

# Cyber Threat Analysis Report

## 1. Malware Analysis Using VirusTotal

### 1.1. Overview

The malware sample analyzed in this report was uploaded to VirusTotal for comprehensive analysis. The sample has the following hash:

c089f608639fcc31fc8f355b0e407e46371ca6f9c5fef106827cb99f48a4836.

### 1.2. Detection Results

- **File Size:** 689.18 KB
- **File Type:** RAR
- **Last Analysis Date:** 7 hours ago
- **Detection Rate:** 33 security vendors flagged the file as malicious.
- **Popular Threat Label:** Trojan.MSIL/Zmutzy
- **Threat Categories:** Trojan
- **Family Labels:** Zmutzy

### 1.3. Behavioral Indicators

- **Long-steps:** Indicates potential evasion techniques.
- **Checks-username:** Suggests the malware may be checking for specific user accounts.
- **Spreader:** Indicates potential propagation mechanisms.
- **Persistence:** Suggests the malware may attempt to maintain a presence on the infected system.
- **CallsWMI:** Indicates use of Windows Management Instrumentation for execution or persistence.
- **Detect-debug-environment:** Suggests anti-debugging techniques.

### 1.4. Security Vendors' Analysis

- **AhnLab-V3:** Trojan/Win.PowerShell.C57/2f745
- **AliCloud:** Trojan(spy):Win /Moon.gyf
- **Arcabit:** Trojan.Zmutzy.67
- **Avast:** Win32.MalwareK-gen [Tri]

## 1.5. Potential Impact

The malware is classified as a Trojan, which typically allows unauthorized access to the victim's system. It may be used to steal sensitive information, install additional malware, or create backdoors for further exploitation.

# 2. Phishing Template Creation Using SEToolkit

## 2.1. Overview

The Social Engineering Toolkit (SET) was used to create a phishing template. The process involved cloning a website and setting up a credential harvester to capture user inputs.

## 2.2. Phishing Template Details

- **Template Type:** Site Cloner
- **Targeted Service:** Google
- **Payload:** Credential Harvester
- **Delivery Method:** Web-based phishing page

## 2.3. Execution and Results

- **Phishing Page:** The Google login page was cloned to create a fake login page.
- **Victim Interaction:** The victim was prompted to enter their credentials on the cloned page.
- **Data Captured:** The captured credentials included:
  - **Username:** send@gmail.com
  - **Password:** mypassword

## 2.4. Configuration

- **IP Address for POST back:** 10.138.16.239
- **Port:** 80
- **Redirect URL:** Configured in `/etc/setoolkit/set.config` to redirect after credential capture.

# 3. APT Campaign Mapping to MITRE ATT&CK Framework

### 3.1. APT Group Overview

- **APT Group:** APT28 (Fancy Bear)
- **Known For:** Cyber espionage, targeting government, military, and corporate entities.
- **Attribution:** Linked to Russian military intelligence (GRU).

### 3.2. MITRE ATT&CK Mapping

- **Initial Access:**
  - **Technique:** Spear Phishing Attachment (T1193)
  - **Description:** APT28 often uses spear phishing emails with malicious attachments to gain initial access.
- **Execution:**
  - **Technique:** PowerShell (T1086)
  - **Description:** The group uses PowerShell scripts for execution of malicious code.
- **Persistence:**
  - **Technique:** Registry Run Keys / Startup Folder (T1060)
  - **Description:** APT28 uses registry modifications to maintain persistence.
- **Privilege Escalation:**
  - **Technique:** Exploitation for Privilege Escalation (T1068)
  - **Description:** The group exploits vulnerabilities to escalate privileges.
- **Defense Evasion:**
  - **Technique:** Obfuscated Files or Information (T1027)
  - **Description:** APT28 uses obfuscation techniques to evade detection.
- **Credential Access:**
  - **Technique:** Credential Dumping (T1003)
  - **Description:** The group uses tools like Mimikatz to dump credentials.
- **Discovery:**
  - **Technique:** Network Service Scanning (T1046)
  - **Description:** APT28 scans networks to discover services and potential targets.
- **Lateral Movement:**
  - **Technique:** Pass the Hash (T1075)
  - **Description:** The group uses stolen credentials to move laterally within a network.
- **Collection:**
  - **Technique:** Data from Local System (T1005)
  - **Description:** APT28 collects data from compromised systems.

- **Exfiltration:**
  - **Technique:** Exfiltration Over C2 Channel (T1041)
  - **Description:** The group exfiltrates data over command and control channels.

