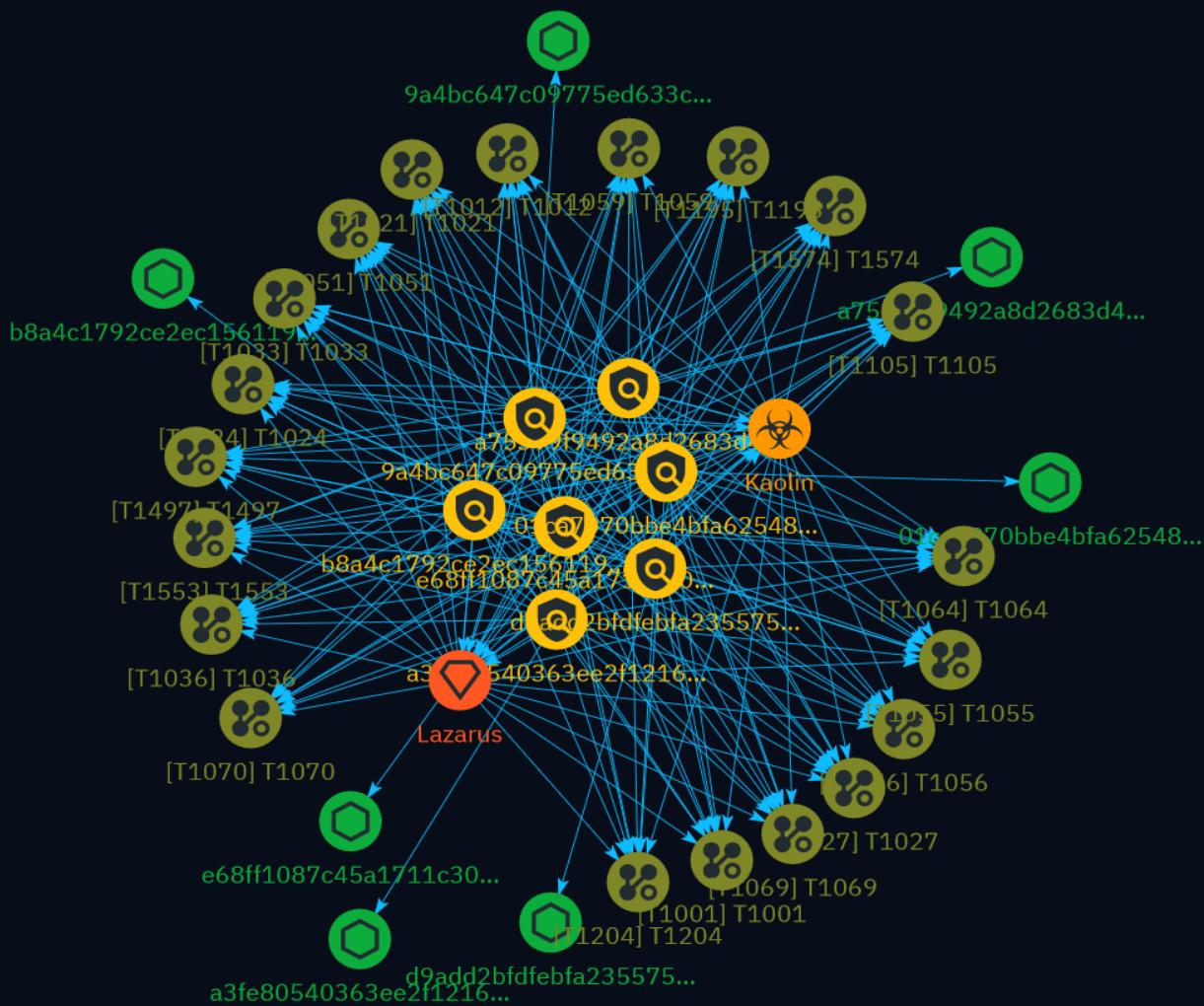


NETMANAGEIT

# Intelligence Report

## Unveiling Advanced Exploits in Cyber Recruiting Scams



# Table of contents

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## Overview

● Description	4
● Confidence	4
● Content	5

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## Entities

● Indicator	6
● Malware	9
● Attack-Pattern	10
● Intrusion-Set	23

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## Observables

● StixFile	24
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## External References

