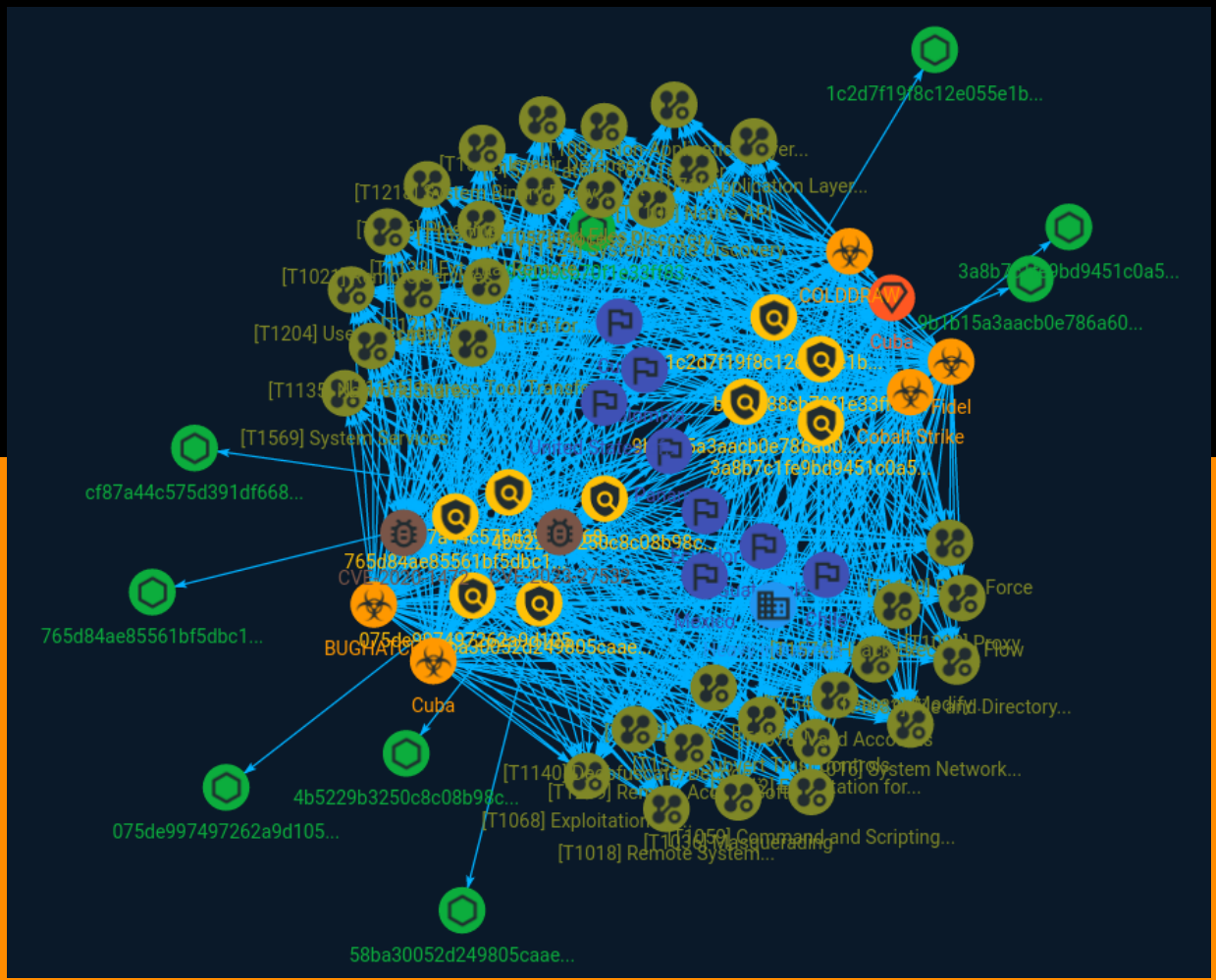
Aug 21 2023

NETMANAGEIT

Intelligence Report

Cuba Ransomware Deploys New Tools: Targets Critical Infrastructure Sector in the U.S. and IT Integrator in Latin America



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Overview

Description

Researchers has discovered and documented new tools used by the Cuba ransomware threat group. Cuba ransomware is currently into the fourth year of its operation and shows no sign of slowing down. In the first half of 2023 alone, the operators behind Cuba ransomware were the perpetrators of several high-profile attacks across disparate industries.