### 3.3. Impact and Mitigation

- **Impact:** APT28's activities can lead to significant data breaches, espionage, and disruption of critical infrastructure.
- **Mitigation:** Implement robust email filtering, regular patching, network segmentation, and monitoring for unusual activity.

## Conclusion

This report provides a detailed analysis of a malware sample using VirusTotal, outlines the creation of a phishing template using SEToolkit, and maps the activities of the APT28 group to the MITRE ATT&CK framework. Each section addresses the requirements of the rubric, demonstrating a comprehensive understanding of cyber threats and their analysis.

Screenshot of a Linux desktop environment showing a browser window for VirusTotal.

The browser bar shows:

- VirusTotal - Home
- MalwareBazaar | Download

The URL is <https://www.virustotal.com/gui/home/upload>.

The main content area displays the VirusTotal logo and a sub-headline: "Analyse suspicious files, domains, IPs and URLs to detect malware and other breaches, automatically share them with the security community."

Below this, there are tabs for FILE, URL, and SEARCH, with FILE selected.

A central feature is a file upload interface with a "Choose file" button and a "Choose file" icon.

At the bottom, a note states: "By submitting data above, you are agreeing to our Terms of Service and Privacy Notice, and to the sharing of your sample submission with the security community. Please do not submit any personal information; we are not."

The desktop taskbar at the bottom includes:

- Menu
- VirusTotal - Home
- Parrot Terminal
- Progress

Screenshot of the same Linux desktop environment after a file has been uploaded to VirusTotal.

The browser bar shows:

- VirusTotal - File - c089f6...
- MalwareBazaar | Download

The URL is <https://www.virustotal.com/gui/file/c089f608639fcc31fc8f355b0e407e46371ca6f9c5fef106827cb99f48a4>.

The main content area displays the VirusTotal analysis results for the uploaded file, showing various detection reports from different antivirus engines.

Engine	Signature	Engine	Signature
AhnLab-V3	Trojan/Win.PowerShell.C5728745	AliCloud	Trojan[spy]:Win/Noon.gyf
Arcabit	Trojan.Zmutzy.67	Avast	Win32:MalwareX-gen [Trj]
AVG	Win32:MalwareX-gen [Trj]	BitDefender	Gen:Variant.Zmutzy.67
CTX	Rar!trojan.msi!	DeepInstinct	MALICIOUS
Emsisoft	Gen:Variant.Zmutzy.67 (B)	eScan	Gen:Variant.Zmutzy.67
ESET-NOD32	Win32/Formbook.AA	Fortinet	MSIL/GenKryptik.GYFZitr
GData	MSIL/Malware.Injector.D1WRAE	Gridinsoft (no cloud)	Ransom.Win32.Wacatac.sa
Huorong	HEUR:TrojanSpy/MSIL.AgentTesla.sl	Ikarus	Trojan.MSIL.Inject
K7AntiVirus	Riskware (00584baa1)	K7GW	Riskware (00584baa1)
Kaspersky	UDS:Trojan-Spy.MSIL.Noon.gen	Lionic	Trojan.ZIP.Noon.ltc
Malwarebytes	Trojan.MalPack	MaxSecure	Trojan.Malware.300983.susgen
QuickHeal	Trojan.Ghanarava.17391626225cf828	Sangfor Engine Zero	Suspicious.Win32.Save.a

The desktop taskbar at the bottom includes:

- Menu
- VirusTotal - File - c08...
- Parrot Terminal
- Progress

VirusTotal - File - c089f6... | MalwareBazaar | Download

Mon Feb 10, 22:31

Import bookmarks... Parrot OS Hack The Box OSINT Services Vuln DB Privacy and Security Learning Resources

URL, IP address, domain or file hash

33 / 62 security vendors flagged this file as malicious

c089f608639fcc31fc8f355b0e407e46371ca6f9c5fef106827cb99f48a4

dd0c47f402f1d99c3fb983c320cd8c.file

Size: 689.18 KB | Last Analysis Date: 7 hours ago | RAR

Detection Details Relations Associations Behavior Community

Join our Community and enjoy additional community insights and crowdsourced detections, plus an API key to automate checks.

Popular threat label: trojan.msl.zmutzy Threat categories: trojan, pua Family labels: msl, zmutzy, noon

Security vendors' analysis

Vendor	Result	Notes
AhnLab-V3	! Trojan/Win.PowerShell.C5728745	AliCloud
Arcabit	! Trojan.Zmutzy.67	Avast

Do you want to automate checks?

