.52.3.10.1	(L2) Ensure 'Set time limit for active but idle Remote Desktop Services sessions' is set to 'Enabled: 15 minutes or less' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.10.2	(L2) Ensure 'Set time limit for disconnected sessions' is set to 'Enabled: 1 minute' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.52.3.11</b>	<b>Temporary folders</b>		
18.9.52.3.11.1	(L1) Ensure 'Do not delete temp folders upon exit' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.52.3.11.2	(L1) Ensure 'Do not use temporary folders per session' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

Control		Set Correctly	
		Yes	No
<b>18.9.53</b>	<b>RSS Feeds</b>		
18.9.53.1	(L1) Ensure 'Prevent downloading of enclosures' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.54</b>	<b>Search</b>		
<b>18.9.54.1</b>	<b>OCR</b>		
18.9.54.2	(L1) Ensure 'Allow indexing of encrypted files' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.54.3	(L2) Ensure 'Set what information is shared in Search' is set to 'Enabled: Anonymous info' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.55</b>	<b>Security Center</b>		
<b>18.9.56</b>	<b>Server for NIS</b>		
<b>18.9.57</b>	<b>Shutdown Options</b>		
<b>18.9.58</b>	<b>Smart Card</b>		
<b>18.9.59</b>	<b>Software Protection Platform</b>		
18.9.59.1	(L2) Ensure 'Turn off KMS Client Online AVS Validation' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.60</b>	<b>Sound Recorder</b>		
<b>18.9.61</b>	<b>Store</b>		
18.9.61.1	(L1) Ensure 'Turn off Automatic Download and Install of updates' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.61.2	(L1) Ensure 'Turn off the offer to update to the latest version of Windows' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.61.3	(L2) Ensure 'Turn off the Store application' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.62</b>	<b>Sync your settings</b>		
<b>18.9.63</b>	<b>Tablet PC</b>		
<b>18.9.64</b>	<b>Task Scheduler</b>		
<b>18.9.65</b>	<b>Text Input</b>		
<b>18.9.66</b>	<b>Windows Calendar</b>		
<b>18.9.67</b>	<b>Windows Color System</b>		
<b>18.9.68</b>	<b>Windows Customer Experience Improvement Program</b>		
<b>18.9.69</b>	<b>Windows Defender</b>		
<b>18.9.69.1</b>	<b>Client Interface</b>		
<b>18.9.69.2</b>	<b>Exclusions</b>		
<b>18.9.69.3</b>	<b>MAPS</b>		
18.9.69.3.1	(L2) Ensure 'Join Microsoft MAPS' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.70</b>	<b>Windows Error Reporting</b>		
<b>18.9.70.1</b>	<b>Advanced Error Reporting Settings</b>		
<b>18.9.70.2</b>	<b>Consent</b>		



Control		Set Correctly	
		Yes	No
18.9.70.2.1	(L1) Ensure 'Configure Default consent' is set to 'Enabled: Always ask before sending data' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.70.3	(L1) Ensure 'Automatically send memory dumps for OS-generated error reports' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.71</b>	<b>Windows Game Recording and Broadcasting</b>		
<b>18.9.72</b>	<b>Windows Hello for Business (formerly Microsoft Passport for Work)</b>		
<b>18.9.73</b>	<b>Windows Ink Workspace</b>		
<b>18.9.74</b>	<b>Windows Installer</b>		
18.9.74.1	(L1) Ensure 'Allow user control over installs' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.74.2	(L1) Ensure 'Always install with elevated privileges' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.74.3	(L2) Ensure 'Prevent Internet Explorer security prompt for Windows Installer scripts' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.75</b>	<b>Windows Logon Options</b>		
18.9.75.1	(L1) Ensure 'Sign-in last interactive user automatically after a system-initiated restart' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.76</b>	<b>Windows Mail</b>		
<b>18.9.77</b>	<b>Windows Media Center</b>		
<b>18.9.78</b>	<b>Windows Media Digital Rights Management</b>		
<b>18.9.79</b>	<b>Windows Media Player</b>		
<b>18.9.80</b>	<b>Windows Meeting Space</b>		
<b>18.9.81</b>	<b>Windows Messenger</b>		
<b>18.9.82</b>	<b>Windows Mobility Center</b>		
<b>18.9.83</b>	<b>Windows Movie Maker</b>		
<b>18.9.84</b>	<b>Windows PowerShell</b>		
18.9.84.1	(L1) Ensure 'Turn on PowerShell Script Block Logging' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.84.2	(L1) Ensure 'Turn on PowerShell Transcription' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.85</b>	<b>Windows Reliability Analysis</b>		
<b>18.9.86</b>	<b>Windows Remote Management (WinRM)</b>		
<b>18.9.86.1</b>	<b>WinRM Client</b>		
18.9.86.1.1	(L1) Ensure 'Allow Basic authentication' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.86.1.2	(L1) Ensure 'Allow unencrypted traffic' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.86.1.3	(L1) Ensure 'Disallow Digest authentication' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.86.2</b>	<b>WinRM Service</b>		

