New details on TinyTurla's post-compromise activity reveal full kill chain

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Thursday, March 21, 2024 09:08

APT Turla malware SecureX

Cisco Talos is providing an update on its two recent reports on a new and ongoing campaign where Turla, a Russian espionage group, deployed their TinyTurla-NG (TTNG) implant. We now have new information on the entire kill chain this actor uses, including the tactics, techniques and procedures (TTPs) utilized to steal valuable information from their victims and propagate through their infected enterprises.

- Talos' analysis, in coordination with CERT.NGO, reveals that Turla infected multiple systems in the compromised network of a European non-governmental organization (NGO).
- The attackers compromised the first system, established persistence and added exclusions to anti-virus products running on these endpoints as part of their preliminary post-compromise actions.
- Turla then opened additional channels of communication via Chisel for data exfiltration and to pivot to additional accessible systems in the network.

Tracing Turla's steps from compromise to exfiltration

Talos discovered that post-compromise activity carried out by Turla in this intrusion isn’t restricted to the sole deployment of their backdoors. Before deploying TinyTurla-NG, Turla will attempt to configure anti-virus software exclusions to evade detection of their backdoor. Once exclusions have been set up, TTNG is written to the disk, and persistence is established by creating a malicious service.

Preliminary post-compromise activity and TinyTurla-NG deployment

After gaining initial access, Turla first adds exclusions in the anti-virus software, such as Microsoft Defender, to locations they will use to host the implant on the compromised systems.

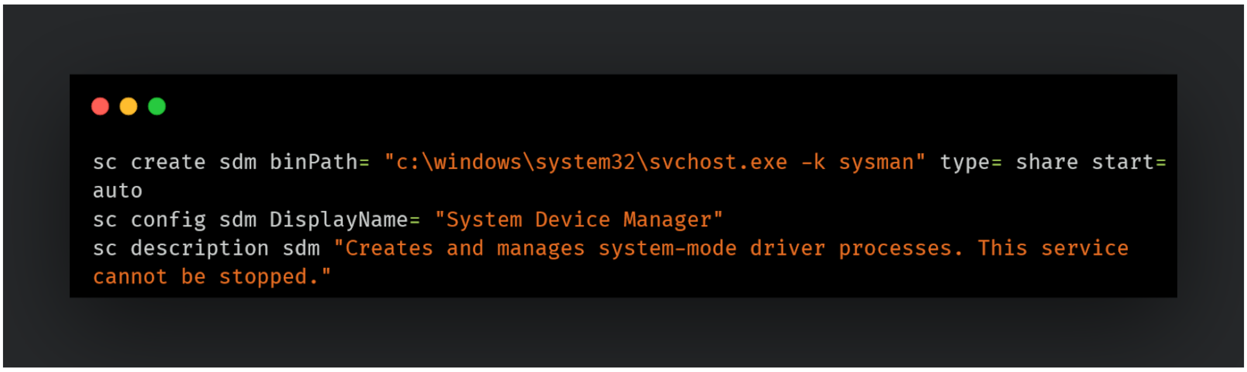
ACTION	INTENT
HKLM\SOFTWARE\Microsoft\Windows Defender\Exclusions\Paths | “C:\Windows\System32\” = 0x0	[T1562.001] Impair Defenses: Disable or Modify Tools

Turla then sets up the persistence of the TinyTurla-NG implants using one or more batch (BAT) files. The batch files create a service on the system to persist the TTNG DLL on the system.