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- External References

25

# Overview

## Description

Avast researchers uncovered a sophisticated attack campaign involving fabricated job offers, leading to the deployment of a malicious toolset featuring a zero-day exploit and a rootkit. The targeted individuals possessed technical backgrounds, suggesting a highly selective approach. The attackers employed fileless malware, encrypted payloads, and multi-stage loaders to evade detection while delivering a Remote Access Trojan (RAT) and an advanced rootkit. The intricate execution chain demonstrated the resourcefulness and dedication of the threat actor in developing such a complex attack.

## Confidence

*This value represents the confidence in the correctness of the data contained within this report.*

100 / 100

# Content

N/A

# Indicator

<b>Name</b>
e68ff1087c45a1711c3037dad427733ccb1211634d070b03cb3a3c7e836d210f
<b>Pattern Type</b>
stix
<b>Pattern</b>
[file:hashes.'SHA-256' = 'e68ff1087c45a1711c3037dad427733ccb1211634d070b03cb3a3c7e836d210f']
<b>Name</b>
b8a4c1792ce2ec15611932437a4a1a7e43b7c3783870afebf6eae043bcfade30
<b>Pattern Type</b>
stix
<b>Pattern</b>
[file:hashes.'SHA-256' = 'b8a4c1792ce2ec15611932437a4a1a7e43b7c3783870afebf6eae043bcfade30']
<b>Name</b>

a75399f9492a8d2683d4406fa3e1320e84010b3affdff0b8f2444ac33ce3e690

**Pattern Type**

stix

**Pattern**

```
[file:hashes!SHA-256' =  
'a75399f9492a8d2683d4406fa3e1320e84010b3affdff0b8f2444ac33ce3e690']
```

**Name**

a3fe80540363ee2f1216ec3d01209d7c517f6e749004c91901494fb94852332b

**Pattern Type**

stix

**Pattern**

```
[file:hashes!SHA-256' =  
'a3fe80540363ee2f1216ec3d01209d7c517f6e749004c91901494fb94852332b']
```

**Name**

9a4bc647c09775ed633c134643d18a0be8f37c21afa3c0f8adf41e038695643e

**Pattern Type**

stix

**Pattern**

[file:hashes!SHA-256' =  
'9a4bc647c09775ed633c134643d18a0be8f37c21afa3c0f8adf41e038695643e']

**Name**

01ca7070bbe4bfa6254886f8599d6ce9537bafcbab6663f1f41bfc43f2ee370e

**Pattern Type**

stix

**Pattern**

[file:hashes!SHA-256' =  
'01ca7070bbe4bfa6254886f8599d6ce9537bafcbab6663f1f41bfc43f2ee370e']

**Name**

d9add2bfdfebfa235575687de356f0cefb3e4c55964c4cb8bfdcdc58294eeaca

**Pattern Type**

stix

**Pattern**

[file:hashes!SHA-256' =  
'd9add2bfdfebfa235575687de356f0cefb3e4c55964c4cb8bfdcdc58294eeaca']

# Malware

Name
Kaolin

# Attack-Pattern

Name
T1024
ID
T1024
Name
T1012
ID
T1012
Description
Adversaries may interact with the Windows Registry to gather information about the system, configuration, and installed software. The Registry contains a significant amount of information about the operating system, configuration, software, and security.(Citation: Wikipedia Windows Registry) Information can easily be queried using the [Reg]( <a href="https://attack.mitre.org/software/S0075">https://attack.mitre.org/software/S0075</a> ) utility, though other means to access the Registry exist. Some of the information may help adversaries to further their operation within a network. Adversaries may use the information from [Query Registry]( <a href="https://attack.mitre.org/techniques/T1012">https://attack.mitre.org/techniques/T1012</a> ) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions.