Control		Set Correctly	
		Yes	No
18.9.86.2.1	(L1) Ensure 'Allow Basic authentication' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.86.2.2	(L2) Ensure 'Allow remote server management through WinRM' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.86.2.3	(L1) Ensure 'Allow unencrypted traffic' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.86.2.4	(L1) Ensure 'Disallow WinRM from storing RunAs credentials' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.87</b>	<b>Windows Remote Shell</b>		
18.9.87.1	(L2) Ensure 'Allow Remote Shell Access' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>18.9.88</b>	<b>Windows SideShow</b>		
<b>18.9.89</b>	<b>Windows System Resource Manager</b>		
<b>18.9.90</b>	<b>Windows Update</b>		
<b>18.9.90.1</b>	<b>Defer Windows Updates</b>		
18.9.90.2	(L1) Ensure 'Configure Automatic Updates' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.90.3	(L1) Ensure 'Configure Automatic Updates: Scheduled install day' is set to '0 - Every day' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
18.9.90.4	(L1) Ensure 'No auto-restart with logged on users for scheduled automatic updates installations' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19</b>	<b>Administrative Templates (User)</b>		
<b>19.1</b>	<b>Control Panel</b>		
<b>19.1.1</b>	<b>Add or Remove Programs</b>		
<b>19.1.2</b>	<b>Display</b>		
<b>19.1.3</b>	<b>Personalization</b>		
19.1.3.1	(L1) Ensure 'Enable screen saver' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
19.1.3.2	(L1) Ensure 'Force specific screen saver: Screen saver executable name' is set to 'Enabled: scrnsave.scr' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
19.1.3.3	(L1) Ensure 'Password protect the screen saver' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
19.1.3.4	(L1) Ensure 'Screen saver timeout' is set to 'Enabled: 900 seconds or fewer, but not 0' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19.2</b>	<b>Desktop</b>		
<b>19.3</b>	<b>Network</b>		
<b>19.4</b>	<b>Shared Folders</b>		
<b>19.5</b>	<b>Start Menu and Taskbar</b>		
<b>19.5.1</b>	<b>Notifications</b>		

Control		Set Correctly	
		Yes	No
19.5.1.1	(L1) Ensure 'Turn off toast notifications on the lock screen' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19.6</b>	<b>System</b>		
<b>19.6.1</b>	<b>Ctrl+Alt+Del Options</b>		
<b>19.6.2</b>	<b>Driver Installation</b>		
<b>19.6.3</b>	<b>Folder Redirection</b>		
<b>19.6.4</b>	<b>Group Policy</b>		
<b>19.6.5</b>	<b>Internet Communication Management</b>		
<b>19.6.5.1</b>	<b>Internet Communication settings</b>		
19.6.5.1.1	(L2) Ensure 'Turn off Help Experience Improvement Program' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19.7</b>	<b>Windows Components</b>		
<b>19.7.1</b>	<b>Add features to Windows 8 / 8.1 / 10</b>		
<b>19.7.2</b>	<b>App runtime</b>		
<b>19.7.3</b>	<b>Application Compatibility</b>		
<b>19.7.4</b>	<b>Attachment Manager</b>		
19.7.4.1	(L1) Ensure 'Do not preserve zone information in file attachments' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
19.7.4.2	(L1) Ensure 'Notify antivirus programs when opening attachments' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19.7.5</b>	<b>AutoPlay Policies</b>		
<b>19.7.6</b>	<b>Backup</b>		
<b>19.7.7</b>	<b>Cloud Content</b>		
<b>19.7.8</b>	<b>Credential User Interface</b>		
<b>19.7.9</b>	<b>Data Collection and Preview Builds</b>		
<b>19.7.10</b>	<b>Desktop Gadgets</b>		
<b>19.7.11</b>	<b>Desktop Window Manager</b>		
<b>19.7.12</b>	<b>Digital Locker</b>		
<b>19.7.13</b>	<b>Edge UI</b>		
<b>19.7.14</b>	<b>File Explorer</b>		
<b>19.7.15</b>	<b>File Revocation</b>		
<b>19.7.16</b>	<b>IME</b>		
<b>19.7.17</b>	<b>Import Video</b>		
<b>19.7.18</b>	<b>Instant Search</b>		
<b>19.7.19</b>	<b>Internet Explorer</b>		
<b>19.7.20</b>	<b>Location and Sensors</b>		
<b>19.7.21</b>	<b>Microsoft Edge</b>		
<b>19.7.22</b>	<b>Microsoft Management Console</b>		
<b>19.7.23</b>	<b>Microsoft User Experience Virtualization</b>		
<b>19.7.24</b>	<b>NetMeeting</b>		