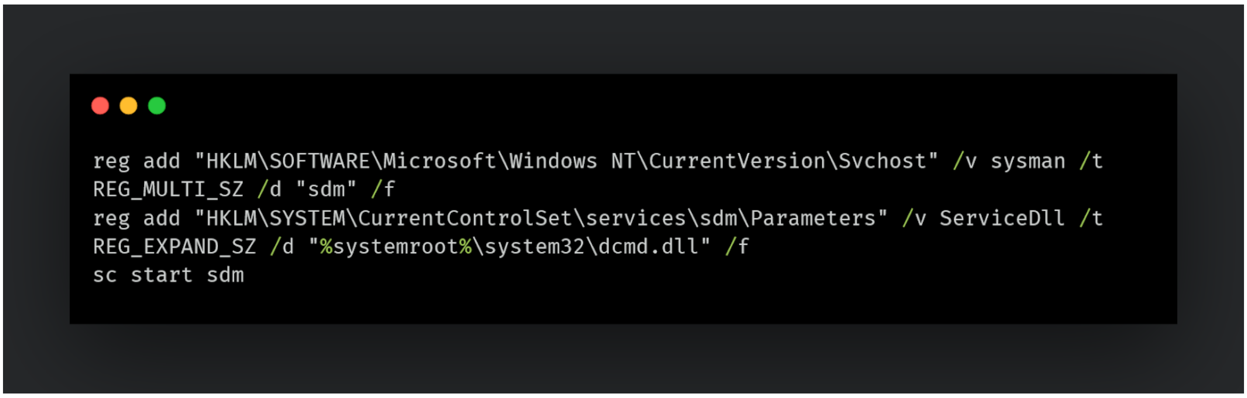
ACTION	INTENT
reg add "HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Svchost" /v sysman /t REG_MULTI_SZ /d "sdm" /f	[T1543.003] Create or Modify System Process: Windows Service
reg add "HKLM\SYSTEM\CurrentControlSet\services\sdm\Parameters" /v ServiceDll /t REG_EXPAND_SZ /d "%systemroot%\system32\dcmd.dll" /f	
sc create sdm binPath= "c:\windows\system32\svchost.exe -k sysman" type= share start= auto	
sc config sdm DisplayName= "System Device Manager"	[T1543.003] Create or Modify System Process: Windows Service
sc description sdm "Creates and manages system-mode driver processes. This service cannot be stopped."	

This technique is identical to that used by Turla in 2021 to achieve persistence for their TinyTurla implants. However, we’re still unsure why the actor uses two different batch files, but it seems to be an unnecessarily convoluted approach to evade detections.

In the case of TTNG, the service is created with the name “sdm” masquerading as a “System Device Manager” service.



```
sc create sdm binPath= "c:\windows\system32\svchost.exe -k sysman" type= share start=
auto
sc config sdm DisplayName= "System Device Manager"
sc description sdm "Creates and manages system-mode driver processes. This service
cannot be stopped."
```



```
reg add "HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Svchost" /v sysman /t
REG_MULTI_SZ /d "sdm" /f
reg add "HKLM\SYSTEM\CurrentControlSet\services\sdm\Parameters" /v ServiceDll /t
REG_EXPAND_SZ /d "%systemroot%\system32\dcmd.dll" /f
sc start sdm
```

Batch file contents.