<b>Name</b>
T1056
<b>ID</b>
T1056
<b>Description</b>
<p>Adversaries may use methods of capturing user input to obtain credentials or collect information. During normal system usage, users often provide credentials to various different locations, such as login pages/portals or system dialog boxes. Input capture mechanisms may be transparent to the user (e.g. [Credential API Hooking](<a href="https://attack.mitre.org/techniques/T1056/004">https://attack.mitre.org/techniques/T1056/004</a>)) or rely on deceiving the user into providing input into what they believe to be a genuine service (e.g. [Web Portal Capture](<a href="https://attack.mitre.org/techniques/T1056/003">https://attack.mitre.org/techniques/T1056/003</a>)).</p>
<b>Name</b>
T1553
<b>ID</b>
T1553
<b>Description</b>
<p>Adversaries may undermine security controls that will either warn users of untrusted activity or prevent execution of untrusted programs. Operating systems and security products may contain mechanisms to identify programs or websites as possessing some level of trust. Examples of such features would include a program being allowed to run because it is signed by a valid code signing certificate, a program prompting the user with a warning because it has an attribute set from being downloaded from the Internet, or getting an indication that you are about to connect to an untrusted site. Adversaries may attempt to subvert these trust mechanisms. The method adversaries use will depend on the specific mechanism they seek to subvert. Adversaries may conduct [File and Directory Permissions Modification](<a href="https://attack.mitre.org/techniques/T1222">https://attack.mitre.org/techniques/T1222</a>) or [Modify Registry]</p>

(<https://attack.mitre.org/techniques/T1112>) in support of subverting these controls. (Citation: SpectorOps Subverting Trust Sept 2017) Adversaries may also create or steal code signing certificates to acquire trust on target systems.(Citation: Securelist Digital Certificates)(Citation: Symantec Digital Certificates)

**Name**

T1574

**ID**

T1574

**Description**

Adversaries may execute their own malicious payloads by hijacking the way operating systems run programs. Hijacking execution flow can be for the purposes of persistence, since this hijacked execution may reoccur over time. Adversaries may also use these mechanisms to elevate privileges or evade defenses, such as application control or other restrictions on execution. There are many ways an adversary may hijack the flow of execution, including by manipulating how the operating system locates programs to be executed. How the operating system locates libraries to be used by a program can also be intercepted. Locations where the operating system looks for programs/resources, such as file directories and in the case of Windows the Registry, could also be poisoned to include malicious payloads.

**Name**

T1001

**ID**

T1001

**Description**

Adversaries may obfuscate command and control traffic to make it more difficult to detect. Command and control (C2) communications are hidden (but not necessarily encrypted) in

an attempt to make the content more difficult to discover or decipher and to make the communication less conspicuous and hide commands from being seen. This encompasses many methods, such as adding junk data to protocol traffic, using steganography, or impersonating legitimate protocols.

**Name**

T1051

**ID**

T1051

**Description**

\*\*This technique has been deprecated and should no longer be used.\*\* Adversaries may add malicious content to an internally accessible website through an open network file share that contains the website's webroot or Web content directory (Citation: Microsoft Web Root OCT 2016) (Citation: Apache Server 2018) and then browse to that content with a Web browser to cause the server to execute the malicious content. The malicious content will typically run under the context and permissions of the Web server process, often resulting in local system or administrative privileges, depending on how the Web server is configured. This mechanism of shared access and remote execution could be used for lateral movement to the system running the Web server. For example, a Web server running PHP with an open network share could allow an adversary to upload a remote access tool and PHP script to execute the RAT on the system running the Web server when a specific page is visited. (Citation: Webroot PHP 2011)