Control		Set Correctly	
		Yes	No
<b>19.7.25</b>	<b>Network Projector</b>		
<b>19.7.26</b>	<b>Network Sharing</b>		
19.7.26.1	(L1) Ensure 'Prevent users from sharing files within their profile.' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19.7.27</b>	<b>Presentation Settings</b>		
<b>19.7.28</b>	<b>Remote Desktop Services</b>		
<b>19.7.29</b>	<b>RSS Feeds</b>		
<b>19.7.30</b>	<b>Search</b>		
<b>19.7.31</b>	<b>Sound Recorder</b>		
<b>19.7.32</b>	<b>Store</b>		
<b>19.7.33</b>	<b>Tablet PC</b>		
<b>19.7.34</b>	<b>Task Scheduler</b>		
<b>19.7.35</b>	<b>Windows Calendar</b>		
<b>19.7.36</b>	<b>Windows Color System</b>		
<b>19.7.37</b>	<b>Windows Error Reporting</b>		
<b>19.7.38</b>	<b>Windows Hello for Business (formerly Microsoft Passport for Work)</b>		
<b>19.7.39</b>	<b>Windows Installer</b>		
19.7.39.1	(L1) Ensure 'Always install with elevated privileges' is set to 'Disabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>
<b>19.7.40</b>	<b>Windows Logon Options</b>		
<b>19.7.41</b>	<b>Windows Mail</b>		
<b>19.7.42</b>	<b>Windows Media Center</b>		
<b>19.7.43</b>	<b>Windows Media Player</b>		
<b>19.7.43.1</b>	<b>Networking</b>		
<b>19.7.43.2</b>	<b>Playback</b>		
19.7.43.2.1	(L2) Ensure 'Prevent Codec Download' is set to 'Enabled' (Scored)	<input type="checkbox"/>	<input type="checkbox"/>

# Appendix: Change History

Date	Version	Changes for this version
09-15-2014	1.0.0	Initial Public Release
11-03-2014	1.1.0	Fix numbering in 1.2.x per Ticket #233
11-03-2014	1.1.0	Clarify that 0 is not valid for 'Maximum password age' per Ticket #235
11-03-2014	1.1.0	Clarify that 0 is not valid for Maximum machine account password age per Ticket #246
11-03-2014	1.1.0	Clarify that 0 is not valid for Machine inactivity limit #ticket 247
11-03-2014	1.1.0	Update registry value name delimiter per Tickets #249, #251, #253, #255, #257, #260
11-03-2014	1.1.0	Clarify that more aggressive states are conformant for smart card removals per Ticket #261
11-03-2014	1.1.0	Clarify that more aggressive states are conformant for SPN validation per Ticket #264
11-03-2014	1.1.0	Reinforce default list of anonymously accessible named pipes per Ticket #266
11-03-2014	1.1.0	Reinforce default list of anonymously accessible file shares per Ticket #268
11-03-2014	1.1.0	Clarify that automatic update delay is 1 minute per Ticket #270
11-03-2014	1.1.0	Remove 'Clear page file on shut down' per Ticket #273

Date	Version	Changes for this version
11-03-2014	1.1.0	Removed redundant information from advanced audit recommendations per Ticket #274
11-03-2014	1.1.0	Drop recommendation related to elevating only signed/validated executables per Ticket #276
11-03-2014	1.1.0	Add 'Audit Other Logon/Logoff Events' per Ticket #290
11-03-2014	1.1.0	Add section for 'Internet Communication Settings' per Ticket #304
11-03-2014	1.1.0	Add section for 'Sleep Settings' per Ticket #306
11-03-2014	1.1.0	Remove 'Shutdown: Allow system to be shut down without having to log on' to 'Enabled' per Ticket #307
11-03-2014	1.1.0	Remove 'System cryptography: Use FIPS compliant algorithms for encryption, hashing, and signing' per Ticket #308
11-03-2014	1.1.0	Add 'Audit Computer Account Management' per Ticket #309
11-03-2014	1.1.0	Remove 'Server' section per Ticket #311
11-03-2014	1.1.0	Enable RPC Endpoint Mapper Client Authentication - change to Enabled per Ticket #312
11-03-2014	1.1.0	Add recommendation for allow log on through RDP per Ticket #314