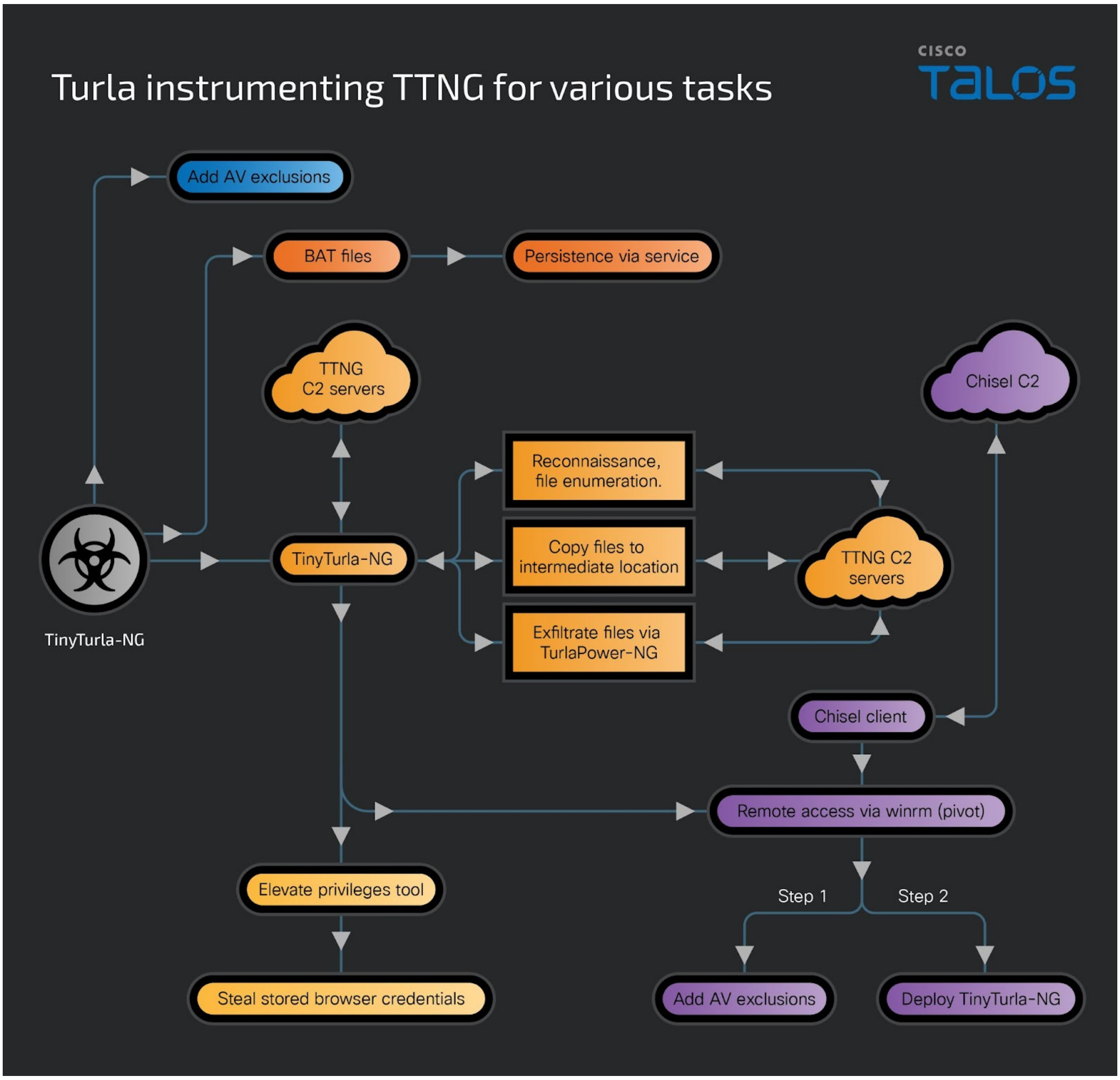
The creation and start of the malicious service kick starts the execution of the TinyTurla-NG implant via svchost[.]exe (Windows' service container). TinyTurla-NG is instrumented further to conduct additional reconnaissance of directories of interest and then copy files to a temporary staging directory on the infected system, followed by subsequent exfiltration to the C2. TinyTurla-NG is also used to deploy a custom-built Chisel beacon from the open-sourced offensive framework.

Custom Chisel usage

On deployment, Chisel will set up a reverse proxy tunnel to an attacker-controlled box [T1573.002 - Encrypted Channel: Asymmetric Cryptography]. We've observed that the attackers leveraged the chisel connection to the initially compromised system, to pivot to other systems in the network.