**Name**

T1064

**ID**

T1064

**Description**

\*\*This technique has been deprecated. Please use [Command and Scripting Interpreter] (<https://attack.mitre.org/techniques/T1059>) where appropriate.\*\* Adversaries may use scripts to aid in operations and perform multiple actions that would otherwise be manual. Scripting is useful for speeding up operational tasks and reducing the time required to gain access to critical resources. Some scripting languages may be used to bypass process monitoring mechanisms by directly interacting with the operating system at an API level instead of calling other programs. Common scripting languages for Windows include VBScript and [PowerShell] (<https://attack.mitre.org/techniques/T1086>) but could also be in the form of command-line batch scripts. Scripts can be embedded inside Office documents as macros that can be set to execute when files used in [Spearphishing Attachment] (<https://attack.mitre.org/techniques/T1193>) and other types of spearphishing are opened. Malicious embedded macros are an alternative means of execution than software exploitation through [Exploitation for Client Execution] (<https://attack.mitre.org/techniques/T1203>), where adversaries will rely on macros being allowed or that the user will accept to activate them. Many popular offensive frameworks exist which use forms of scripting for security testers and adversaries alike. Metasploit (Citation: Metasploit\_Ref), Veil (Citation: Veil\_Ref), and PowerSploit (Citation: Powersploit) are three examples that are popular among penetration testers for exploit and post-compromise operations and include many features for evading defenses. Some adversaries are known to use PowerShell. (Citation: Alperovitch 2014)

**Name**

T1070

**ID**

T1070

**Description**

Adversaries may delete or modify artifacts generated within systems to remove evidence of their presence or hinder defenses. Various artifacts may be created by an adversary or something that can be attributed to an adversary's actions. Typically these artifacts are used as defensive indicators related to monitored events, such as strings from downloaded files, logs that are generated from user actions, and other data analyzed by defenders. Location, format, and type of artifact (such as command or login history) are often specific to each platform. Removal of these indicators may interfere with event collection, reporting, or other processes used to detect intrusion activity. This may compromise the integrity of security solutions by causing notable events to go unreported.

This activity may also impede forensic analysis and incident response, due to lack of sufficient data to determine what occurred.

**Name**

T1059

**ID**

T1059

**Description**

Adversaries may abuse command and script interpreters to execute commands, scripts, or binaries. These interfaces and languages provide ways of interacting with computer systems and are a common feature across many different platforms. Most systems come with some built-in command-line interface and scripting capabilities, for example, macOS and Linux distributions include some flavor of [Unix Shell](<https://attack.mitre.org/techniques/T1059/004>) while Windows installations include the [Windows Command Shell](<https://attack.mitre.org/techniques/T1059/003>) and [PowerShell](<https://attack.mitre.org/techniques/T1059/001>). There are also cross-platform interpreters such as [Python](<https://attack.mitre.org/techniques/T1059/006>), as well as those commonly associated with client applications such as [JavaScript](<https://attack.mitre.org/techniques/T1059/007>) and [Visual Basic](<https://attack.mitre.org/techniques/T1059/005>). Adversaries may abuse these technologies in various ways as a means of executing arbitrary commands. Commands and scripts can be embedded in [Initial Access](<https://attack.mitre.org/tactics/TA0001>) payloads delivered to victims as lure documents or as secondary payloads downloaded from an existing C2. Adversaries may also execute commands through interactive terminals/shells, as well as utilize various [Remote Services](<https://attack.mitre.org/techniques/T1021>) in order to achieve remote Execution. (Citation: Powershell Remote Commands)(Citation: Cisco IOS Software Integrity Assurance - Command History)(Citation: Remote Shell Execution in Python)

**Name**

T1027

**ID**

T1027

**Description**

Adversaries may attempt to make an executable or file difficult to discover or analyze by encrypting, encoding, or otherwise obfuscating its contents on the system or in transit. This is common behavior that can be used across different platforms and the network to evade defenses. Payloads may be compressed, archived, or encrypted in order to avoid detection. These payloads may be used during Initial Access or later to mitigate detection. Sometimes a user's action may be required to open and [Deobfuscate/Decode Files or Information](<https://attack.mitre.org/techniques/T1140>) for [User Execution](<https://attack.mitre.org/techniques/T1204>). The user may also be required to input a password to open a password protected compressed/encrypted file that was provided by the adversary. (Citation: Volexity PowerDuke November 2016) Adversaries may also use compressed or archived scripts, such as JavaScript. Portions of files can also be encoded to hide the plain-text strings that would otherwise help defenders with discovery. (Citation: Linux/Cdorked.A We Live Security Analysis) Payloads may also be split into separate, seemingly benign files that only reveal malicious functionality when reassembled. (Citation: Carbon Black Obfuscation Sept 2016) Adversaries may also abuse [Command Obfuscation](<https://attack.mitre.org/techniques/T1027/010>) to obscure commands executed from payloads or directly via [Command and Scripting Interpreter](<https://attack.mitre.org/techniques/T1059>). Environment variables, aliases, characters, and other platform/language specific semantics can be used to evade signature based detections and application control mechanisms. (Citation: FireEye Obfuscation June 2017) (Citation: FireEye Revoke-Obfuscation July 2017)(Citation: PaloAlto EncodedCommand March 2017)