Confidence

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

15 / 100

Indicator

Name
4b5229b3250c8c08b98cb710d6c056144271de099a57ae09f5d2097fc41bd4f1
Pattern Type
stix
Pattern
[file:hashes.'SHA-256' = '4b5229b3250c8c08b98cb710d6c056144271de099a57ae09f5d2097fc41bd4f1']
Name
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Pattern Type
stix
Pattern
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Pattern Type

stix

Pattern

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Name

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Pattern Type

stix

Pattern

[file:hashes.'SHA-256' = '58ba30052d249805caae0107a0e2a5a3cb85f3000ba5479fafb7767e2a5a78f3']

Name

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Pattern Type

stix

Pattern

[file:hashes.'SHA-256' = '765d84ae85561bf5dbc1187da2b2cef91da9f222bcc6cf2c12cacd36e44bcffd']

Name

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Pattern Type

stix

Pattern

[file:hashes.'SHA-256' = 'bd93d88cb70f1e33ff83de4d084bb2b247d0b2a9cec61ae45745f2da85ca82d2']

Name

075de997497262a9d105afeadaaefc6348b25ce0e0126505c24aa9396c251e85

Pattern Type

stix

Pattern

[file:hashes.'SHA-256' = '075de997497262a9d105afeadaaefc6348b25ce0e0126505c24aa9396c251e85']

Name

9b1b15a3aacb0e786a608726c3abfc94968915cedcbd239ddf903c4a54bfcf0c

Description

Win64:DangerousSig\ [Trj]

Pattern Type

stix

Pattern

[file:hashes.'SHA-256' = '9b1b15a3aacb0e786a608726c3abfc94968915cedcbd239ddf903c4a54bfcf0c']

Name

3a8b7c1fe9bd9451c0a51e4122605efc98e7e4e13ed117139a13e4749e211ed0

Description

stack_string

Pattern Type

stix

Pattern

[file:hashes.'SHA-256' = '3a8b7c1fe9bd9451c0a51e4122605efc98e7e4e13ed117139a13e4749e211ed0']

Intrusion-Set

Name
Cuba

Country

Name
Guatemala
Name
Cuba
Name
Panama
Name
Ecuador
Name
Colombia
Name
Chile
Name
Mexico

Name
United States of America

Malware

Name
Fidel
Name
BUGHATCH
Name
COLDDRAW
Name
Cuba
Description
[Cuba](https://attack.mitre.org/software/S0625) is a Windows-based ransomware family that has been used against financial institutions, technology, and logistics organizations in North and South America as well as Europe since at least December 2019.(Citation: McAfee Cuba April 2021)
Name
Cobalt Strike

Description

[Cobalt Strike](https://attack.mitre.org/software/S0154) is a commercial, full-featured, remote access tool that bills itself as “adversary simulation software designed to execute targeted attacks and emulate the post-exploitation actions of advanced threat actors”. Cobalt Strike’s interactive post-exploit capabilities cover the full range of ATT&CK tactics, all executed within a single, integrated system.(Citation: cobaltstrike manual) In addition to its own capabilities, [Cobalt Strike](https://attack.mitre.org/software/S0154) leverages the capabilities of other well-known tools such as Metasploit and [Mimikatz](https://attack.mitre.org/software/S0002).(Citation: cobaltstrike manual)