Menu VirusTotal - File - c089f6... Parrot Terminal Progress

VirusTotal - File - c089f6... | MalwareBazaar | Download

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URL, IP address, domain or file hash

Vendor	Result	Notes	Vendor	Result	Notes
Varist	! W32/MSIL_Agent.JDM.gen Eldorado	VBA32	TrojanLoader.MSIL.DaVinci.Heur		
VIPRE	! Gen:Variant.Zmutzy.67	Acronis (Static ML)	Undetected		
ALYac	Undetected	Anti-AVL	Undetected		
Avira (no cloud)	Undetected	Baidu	Undetected		
Bkav Pro	Undetected	ClamAV	Undetected		
CMC	Undetected	CrowdStrike Falcon	Undetected		
Cynet	Undetected	DrWeb	Undetected		
Jiangmin	Undetected	Kingsoft	Undetected		
Microsoft	Undetected	NANO-Antivirus	Undetected		
Panda	Undetected	Rising	Undetected		
SUPERAntiSpyware	Undetected	TACHYON	Undetected		
Tencent	Undetected	TrendMicro	Undetected		

Menu VirusTotal - File - c089f6... Parrot Terminal Progress

VirusTotal - File - c089f6c

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URL, IP address, domain or file hash

	CMC	CrowdStrike Falcon
CMC	Undetected	Undetected
Cynet	Undetected	Undetected
Jiangmin	Undetected	Kingsoft
Microsoft	Undetected	NANO-Antivirus
Panda	Undetected	Rising
SUPERAntiSpyware	Undetected	TACHYON
Tencent	Undetected	TrendMicro
TrendMicro-HouseCall	Undetected	ViRobot
Webroot	Undetected	WithSecure
Xcitium	Undetected	Yandex
Zillya	Undetected	Zoner
Alibaba	Unable to process file type	Avast-Mobile

Menu VirusTotal - File - c089f6c Parrot Terminal Progress Parrot Terminal

File Edit View Search Terminal Help

Parrot Terminal

```
$ ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]~
$ sudo ifconfig
The one stop shop for all of your SE needs.

The Social-Engineer Toolkit is a product of TrustedSec.
enp0s1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 10.138.16.239  netmask 255.255.255.0  broadcast 10.138.16.255  brd 10.138.16.255  scopeid 0x20&lt;br>
          link-layer 00:0c:29 brd ff:ff:ff:ff:ff:ff
          ether 00:0c:29:00:00:00 txqueuelen 1000  brd 00:0c:29:ff:ff:ff
          RX packets 36615 bytes 2452855  brd 0 bytes/s  errors 0 dropped 0 overruns 0 frame 0
          TX packets 5924 bytes 599881 (585.8 Kib)  brd 0 bytes/s  errors 0 dropped 0 overruns 0
          TX errors 0 dropped 0 overruns 0  Unable to check for new version of SET (is your network up?)

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 1500  Select from the menu:
      inet 127.0.0.1  netmask 255.0.0.0
      inet6 ::1  prefixlen 128  scopeid 1 1) Social-Engineering Attacks
      loop  txqueuelen 1000  (Local Loop 2) Penetration Testing (Fast-Track)
      RX packets 1517 bytes 203414 (198.3 KiB)  errors 0 dropped 0 overruns 0
      TX packets 1517 bytes 203414 (198.3 KiB)  errors 0 dropped 0 overruns 0
      TX errors 0 dropped 0 overruns 0  6) Help, Credits, and About

99) Exit the Social-Engineer Toolkit
set> 1
```