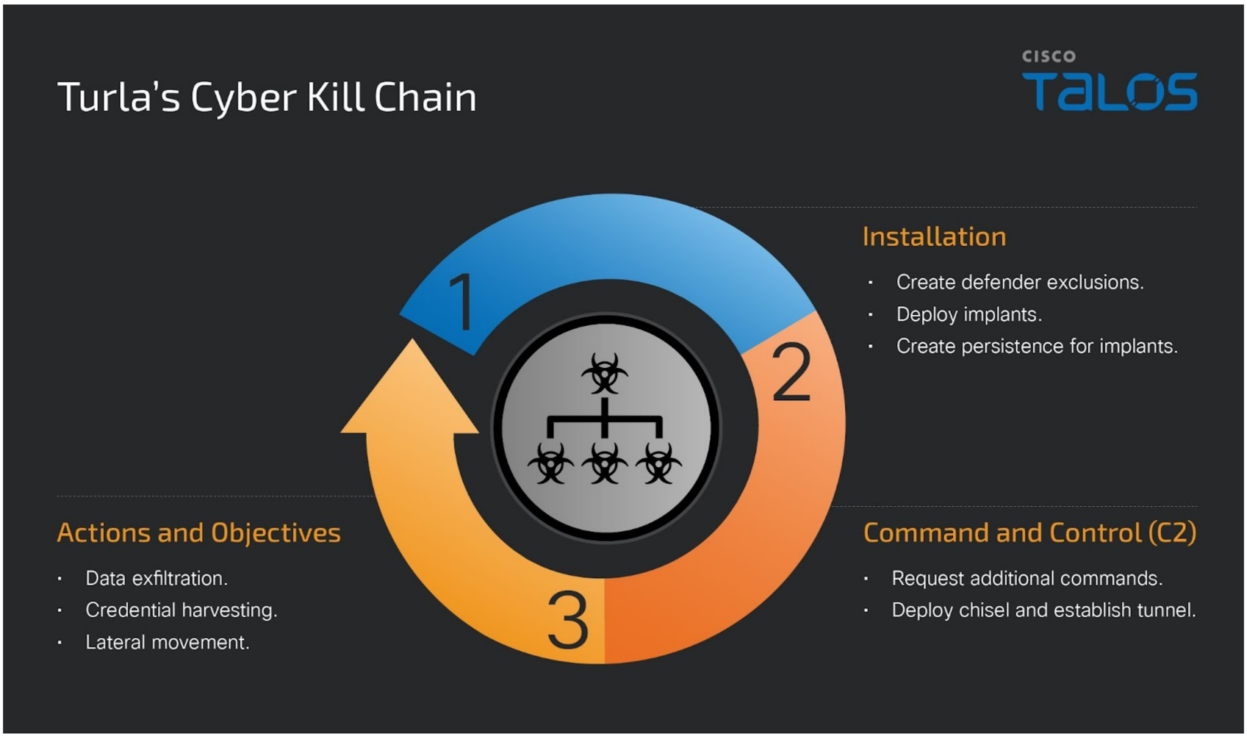
The presence of Windows Remote Management (WinRM)-based connections on the target systems indicates that chisel was likely used in conjunction with other tools, such as proxy chains and evil-winrm to establish remote sessions. WinRM is Microsoft's implementation of the WS-Management protocol and allows Windows-based systems to exchange information and be administered using scripts or built-in utilities.

The overall infection chain is visualized below.


Turla instrumenting TTNG for various tasks
CISCO TALOS
Add AV exclusions
BAT files
Persistence via service
TTNG C2 servers
Chisel C2
Reconnaissance, file enumeration.
TinyTurla-NG
Copy files to intermediate location
TTNG C2 servers
TinyTurla-NG
Exfiltrate files via TurlaPower-NG
Chisel client
Remote access via winrm (pivot)
Step 1
Step 2
Elevate privileges tool
Steal stored browser credentials
Add AV exclusions
Deploy TinyTurla-NG

Turla tactics, tools and procedures flow.

Once the attackers have gained access to a new box, they will repeat their activities to create Microsoft Defender exclusions, drop the malware components, and create persistence, indicating that Turla follows a playbook that can be articulated as the following cyber kill chain.



Turla's Cyber Kill Chain

Installation

- Create defender exclusions.
- Deploy implants.
- Create persistence for implants.

Command and Control (C2)

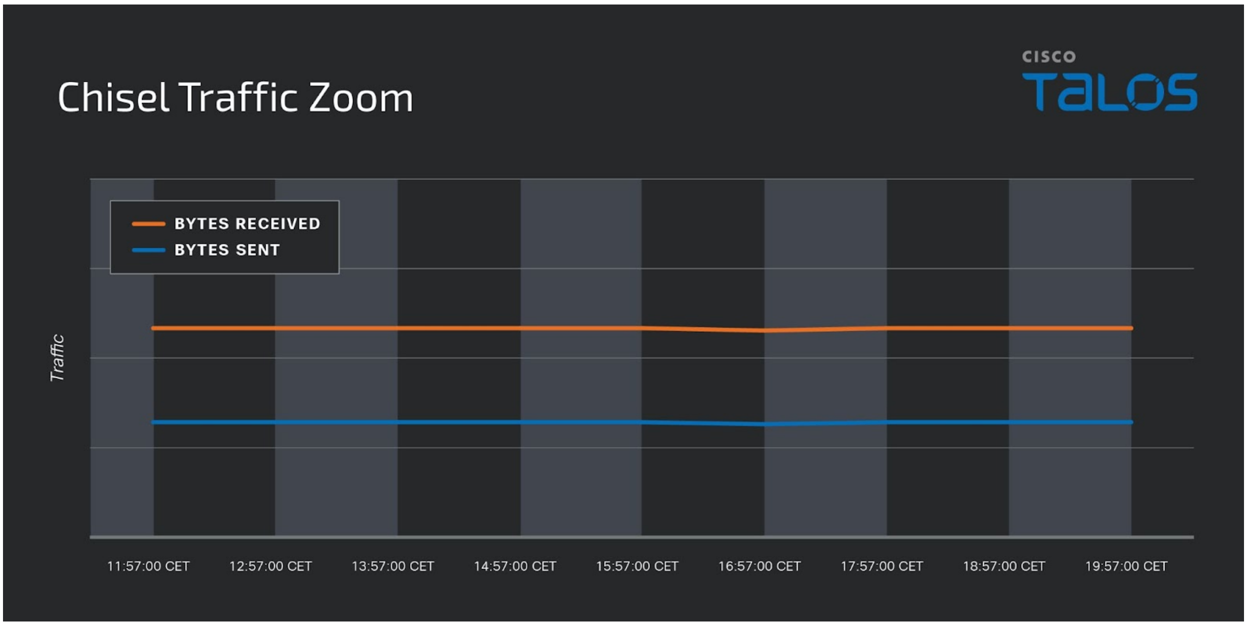
- Request additional commands.
- Deploy chisel and establish tunnel.