Vulnerability

Name
CVE-2023-27532

Name
CVE-2020-1472

Attack-Pattern

Name
Exploitation for Credential Access
ID
T1212
Description
Adversaries may exploit software vulnerabilities in an attempt to collect credentials. Exploitation of a software vulnerability occurs when an adversary takes advantage of a programming error in a program, service, or within the operating system software or kernel itself to execute adversary-controlled code. Credentialing and authentication mechanisms may be targeted for exploitation by adversaries as a means to gain access to useful credentials or circumvent the process to gain access to systems. One example of this is MS14-068, which targets Kerberos and can be used to forge Kerberos tickets using domain user permissions.(Citation: Technet MS14-068)(Citation: ADSecurity Detecting Forged Tickets) Exploitation for credential access may also result in Privilege Escalation depending on the process targeted or credentials obtained.
Name
Exploitation for Defense Evasion
ID
T1211

Description

Adversaries may exploit a system or application vulnerability to bypass security features. Exploitation of a software vulnerability occurs when an adversary takes advantage of a programming error in a program, service, or within the operating system software or kernel itself to execute adversary-controlled code. Vulnerabilities may exist in defensive security software that can be used to disable or circumvent them. Adversaries may have prior knowledge through reconnaissance that security software exists within an environment or they may perform checks during or shortly after the system is compromised for [Security Software Discovery](https://attack.mitre.org/techniques/T1518/001). The security software will likely be targeted directly for exploitation. There are examples of antivirus software being targeted by persistent threat groups to avoid detection.

Name

Abuse Elevation Control Mechanism

ID

T1548

Description

Adversaries may circumvent mechanisms designed to control elevate privileges to gain higher-level permissions. Most modern systems contain native elevation control mechanisms that are intended to limit privileges that a user can perform on a machine. Authorization has to be granted to specific users in order to perform tasks that can be considered of higher risk. An adversary can perform several methods to take advantage of built-in control mechanisms in order to escalate privileges on a system.

Name

Create or Modify System Process

ID

T1543

Description

Adversaries may create or modify system-level processes to repeatedly execute malicious payloads as part of persistence. When operating systems boot up, they can start processes that perform background system functions. On Windows and Linux, these system processes are referred to as services.(Citation: TechNet Services) On macOS, launchd processes known as [Launch Daemon](https://attack.mitre.org/techniques/T1543/004) and [Launch Agent](https://attack.mitre.org/techniques/T1543/001) are run to finish system initialization and load user specific parameters.(Citation: AppleDocs Launch Agent Daemons) Adversaries may install new services, daemons, or agents that can be configured to execute at startup or a repeatable interval in order to establish persistence. Similarly, adversaries may modify existing services, daemons, or agents to achieve the same effect. Services, daemons, or agents may be created with administrator privileges but executed under root/SYSTEM privileges. Adversaries may leverage this functionality to create or modify system processes in order to escalate privileges.(Citation: OSX Malware Detection)

Name

System Services

ID

T1569

Description

Adversaries may abuse system services or daemons to execute commands or programs. Adversaries can execute malicious content by interacting with or creating services either locally or remotely. Many services are set to run at boot, which can aid in achieving persistence ([Create or Modify System Process](https://attack.mitre.org/techniques/T1543)), but adversaries can also abuse services for one-time or temporary execution.

Name

Lateral Tool Transfer

ID

T1570

Description

Adversaries may transfer tools or other files between systems in a compromised environment. Once brought into the victim environment (i.e. [Ingress Tool Transfer](https://attack.mitre.org/techniques/T1105)) files may then be copied from one system to another to stage adversary tools or other files over the course of an operation. Adversaries may copy files between internal victim systems to support lateral movement using inherent file sharing protocols such as file sharing over [SMB/Windows Admin Shares](https://attack.mitre.org/techniques/T1021/002) to connected network shares or with authenticated connections via [Remote Desktop Protocol](https://attack.mitre.org/techniques/T1021/001).(Citation: Unit42 LockerGoga 2019) Files can also be transferred using native or otherwise present tools on the victim system, such as scp, rsync, curl, sftp, and [ftp](https://attack.mitre.org/software/S0095).