**Name**

T1497

**ID**

T1497

**Description**

Adversaries may employ various means to detect and avoid virtualization and analysis environments. This may include changing behaviors based on the results of checks for the presence of artifacts indicative of a virtual machine environment (VME) or sandbox. If the

adversary detects a VME, they may alter their malware to disengage from the victim or conceal the core functions of the implant. They may also search for VME artifacts before dropping secondary or additional payloads. Adversaries may use the information learned from [Virtualization/Sandbox Evasion](<https://attack.mitre.org/techniques/T1497>) during automated discovery to shape follow-on behaviors.(Citation: Deloitte Environment Awareness) Adversaries may use several methods to accomplish [Virtualization/Sandbox Evasion](<https://attack.mitre.org/techniques/T1497>) such as checking for security monitoring tools (e.g., Sysinternals, Wireshark, etc.) or other system artifacts associated with analysis or virtualization. Adversaries may also check for legitimate user activity to help determine if it is in an analysis environment. Additional methods include use of sleep timers or loops within malware code to avoid operating within a temporary sandbox. (Citation: Unit 42 Pirpi July 2015)

**Name**

T1105

**ID**

T1105

**Description**

Adversaries may transfer tools or other files from an external system into a compromised environment. Tools or files may be copied from an external adversary-controlled system to the victim network through the command and control channel or through alternate protocols such as [ftp](<https://attack.mitre.org/software/S0095>). Once present, adversaries may also transfer/spread tools between victim devices within a compromised environment (i.e. [Lateral Tool Transfer](<https://attack.mitre.org/techniques/T1570>)). On Windows, adversaries may use various utilities to download tools, such as `copy`, `finger`, [certutil](<https://attack.mitre.org/software/S0160>), and [PowerShell](<https://attack.mitre.org/techniques/T1059/001>) commands such as `IEX(New-Object Net.WebClient).downloadString()` and `Invoke-WebRequest`. On Linux and macOS systems, a variety of utilities also exist, such as `curl`, `scp`, `sftp`, `tftp`, `rsync`, `finger`, and `wget`. (Citation: t1105\_lolbas) Adversaries may also abuse installers and package managers, such as `yum` or `winget`, to download tools to victim hosts. Files can also be transferred using various [Web Service](<https://attack.mitre.org/techniques/T1102>)s as well as native or otherwise present tools on the victim system.(Citation: PTSecurity Cobalt Dec 2016) In some cases, adversaries may be able to leverage services that sync between a web-based and an on-premises client, such as Dropbox or OneDrive, to transfer files onto victim systems. For example, by compromising a cloud account and logging into the service's web portal,

an adversary may be able to trigger an automatic syncing process that transfers the file onto the victim's machine.(Citation: Dropbox Malware Sync)

**Name**

T1204

**ID**

T1204

**Description**

An adversary may rely upon specific actions by a user in order to gain execution. Users may be subjected to social engineering to get them to execute malicious code by, for example, opening a malicious document file or link. These user actions will typically be observed as follow-on behavior from forms of [Phishing](<https://attack.mitre.org/techniques/T1566>). While [User Execution](<https://attack.mitre.org/techniques/T1204>) frequently occurs shortly after Initial Access it may occur at other phases of an intrusion, such as when an adversary places a file in a shared directory or on a user's desktop hoping that a user will click on it. This activity may also be seen shortly after [Internal Spearphishing](<https://attack.mitre.org/techniques/T1534>). Adversaries may also deceive users into performing actions such as enabling [Remote Access Software](<https://attack.mitre.org/techniques/T1219>), allowing direct control of the system to the adversary, or downloading and executing malware for [User Execution](<https://attack.mitre.org/techniques/T1204>). For example, tech support scams can be facilitated through [Phishing](<https://attack.mitre.org/techniques/T1566>), vishing, or various forms of user interaction. Adversaries can use a combination of these methods, such as spoofing and promoting toll-free numbers or call centers that are used to direct victims to malicious websites, to deliver and execute payloads containing malware or [Remote Access Software](<https://attack.mitre.org/techniques/T1219>).(Citation: Telephone Attack Delivery)