Actions and Objectives

- Data exfiltration.
- Credential harvesting.
- Lateral movement.

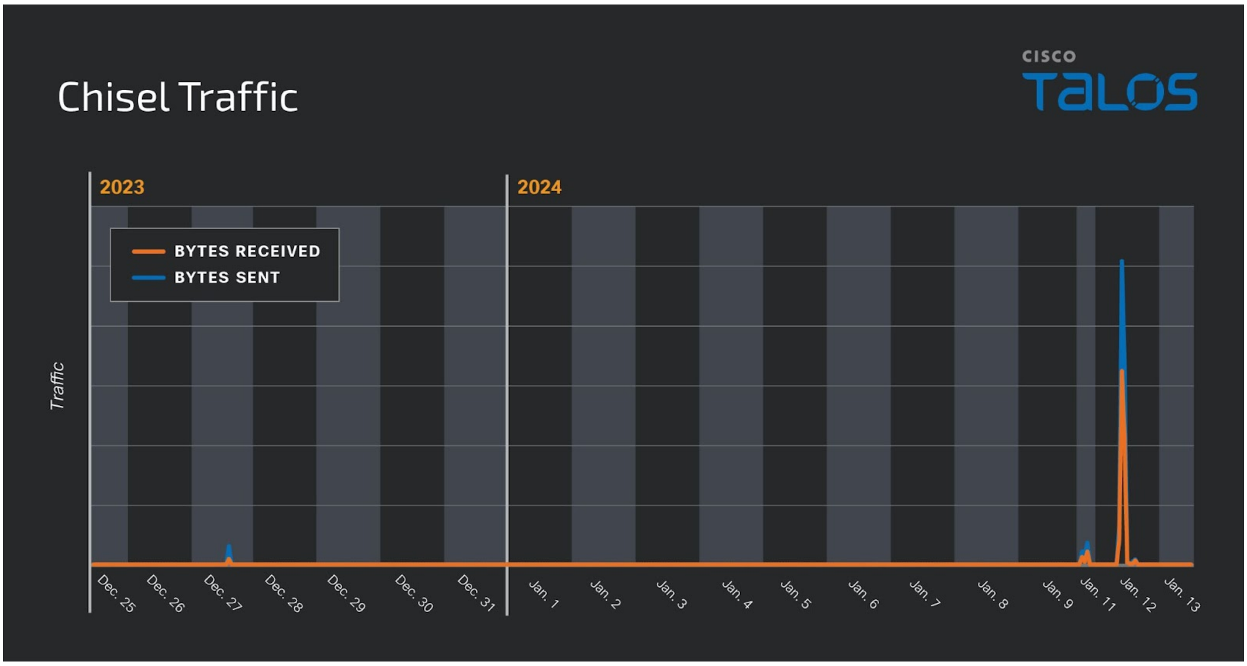
Cyber kill chain.

Analyzing the traffic originating from Chisel revealed the tool beaconed back to its C2 server every hour.



Chisel Traffic Zoom

While the infected systems were compromised as early as October 2023 and Chisel was deployed as late as December 2023, Turla operators conducted the majority of their data exfiltration over using Chisel much later on Jan. 12, 2024 [T1041 - Exfiltration Over C2 Channel].



IOCS

Hashes

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b376a3a6bae73840e70b2fa3df99d881def9250b42b6b8b0458d0445ddfbc044

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