Date	Version	Changes for this version
09-30-2015	2.0.0	(L1) Remove "Interactive logon: Number of previous logons to cache (in case domain controller is not available)" = Enabled from DC profile  Ticket #263
09-30-2015	2.0.0	(L1) Add "Exchange Servers" group to "Manage auditing and security logs" to DC profile  Ticket #320
09-30-2015	2.0.0	(L1) Modify "Microsoft network server: Amount of idle time required before suspending session" to disqualify 0 as acceptable value.  Ticket #322
09-30-2015	2.0.0	(L1) Remove "Apply UAC restrictions to local accounts on network logons" = Enabled from DC profile. Ticket #324
09-30-2015	2.0.0	(L1) Add "Accounts: Administrator account status" = Disabled  Ticket #329
09-30-2015	2.0.0	(L1) Add "Do not enumerate connected users on domain-joined computers" = Enabled  Ticket #331
09-30-2015	2.0.0	(L1) Add "Enumerate local users on domain-joined computers" = Disabled  Ticket #332
09-30-2015	2.0.0	(L1) Add "Turn on PIN sign-in" = Disabled  Ticket #333

Date	Version	Changes for this version
09-30-2015	2.0.0	(L1) Add "Enumerate administrator accounts on elevation" = Disabled  Ticket #334
09-30-2015	2.0.0	(L1) Add "Configure Windows SmartScreen" = Enabled:Require approval from an administrator before running downloaded unknown software  Ticket #335
09-30-2015	2.0.0	(L1) Add "Turn off Data Execution Prevention for Explorer" = Disabled  Ticket #336
09-30-2015	2.0.0	(L1) Permit stronger values for 'Interactive logon: Smart card removal behavior' Ticket #337
09-30-2015	2.0.0	(L1) Add "Interactive logon: Require Domain Controller Authentication to unlock workstations" = Enabled to MS profile  Ticket#340
09-30-2015	2.0.0	(L1) Add "Hardened UNC Paths" to protect NETLOGON and SYSVOL (MS15-011 / KB3000483)  Ticket #343
09-30-2015	2.0.0	(L2) Add MSS: KeepAliveTime = 3  Ticket #346
09-30-2015	2.0.0	(L2) Add MSS: NoNameReleaseOnDemand = Enabled  Ticket #348



Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add MSS: PerformRouterDiscovery = Disabled  Ticket #350
09-30-2015	2.0.0	(L2) Add MSS: TcpMaxDataRetransmission IPv6 = 3  Ticket #352
09-30-2015	2.0.0	(L2) Add MSS: TcpMaxDataRetransmission = 3  Ticket #354
09-30-2015	2.0.0	(L2) Add "Network access: Do not allow storage of passwords and credentials for network authentication" = Enabled  Ticket #356
09-30-2015	2.0.0	(L2) Add "Turn off Microsoft Peer-to-Peer Networking Services" = Enabled  Ticket #367
09-30-2015	2.0.0	(L1) Add "Prohibit installation and configuration of Network Bridge on your DNS domain network" = Enabled  Ticket #368
09-30-2015	2.0.0	(L1) Add "Require domain users to elevate when setting a network's location" = Enabled  Ticket #370
09-30-2015	2.0.0	(L2) Add "Configuration of wireless settings using Windows Connect Now" = Disabled  Ticket #371

Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Prohibit Access of the Windows Connect Now wizards" = Enabled  Ticket #372
09-30-2015	2.0.0	(L1) Add "Turn off background refresh of Group Policy" = Disabled  Ticket #374
09-30-2015	2.0.0	(L1) Add "Turn off shell protocol protected mode" = Disabled  Ticket #375
09-30-2015	2.0.0	(L1) Add "Do not use temporary folders per session" = Disabled  Ticket #376
09-30-2015	2.0.0	(L1) Clarify 'Allow log on through Remote Desktop Services' - listed principals are white listed, not required  Ticket #378
09-30-2015	2.0.0	(L1) Add "ENTERPRISE DOMAIN CONTROLLERS" to "Allow log on locally" to DC profile for Active Directory Domain Services Role  Ticket #379
09-30-2015	2.0.0	(L1) Clarify "Devices: Allowed to format and eject removable media" language  Ticket #380

Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Require Password When a Computer Wakes" = Enabled (both "On Battery" and "Plugged In")  Ticket #382
09-30-2015	2.0.0	(L1) Add "Turn off toast notifications on the lock screen" = Enabled  Ticket #383
09-30-2015	2.0.0	(L1) Permit stronger values for 'Interactive logon: Smart card removal behavior'  Ticket #385
09-30-2015	2.0.0	(L1) Correct "Always install with elevated privileges" = Disabled remediation and cross-reference  Ticket #386
09-30-2015	2.0.0	(L1) Add "Do not display the password reveal button" = Enabled  Ticket #387
09-30-2015	2.0.0	(L2) Add "Turn off heap termination on corruption" = Disabled  Ticket #388
09-30-2015	2.0.0	(L1) Add "Turn off shell protocol protected mode" = Disabled  Ticket #389
09-30-2015	2.0.0	(L1) Add "Prevent the usage of OneDrive for file storage" = Enabled  Ticket #390

Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Set what information is shared in Search" = Enabled:Anonymous info  Ticket #391
09-30-2015	2.0.0	(L2) Add "Join Microsoft MAPS" = Disabled  Ticket #392
09-30-2015	2.0.0	(L2) Add "Prevent Internet Explorer security prompt for Windows Installer scripts" = Disabled  Ticket #393
09-30-2015	2.0.0	(L1) Add "Turn off app notifications on the lock screen" = Enabled  Ticket #395
09-30-2015	2.0.0	(L2) Add "Enable/Disable PerfTrack" = Disabled  Ticket #396
09-30-2015	2.0.0	(L2) Add "Enable Windows NTP Client" = Enabled  Ticket #397
09-30-2015	2.0.0	(L2) Add "Enable Windows NTP Server" = Disabled  Ticket #398
09-30-2015	2.0.0	17.2 - Audit Application Group Management  Ticket #399
09-30-2015	2.0.0	(L2) Add "Disallow Autoplay for non-volume devices" = Enabled  Ticket #400

Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Turn on Mapper I/O (LLTDIO) driver" = Disabled  Ticket #401
09-30-2015	2.0.0	(L2) Add "Turn on Responder (RSPNDR) driver" = Disabled  Ticket #402
09-30-2015	2.0.0	(L2) Add "Restrict Remote Desktop Services users to a single Remote Desktop Services session" = Enabled  Ticket #404
09-30-2015	2.0.0	(L2) Add "Do not allow COM port redirection" = Enabled  Ticket #405
09-30-2015	2.0.0	(L2) Add "Do not allow LPT port redirection" = Enabled  Ticket #406
09-30-2015	2.0.0	(L2) Add "Do not allow supported Plug and Play device redirection" = Enabled  Ticket #407
09-30-2015	2.0.0	(L1) Add "Require secure RPC communication" = Enabled  Ticket #408
09-30-2015	2.0.0	(L2) Add "Set time limit for active but idle Remote Desktop Services sessions" = Enabled:15 minutes or less  Ticket #409

Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Set time limit for disconnected sessions" = Enabled:1 minute or less  Ticket #410
09-30-2015	2.0.0	(L2) Add "Restrict Unauthenticated RPC clients" = Enabled:Authenticated on Member Servers *only*  Ticket #411
09-30-2015	2.0.0	(L2) Add Disable IPv6 (via DisabledComponents registry value = 0xff (255))  Ticket #412
09-30-2015	2.0.0	(L2) Add "Prohibit connection to non-domain networks when connected to domain authenticated network" = Enabled  Ticket #413
09-30-2015	2.0.0	(L1) Add "Include command line in process creation events" = Disabled  Ticket #414
09-30-2015	2.0.0	(L2) Add "Turn off handwriting personalization data sharing" = Enabled  Ticket #415
09-30-2015	2.0.0	(L2) Add "Turn off handwriting recognition error reporting" = Enabled  Ticket #416

Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Turn off Internet Connection Wizard if URL connection is referring to Microsoft.com" = Enabled  Ticket #417
09-30-2015	2.0.0	(L2) Add "Turn off Internet File Association service" = Enabled  Ticket #418
09-30-2015	2.0.0	(L2) Add "Turn off Registration if URL connection is referring to Microsoft.com" = Enabled  Ticket #419
09-30-2015	2.0.0	(L2) Add "Turn off the "Order Prints" picture task" = Enabled  Ticket #420
09-30-2015	2.0.0	(L2) Add "Turn off Windows Customer Experience Improvement Program" = Enabled  Ticket #421
09-30-2015	2.0.0	(L2) Add "Turn off Windows Error Reporting" = Enabled  Ticket #422
09-30-2015	2.0.0	(L1->L2) Move "Turn off Internet download for Web publishing and online ordering wizards" to Level 2  Ticket #423
09-30-2015	2.0.0	(L1->L2) Move "Turn off Search Companion content file updates" to Level 2  Ticket #424

Date	Version	Changes for this version
09-30-2015	2.0.0	(L1->L2) Move "Turn off the Windows Messenger Experience Improvement Program" to Level 2  Ticket #425
09-30-2015	2.0.0	(L1) Add "NT VIRTUAL MACHINE\Virtual Machines" to "Create symbolic links" for Hyper-V Role  Ticket #426
09-30-2015	2.0.0	(L1) Add "System\CurrentControlSet\Services\CertSvc" to "Network access: Remotely accessible registry paths and sub-paths" for ADCS Role  Ticket #427
09-30-2015	2.0.0	(L1) Add "IIS_USRS" to "Impersonate a client after authentication" for Web Server (IIS) Role with Web Services Role Service  Ticket #428
09-30-2015	2.0.0	(L1) Add "System\CurrentControlSet\Services\WINS" to "Network access: Remotely accessible registry paths and sub-paths" for WINS Server Feature  Ticket #429
09-30-2015	2.0.0	(L1) Add "Hardened UNC Paths" to protect NETLOGON and SYSVOL (MS15-011 / KB3000483)  Ticket #432



Date	Version	Changes for this version
09-30-2015	2.0.0	(L2) Add "Turn off Help Experience Improvement Program" = Enabled  Ticket #433
09-30-2015	2.0.0	(L1) Add "Prevent users from sharing files within their profile." = Enabled  Ticket #434
09-30-2015	2.0.0	(L2) Add "Prevent Codec Download" = Enabled  Ticket #435
09-30-2015	2.0.0	(L2) Add "Disallow copying of user input methods to the system account for sign-in" = Enabled  Ticket #436
10-30-2015	2.1.0	Add "MSS (Legacy)" section from new ADMX template, relocate all MSS items to it and delete old MSS section  Ticket #438
10-30-2015	2.1.0	Add "SCM: Wi-Fi Sense" section from new Microsoft ADMX template  Ticket #439
10-30-2015	2.1.0	(L2) Remove "Turn off Internet File Association service" recommendation - does not apply  Ticket #440

Date	Version	Changes for this version
10-30-2015	2.1.0	(L1) Remove "Do not adjust default option to 'Install Updates and Shut Down' in Shut Down Windows dialog box" recommendation - does not apply  Ticket #441
10-30-2015	2.1.0	(L1) Remove "Do not display 'Install Updates and Shut Down' option in Shut Down Windows dialog box" recommendation - does not apply  Ticket #442
10-30-2015	2.1.0	(L1) Remove "Reschedule Automatic Updates scheduled installations" recommendation - does not apply  Ticket #443
10-30-2015	2.1.0	(L1) Add "Audit Application Group Management" = Success and Failure  Ticket #444
10-30-2015	2.1.0	(L1) Add "MSS: (EnableICMPRedirect) Allow ICMP redirects to override OSPF generated routes" = Disabled  Ticket #445
10-30-2015	2.1.0	(L2->L1) Move "MSS: (NoNameReleaseOnDemand) Allow the computer to ignore NetBIOS name release requests except from WINS servers" = Enabled to Level 1  Ticket #446
10-30-2015	2.1.0	(L2->L1) Move "Disallow Autoplay for non-volume devices" = Enabled to Level 1  Ticket #447

Date	Version	Changes for this version
10-30-2015	2.1.0	(L2->L1) Move "Turn off heap termination on corruption" = Disabled to Level 1  Ticket #448
10-30-2015	2.1.0	Fix missing/incorrect Common Configuration Enumeration (CCE) IDs  Ticket #449
10-30-2015	2.1.0	(L1) Add "Set the default behavior for AutoRun" = "Enabled: Do not execute any autorun commands"  Ticket #450
10-30-2015	2.1.0	(L1) Add LAPS "Enable local admin password management" = "Enabled"  Ticket #451
10-30-2015	2.1.0	(L1) Add LAPS "Password Settings: Password Complexity" = "Enabled:Large letters + small letters + numbers + specials"  Ticket #452
10-30-2015	2.1.0	(L1) Add LAPS "Password Settings: Password Length" = "Enabled:15 or more"  Ticket #453
10-30-2015	2.1.0	(L1) Add LAPS "Password Settings: Password Age (Days)" = "Enabled:30 or fewer"  Ticket #454
10-30-2015	2.1.0	(L1) Add LAPS "Do not allow password expiration time longer than required by policy" = "Enabled"  Ticket #455