**Name**

T1021

**ID**

T1021

**Description**

Adversaries may use [Valid Accounts](<https://attack.mitre.org/techniques/T1078>) to log into a service that accepts remote connections, such as telnet, SSH, and VNC. The adversary may then perform actions as the logged-on user. In an enterprise environment, servers and workstations can be organized into domains. Domains provide centralized identity management, allowing users to login using one set of credentials across the entire network. If an adversary is able to obtain a set of valid domain credentials, they could login to many different machines using remote access protocols such as secure shell (SSH) or remote desktop protocol (RDP).(Citation: SSH Secure Shell)(Citation: TechNet Remote Desktop Services) They could also login to accessible SaaS or IaaS services, such as those that federate their identities to the domain. Legitimate applications (such as [Software Deployment Tools](<https://attack.mitre.org/techniques/T1072>) and other administrative programs) may utilize [Remote Services](<https://attack.mitre.org/techniques/T1021>) to access remote hosts. For example, Apple Remote Desktop (ARD) on macOS is native software used for remote management. ARD leverages a blend of protocols, including [VNC](<https://attack.mitre.org/techniques/T1021/005>) to send the screen and control buffers and [SSH](<https://attack.mitre.org/techniques/T1021/004>) for secure file transfer. (Citation: Remote Management MDM macOS)(Citation: Kickstart Apple Remote Desktop commands)(Citation: Apple Remote Desktop Admin Guide 3.3) Adversaries can abuse applications such as ARD to gain remote code execution and perform lateral movement. In versions of macOS prior to 10.14, an adversary can escalate an SSH session to an ARD session which enables an adversary to accept TCC (Transparency, Consent, and Control) prompts without user interaction and gain access to data.(Citation: FireEye 2019 Apple Remote Desktop)(Citation: Lockboxx ARD 2019)(Citation: Kickstart Apple Remote Desktop commands)

**Name**

T1055

**ID**

T1055

**Description**

Adversaries may inject code into processes in order to evade process-based defenses as well as possibly elevate privileges. Process injection is a method of executing arbitrary code in the address space of a separate live process. Running code in the context of another process may allow access to the process's memory, system/network resources, and possibly elevated privileges. Execution via process injection may also evade detection from security products since the execution is masked under a legitimate process. There are many different ways to inject code into a process, many of which abuse legitimate functionalities. These implementations exist for every major OS but are typically platform specific. More sophisticated samples may perform multiple process injections to segment modules and further evade detection, utilizing named pipes or other inter-process communication (IPC) mechanisms as a communication channel.

**Name**

T1036

**ID**

T1036

**Description**

Adversaries may attempt to manipulate features of their artifacts to make them appear legitimate or benign to users and/or security tools. Masquerading occurs when the name or location of an object, legitimate or malicious, is manipulated or abused for the sake of evading defenses and observation. This may include manipulating file metadata, tricking users into misidentifying the file type, and giving legitimate task or service names. Renaming abusable system utilities to evade security monitoring is also a form of [Masquerading](<https://attack.mitre.org/techniques/T1036>). (Citation: LOLBAS Main Site) Masquerading may also include the use of [Proxy](<https://attack.mitre.org/techniques/T1090>) or VPNs to disguise IP addresses, which can allow adversaries to blend in with normal network traffic and bypass conditional access policies or anti-abuse protections.