Name

Subvert Trust Controls

ID

T1553

Description

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](https://attack.mitre.org/techniques/T1222) or [Modify Registry](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

External Remote Services

ID

T1133

Description

Adversaries may leverage external-facing remote services to initially access and/or persist within a network. Remote services such as VPNs, Citrix, and other access mechanisms allow users to connect to internal enterprise network resources from external locations. There are often remote service gateways that manage connections and credential authentication for these services. Services such as [Windows Remote Management](https://attack.mitre.org/techniques/T1021/006) and [VNC](https://attack.mitre.org/techniques/T1021/005) can also be used externally.(Citation: MacOS VNC software for Remote Desktop) Access to [Valid Accounts](https://attack.mitre.org/techniques/T1078) to use the service is often a requirement, which could be obtained through credential pharming or by obtaining the credentials from users after compromising the enterprise network.(Citation: Volexity Virtual Private Keylogging) Access to remote services may be used as a redundant or persistent access mechanism during an operation. Access may also be gained through an exposed service that doesn't require authentication. In containerized environments, this may include an exposed Docker API, Kubernetes API server, kubelet, or web application such as the Kubernetes dashboard.(Citation: Trend Micro Exposed Docker Server)(Citation: Unit 42 Hildegard Malware)

Name

Brute Force

ID

T1110

Description

Adversaries may use brute force techniques to gain access to accounts when passwords are unknown or when password hashes are obtained. Without knowledge of the password for an account or set of accounts, an adversary may systematically guess the password using a repetitive or iterative mechanism. Brute forcing passwords can take place via interaction with a service that will check the validity of those credentials or offline against previously acquired credential data, such as password hashes. Brute forcing credentials may take place at various points during a breach. For example, adversaries may attempt to brute force access to [Valid Accounts](https://attack.mitre.org/techniques/T1078) within a victim environment leveraging knowledge gathered from other post-compromise behaviors such as [OS Credential Dumping](https://attack.mitre.org/techniques/T1003), [Account Discovery](https://attack.mitre.org/techniques/T1087), or [Password Policy Discovery](https://attack.mitre.org/techniques/T1201). Adversaries may also combine brute forcing activity with behaviors such as [External Remote Services](https://attack.mitre.org/techniques/T1133) as part of Initial Access.

Name

Remote Access Software

ID

T1219

Description

An adversary may use legitimate desktop support and remote access software, such as Team Viewer, AnyDesk, Go2Assist, LogMein, AmmyyAdmin, etc, to establish an interactive command and control channel to target systems within networks. These services are commonly used as legitimate technical support software, and may be allowed by application control within a target environment. Remote access tools like VNC, Ammyy, and Teamviewer are used frequently when compared with other legitimate software commonly used by adversaries.(Citation: Symantec Living off the Land) Remote access tools may be installed and used post-compromise as alternate communications channel for redundant access or as a way to establish an interactive remote desktop session with the target system. They may also be used as a component of malware to establish a reverse connection or back-connect to a service or adversary controlled system. Installation of many remote access tools may also include persistence (ex: the tool's installation routine creates a [Windows Service](https://attack.mitre.org/techniques/T1543/003)). Admin tools

such as TeamViewer have been used by several groups targeting institutions in countries of interest to the Russian state and criminal campaigns.(Citation: CrowdStrike 2015 Global Threat Report)(Citation: CrySyS Blog TeamSpy)

Name

Process Discovery

ID

T1057

Description

Adversaries may attempt to get information about running processes on a system. Information obtained could be used to gain an understanding of common software/applications running on systems within the network. Adversaries may use the information from [Process Discovery](https://attack.mitre.org/techniques/T1057) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions. In Windows environments, adversaries could obtain details on running processes using the [Tasklist](https://attack.mitre.org/software/S0057) utility via [cmd](https://attack.mitre.org/software/S0106) or `Get-Process` via [PowerShell](https://attack.mitre.org/techniques/T1059/001). Information about processes can also be extracted from the output of [Native API](https://attack.mitre.org/techniques/T1106) calls such as `CreateToolhelp32Snapshot`. In Mac and Linux, this is accomplished with the `ps` command. Adversaries may also opt to enumerate processes via /proc. On network devices, [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) commands such as `show processes` can be used to display current running processes.(Citation: US-CERT-TA18-106A)(Citation: show_processes_cisco_cmd)