Date	Version	Changes for this version
10-30-2015	2.1.0	(L1) Ensure LAPS AdmPwd GPO Extension / CSE is installed  Ticket #456
10-30-2015	2.1.0	(L2) Add "Turn off KMS Client Online AVS Validation" = "Enabled"  Ticket #457
10-30-2015	2.1.0	(L1) Add "Turn on PowerShell Script Block Logging" = "Disabled"  Ticket #458
10-30-2015	2.1.0	(L1) Add "Turn on PowerShell Transcription" = "Disabled"  Ticket #459
10-30-2015	2.1.0	Change from LGPE GPO paths to GPME GPO paths  Ticket #460
11-02-2015	2.1.0	Improved document formatting - no recommendation changes.
04-28-2016	2.2.0	(L1) Change "Access this computer from the network" from "Administrators, Authenticated Users" to "Administrators"  Ticket #481
04-28-2016	2.2.0	(L1) Change "Windows Firewall: Domain: Settings: Display a notification" from "Yes" to "No"  Ticket #482

Date	Version	Changes for this version
04-28-2016	2.2.0	(L1) Change "Windows Firewall: Private: Settings: Display a notification" from "Yes" to "No"  Ticket #483
04-28-2016	2.2.0	(L1) Change "Windows Firewall: Public: Apply local firewall rules" from "Yes (default)" to "No"  Ticket #484
04-28-2016	2.2.0	(L1) Change "Audit Security State Change" from "Success and Failure" to "Success"  Ticket #485
04-28-2016	2.2.0	(BL) Change "Do not allow write access to devices configured in another organization" from "TRUE" to "FALSE"  Ticket #486
04-28-2016	2.2.0	(L2 -> L1) Move "Prohibit connection to non-domain networks when connected to domain authenticated network" = "Enabled" to Level 1  Ticket #489
04-28-2016	2.2.0	(L1) Add "Allow user control over installs" = "Disabled"  Ticket #490
04-28-2016	2.2.0	(L2 -> L1) Move "Network access: Do not allow storage of passwords and credentials for network authentication" = "Enabled" to Level 1  Ticket #491

Date	Version	Changes for this version
04-28-2016	2.2.0	Addition of SkyDrive category, separate from OneDrive category  Ticket #499
04-28-2016	2.2.0	(L1) Add Store "Turn off Automatic Download and Install of updates" = "Disabled"  Ticket #510
04-28-2016	2.2.0	(L1) Add Store "Turn off the offer to update to the latest version of Windows" = "Enabled"  Ticket #512
04-28-2016	2.2.0	(L2) Add Store "Turn off the Store application" = Enabled  Ticket #513
04-28-2016	2.2.0	(L1) Add Windows Error Reporting "Automatically send memory dumps for OS-generated error reports" = "Disabled"  Ticket #514
04-28-2016	2.2.0	(L1) Add Windows Error Reporting "Configure Default consent" = "Enabled: Always ask before sending data"  Ticket #515
04-28-2016	2.2.0	(L1) Add "Minimize the number of simultaneous connections to the Internet or a Windows Domain" = "Enabled"  Ticket #525
04-28-2016	2.2.0	(L2) Add "Turn off access to the Store" = "Enabled"  Ticket #527

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04-28-2016	2.2.0	(L2) Add "Turn off location" = "Enabled"  Ticket #531
04-28-2016	2.2.0	(L1 -> L2) Move "Interactive logon: Number of previous logons to cache (in case domain controller is not available)" = "4 or fewer logons" to Level 2  Ticket #535
04-28-2016	2.2.0	REMOVE - (L1) Set 'Recovery console: Allow automatic administrative logon' to 'Disabled'  Ticket #536
04-28-2016	2.2.0	REMOVE - (L1) Set 'Recovery console: Allow floppy copy and access to all drives and all folders' to 'Disabled'  Ticket #537
04-28-2016	2.2.0	REMOVE - (L1) Set 'Windows Firewall: Domain: Settings: Allow unicast response' to 'No'  Ticket #538
04-28-2016	2.2.0	REMOVE - (L1) Set 'Windows Firewall: Private: Settings: Allow unicast response' to 'No'  Ticket #539
04-28-2016	2.2.0	REMOVE - (L1) Set 'Windows Firewall: Public: Settings: Allow unicast response' to 'No'  Ticket #540