**Name**

T1195

**ID**

T1195

**Description**

Adversaries may manipulate products or product delivery mechanisms prior to receipt by a final consumer for the purpose of data or system compromise. Supply chain compromise can take place at any stage of the supply chain including:

- \* Manipulation of development tools
- \* Manipulation of a development environment
- \* Manipulation of source code repositories (public or private)
- \* Manipulation of source code in open-source dependencies
- \* Manipulation of software update/distribution mechanisms
- \* Compromised/infected system images (multiple cases of removable media infected at the factory)(Citation: IBM Storwize)(Citation: Schneider Electric USB Malware)
- \* Replacement of legitimate software with modified versions
- \* Sales of modified/counterfeit products to legitimate distributors
- \* Shipment interdiction

While supply chain compromise can impact any component of hardware or software, adversaries looking to gain execution have often focused on malicious additions to legitimate software in software distribution or update channels.(Citation: Avast CCleaner3 2018)(Citation: Microsoft Dofoil 2018)(Citation: Command Five SK 2011) Targeting may be specific to a desired victim set or malicious software may be distributed to a broad set of consumers but only move on to additional tactics on specific victims.(Citation: Symantec Elderwood Sept 2012)(Citation: Avast CCleaner3 2018)(Citation: Command Five SK 2011) Popular open source projects that are used as dependencies in many applications may also be targeted as a means to add malicious code to users of the dependency.(Citation: Trendmicro NPM Compromise)

**Name**

T1069

**ID**

T1069

**Description**

Adversaries may attempt to discover group and permission settings. This information can help adversaries determine which user accounts and groups are available, the membership of users in particular groups, and which users and groups have elevated permissions. Adversaries may attempt to discover group permission settings in many different ways. This data may provide the adversary with information about the

compromised environment that can be used in follow-on activity and targeting.(Citation: CrowdStrike BloodHound April 2018)

Name
T1033
ID
T1033
Description
Adversaries may attempt to identify the primary user, currently logged in user, set of users that commonly uses a system, or whether a user is actively using the system. They may do this, for example, by retrieving account usernames or by using [OS Credential Dumping] ( <a href="https://attack.mitre.org/techniques/T1003">https://attack.mitre.org/techniques/T1003</a> ). The information may be collected in a number of different ways using other Discovery techniques, because user and username details are prevalent throughout a system and include running process ownership, file/directory ownership, session information, and system logs. Adversaries may use the information from [System Owner/User Discovery] ( <a href="https://attack.mitre.org/techniques/T1033">https://attack.mitre.org/techniques/T1033</a> ) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions. Various utilities and commands may acquire this information, including `whoami`. In macOS and Linux, the currently logged in user can be identified with `w` and `who`. On macOS the `dscl . list /Users   grep -v '_'` command can also be used to enumerate user accounts. Environment variables, such as `%USERNAME%` and `\$_USER`, may also be used to access this information. On network devices, [Network Device CLI] ( <a href="https://attack.mitre.org/techniques/T1059/008">https://attack.mitre.org/techniques/T1059/008</a> ) commands such as `show users` and `show ssh` can be used to display users currently logged into the device.(Citation: show_ssh_users_cmd_cisco)(Citation: US-CERT TA18-106A Network Infrastructure Devices 2018)

# Intrusion-Set

Name
Lazarus

# StixFile

Value
e68ff1087c45a1711c3037dad427733ccb1211634d070b03cb3a3c7e836d210f
b8a4c1792ce2ec15611932437a4a1a7e43b7c3783870afebf6eae043bcfade30
a75399f9492a8d2683d4406fa3e1320e84010b3affdff0b8f2444ac33ce3e690
a3fe80540363ee2f1216ec3d01209d7c517f6e749004c91901494fb94852332b
9a4bc647c09775ed633c134643d18a0be8f37c21afa3c0f8adf41e038695643e
01ca7070bbe4bfa6254886f8599d6ce9537bafcbab6663f1f41bfc43f2ee370e
d9add2bfdfebfa235575687de356f0cefb3e4c55964c4cb8bfdcdc58294eeaca

# External References

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- <https://decoded.avast.io/luiginocamastra/from-byovd-to-a-0-day-unveiling-advanced-exploits-in-cyber-recruiting-scams/>
- <https://otx.alienvault.com/pulse/6620d58a04d78851ad5194cf>

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