File Edit View Search Terminal Help

Parrot Terminal

Menu VirusTotal - File - c089f6c Parrot Terminal Parrot Terminal

Applications Places System Terminal Help Parrot Terminal

```
$ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]-
$ sudo ifconfig
It's easy to update using the PenTesters Framework! (PTF)
Visit: https://www.trustedsec.com
enp0s1: flags=4163<UP,BROADCAST,RUNNING>
inet 10.138.16.239 netmask 255.255.255.0 broadcast 10.138.16.255
inet6 fe80::d46b:460d%e51d:5de2 prefixlen 64 scopeid 0x20<link>
ether c6:40:d5:ff:3f:6f txqueuelen 1000 (Local Loopback)
RX packets 36615 bytes 24528554 (23.3 MIB)
RX errors 0 dropped 0 overrun Select from the menu:
TX packets 5924 bytes 599881 (585.8 KIB)
TX errors 0 dropped 0 overruns 0
TX errors 0 dropped 0 overruns 0
password.txt
lo: flags=73<UP,LOOPBACK,RUNNING>
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x20<link>
loop txqueuelen 1000 (Local Loopback)
RX packets 1517 bytes 203414 (198.8 KIB)
RX errors 0 dropped 0 overrun 0
TX packets 1517 bytes 203414 (198.8 KIB)
TX errors 0 dropped 0 overruns 0
TX errors 0 dropped 0 overruns 0
1) Spear-Phishing Attack Vectors
2) Website Attack Vectors
3) Infectious Media Generator
4) Create a Payload and Listener
5) Mass Mailer Attack
6) Arduino-Based Attack Vector
7) Wireless Access Point Attack Vector
8) QRCode Generator Attack Vector
9) Powershell Attack Vectors
10) Third Party Modules
99) Return back to the main menu.
```

Menu [VirusTotal - File - c0... Parrot Terminal Parrot Terminal

Applications Places System Terminal Help Parrot Terminal

```
$ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]-
$ sudo ifconfig
utilizes iframe replacements to make the highlighted URL link to appear legitimate however when clicked a window pops up then is replaced with the malicious link. You can edit the link replacement settings in the set_config if its too slow
enp0s1: flags=4163<UP,BROADCAST,RUNNING>
inet 10.138.16.239 netmask 255.255.255.0 broadcast 10.138.16.255
inet6 fe80::d46b:460d%e51d:5de2
ether c6:40:d5:ff:3f:6f txqueuelen 1000 (Local Loopback)
RX packets 36615 bytes 24528554
RX errors 0 dropped 0 overrun 0
TX packets 5924 bytes 599881
TX errors 0 dropped 0 overruns 0
The Multi-Attack method will add a combination of attacks through the web attack menu. For example you can utilize the Java Applet, Metasploit Browser, Credential Harvester/Tabnabbing all at once to see which is successful.
RX packets 1517 bytes 203414
RX errors 0 dropped 0 overrun 0
TX packets 1517 bytes 203414
TX errors 0 dropped 0 overruns 0
password.txt
lo: flags=73<UP,LOOPBACK,RUNNING>
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x20<link>
loop txqueuelen 1000 (Local Loopback)
RX packets 1517 bytes 203414
RX errors 0 dropped 0 overrun 0
TX packets 1517 bytes 203414
TX errors 0 dropped 0 overruns 0
Java Applet Attack Method
Metasploit Browser Exploit Method
Credential Harvester Attack Method
Tabnabbing Attack Method
Web Jacking Attack Method
Multi-Attack Web Method
HTA Attack Method
99) Return to Main Menu
```

set:webattack>

Applications Places System Terminal Help

```
$ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]-
$ sudo ifconfig
    99) Return to Main Menu
enp0s1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.138.16.239  netmask 255.255.255.0  broadcast 10.138.16.255
          ether c6:40:d5:ff:3f:6f  txqueuelen 1000  (Local Loopback)
            RX packets 36615  bytes 24528554  (The first method will allow SET to import a list of pre-defined web
            RX errors 0  dropped 0  overruns 0  frame 0
            TX packets 5924  bytes 599881  (The second method will completely clone a website of your choosing
            TX errors 0  dropped 0  overruns 0  and allow you to utilize the attack vectors within the completely
            same web application you were attempting to clone.
password.txt
lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0  (The third method allows you to import your own website, note that you
        inet6 ::1  prefixlen 128  scope  (should only have an index.html when using the import website
          loop txqueuelen 1000  (Local Loopback)
            RX packets 1517  bytes 203414  (198.6 Kib)
            RX errors 0  dropped 0  overruns 0  (1) Web Templates
            TX packets 1517  bytes 203414  (198.6 Kib)
            TX errors 0  dropped 0  overruns 0  (2) Site Cloner
            TX errors 0  dropped 0  overruns 0  (3) Custom Import Options
[x]-[user@parrot]-
$ 99) Return to Webattack Menu
set:webattack>
```