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04-28-2016	2.2.0	REMOVE - (L2) Set 'Require trusted path for credential entry' to 'Enabled'  Ticket #541
04-28-2016	2.2.0	Update "(L1) Ensure EMET is installed" for EMET 5.5  Ticket #542
04-28-2016	2.2.0	(L1) Add EMET "Default Action and Mitigation Settings" = "Enabled" (plus subsettings)  Ticket #543
04-28-2016	2.2.0	Update "(L1) Set 'Default Protections for Internet Explorer'" for EMET 5.5 registry values  Ticket #544
04-28-2016	2.2.0	Update "(L1) Set 'Default Protections for Popular Software'" for EMET 5.5 registry values  Ticket #545
04-28-2016	2.2.0	Update "(L1) Set 'Default Protections for Recommended Software'" for EMET 5.5 registry values  Ticket #546
04-28-2016	2.2.0	Update "(L1) Set 'System ASLR'" for EMET 5.5 registry values  Ticket #547
04-28-2016	2.2.0	Update "(L1) Set 'System DEP'" for EMET 5.5 registry values  Ticket #548



Date	Version	Changes for this version
04-28-2016	2.2.0	Update "(L1) Set 'System SEHOP'" for EMET 5.5 registry values  Ticket #549
04-28-2016	2.2.0	(L2) Add "Log on as a batch job" = "Administrators"  Ticket #554
04-28-2016	2.2.0	(L2) Add "Log on as a service" = "<None> (blank)"  Ticket #556
04-28-2016	2.2.0	(L2) Add "Microsoft Support Diagnostic Tool: Turn on MSDT interactive communication with support provider" = "Disabled"  Ticket #557
04-28-2016	2.2.0	(L1) Add "Do not delete temp folders upon exit" = "Disabled"  Ticket #561
04-28-2016	2.2.0	(L1) Add "Prevent downloading of enclosures" = "Enabled"  Ticket #562
04-28-2016	2.2.0	(L2) Add "Allow Remote Shell Access" = "Disabled"  Ticket #563
04-28-2016	2.2.0	(L2) Add "Devices: Prevent users from installing printer drivers" = "Enabled"  Ticket #564

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01-31-2017	2.2.1	<p>ADD – (L2) Ensure ‘Turn off the advertising ID’ is set to ‘Enabled’.</p> <p>Ticket #580</p>
01-31-2017	2.2.1	<p>ADD – (L2) Ensure 'Allow remote server management through WinRM' is set to 'Disabled'.</p> <p>Ticket #581</p>
01-31-2017	2.2.1	<p>UPDATE of all “Default Value” entries to reflect default behavior instead of “Not Configured”, and streamline of other recommendation text to simplify and increase readability.</p> <p>Ticket #584</p>
01-31-2017	2.2.1	<p>UPDATE for EMET v5.51 release (also caused removal of 19.7.12 EMET user-based section &amp; renumbering of subsequent sections)</p> <p>Ticket #586</p>
01-31-2017	2.2.1	<p>RENAME &amp; RELOCATE “Microsoft Passport for Work” sections to “Windows Hello for Business” to reflect change in new Windows 10 R1607 &amp; Server 2016 administrative templates.</p> <p>Ticket #595</p>
01-31-2017	2.2.1	<p>MERGE “SkyDrive” section into “OneDrive” section and rename to “OneDrive (formerly SkyDrive)” to reflect full consolidation in new Windows 10 R1607 &amp; Server 2016 administrative templates.</p> <p>Ticket #596</p>

Date	Version	Changes for this version
01-31-2017	2.2.1	ADD all new sections from new Windows 10 R1607 & Server 2016 administrative templates. Causes some section renumbering.  Ticket #597
01-31-2017	2.2.1	UPDATE – (L1) Ensure 'Create symbolic links' is set to 'Administrators' to add “NT VIRTUAL MACHINE\Virtual Machines” as acceptable value to accommodate Client Hyper-V.  Ticket #603
01-31-2017	2.2.1	UPDATE – SkyDrive and OneDrive settings for better clarity between Next Generation Sync Client and legacy OneDrive client.  Ticket #2846
01-31-2017	2.2.1	Added mappings to the CIS Critical Security Controls.