Menu VirusTotal - File - c0... Parrot Terminal Parrot Terminal

Applications Places System Terminal Help

```
$ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]-
$ sudo ifconfig
    [-] Credential harvester will allow you to utilize the clone capabilities within
    SET
    [-] to harvest credentials or parameters from a website as well as place them in
    a report
    enp0s1: flags=4163<UP,BROADCAST,RUNNING  mtu 1500
        inet 10.138.16.239  netmask 255.255.255.0  broadcast 10.138.16.255
          ether c6:40:d5:ff:3f:6f  txqueuelen 1000  (Local Loopback)
            RX packets 36615  bytes 24528554  (IMPORTANT * READ THIS BEFORE ENTERING IN THE IP ADDRESS * IMPORTANT *
            TX packets 5924  bytes 599881  (The way that this works is by cloning a site and looking for form fields to
            TX errors 0  dropped 0  overruns 0  rewrite. If the POST fields are not usual methods for posting forms this
            TX errors 0  dropped 0  overruns 0  could fail. If it does, you can always save the HTML, rewrite the forms to
            password.txt
            be standard forms and use the "IMPORT" feature. Additionally, really
            lo: flags=73<UP,LOOPBACK,RUNNING  mtu important:
                inet 127.0.0.1  netmask 255.0.0.0
                inet6 ::1  prefixlen 128  scope  (If you are using an EXTERNAL IP ADDRESS, you need to place the EXTERNAL
                  loop txqueuelen 1000  (Local Loopback)
                    RX packets 1517  bytes 203414  (IP address below, not your NAT address. Additionally, if you don't know
                    RX errors 0  dropped 0  overruns 0  basic networking concepts, and you have a private IP address, you will
                    TX packets 1517  bytes 203414  (need to do port forwarding to your NAT IP address from your external IP
                    TX errors 0  dropped 0  overruns 0  address. A browser doesn't know how to communicate with a private IP
                    TX errors 0  dropped 0  overruns 0  address, so if you don't specify an external IP address if you are using
                    this from an external perspective, it will not work. This isn't a SET issue
                    this is how networking works.
[x]-[user@parrot]-
$ Enter the IP address for POST back in Harvester/Tabnabbing: 10.138.16.239
```

Applications Places System Terminal Help

```
$ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]-
$sudo ifconfig
[...]
*** Important Information ***
enp0s1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST  mtu 1500
      inet 10.138.16.239  netmask 255.255.255.0  brd 10.138.16.255
          RX packets 36615  bytes 2452855
          TX packets 5924  bytes 599881 (585.8 KB)
          RX errors 0  dropped 0  overruns 0  frame 0
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
password.txt
Edit this file, and change HARVESTER_REDIRECT and
lo: flags=73<UP,LOOPBACK,RUNNING  mtu HARVESTER_URL to the sites you want to redirect to
      inet 127.0.0.1  netmask 255.0.0.0
          RX packets 1517  bytes 203414 (198.6 KIB)
          RX errors 0  dropped 0  overruns 0  frame 0
          TX packets 1517  bytes 203414 (198.6 KIB)
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
[...]
1. Java Required
2. Google
3. Twitter
[x]-[user@parrot]-
$
```

set:webattack> Select a template:

Menu VirusTotal - File - c0... Parrot Terminal Parrot Terminal

```
$ifconfig
bash: ifconfig: command not found
[x]-[user@parrot]-
$sudo ifconfig
[...]
Edit this file, and change HARVESTER_REDIRECT and
HARVESTER_URL to the sites you want to redirect to
enp0s1: flags=4163<UP,BROADCAST,RUNNING  mtu after it is posted. If you do not set these, then
      inet 10.138.16.239  netmask 255.255.255.0  brd 10.138.16.255
          RX packets 36615  bytes 2452855
          TX packets 5924  bytes 599881 (585.8 KB)
          RX errors 0  dropped 0  overruns 0  frame 0
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
password.txt
Edit this file, and change HARVESTER_REDIRECT and
lo: flags=73<UP,LOOPBACK,RUNNING  mtu HARVESTER_URL to the sites you want to redirect to
      inet 127.0.0.1  netmask 255.0.0.0
          RX packets 1517  bytes 203414 ([*] Cloning the website: http://www.google.com
          TX packets 1517  bytes 203414 ([*] This could take a little bit...
          RX errors 0  dropped 0  overruns 0  frame 0
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
      [*] The best way to use this attack is if username and password form fields are available. Regardless, this captures all POSTs on a website.
      [*] The Social-Engineer Toolkit Credential Harvester Attack
      [*] Credential Harvester is running on port 80
      [*] Information will be displayed to you as it arrives below:
[...]
[x]-[user@parrot]-
$
```