Name

Valid Accounts

ID

T1078

Description

Adversaries may obtain and abuse credentials of existing accounts as a means of gaining Initial Access, Persistence, Privilege Escalation, or Defense Evasion. Compromised credentials may be used to bypass access controls placed on various resources on systems within the network and may even be used for persistent access to remote systems and externally available services, such as VPNs, Outlook Web Access, network devices, and remote desktop.(Citation: volexity_0day_sophos_FW) Compromised credentials may also grant an adversary increased privilege to specific systems or access to restricted areas of the network. Adversaries may choose not to use malware or tools in conjunction with the legitimate access those credentials provide to make it harder to detect their presence. In some cases, adversaries may abuse inactive accounts: for example, those belonging to individuals who are no longer part of an organization. Using these accounts may allow the adversary to evade detection, as the original account user will not be present to identify any anomalous activity taking place on their account.(Citation: CISA MFA PrintNightmare) The overlap of permissions for local, domain, and cloud accounts across a network of systems is of concern because the adversary may be able to pivot across accounts and systems to reach a high level of access (i.e., domain or enterprise administrator) to bypass access controls set within the enterprise.(Citation: TechNet Credential Theft)

Name

Virtualization/Sandbox Evasion

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

System Time Discovery

ID

T1124

Description

An adversary may gather the system time and/or time zone from a local or remote system. The system time is set and stored by the Windows Time Service within a domain to maintain time synchronization between systems and services in an enterprise network. (Citation: MSDN System Time)(Citation: Technet Windows Time Service) System time information may be gathered in a number of ways, such as with [Net](https://attack.mitre.org/software/S0039) on Windows by performing `net time \\hostname` to gather the system time on a remote system. The victim's time zone may also be inferred from the current system time or gathered by using `w32tm /tz`.(Citation: Technet Windows Time Service) On network devices, [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) commands such as `show clock detail` can be used to see the current time configuration.(Citation: show_clock_detail_cisco_cmd) This information could be useful for performing other techniques, such as executing a file with a [Scheduled Task/Job](https://attack.mitre.org/techniques/T1053)(Citation: RSA EU12 They're Inside), or to discover locality information based on time zone to assist in victim targeting (i.e. [System Location Discovery](https://attack.mitre.org/techniques/T1614)). Adversaries may also use knowledge of system time as part of a time bomb, or delaying execution until a specified date/time.(Citation: AnyRun TimeBomb)

Name

Masquerading

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)

Name

Phishing

ID

T1566

Description

Adversaries may send phishing messages to gain access to victim systems. All forms of phishing are electronically delivered social engineering. Phishing can be targeted, known as spearphishing. In spearphishing, a specific individual, company, or industry will be targeted by the adversary. More generally, adversaries can conduct non-targeted phishing, such as in mass malware spam campaigns. Adversaries may send victims emails containing malicious attachments or links, typically to execute malicious code on victim systems. Phishing may also be conducted via third-party services, like social media platforms. Phishing may also involve social engineering techniques, such as posing as a trusted source, as well as evasive techniques such as removing or manipulating emails or metadata/headers from compromised accounts being abused to send messages (e.g., [Email Hiding Rules](https://attack.mitre.org/techniques/T1564/008)).(Citation: Microsoft OAuth Spam 2022)(Citation: Palo Alto Unit 42 VBA Infostealer 2014) Another way to accomplish this is by forging or spoofing(Citation: Proofpoint-spoof) the identity of the sender which can be used to fool both the human recipient as well as automated security tools.(Citation: cyberproof-double-bounce) Victims may also receive phishing messages that instruct them to call a phone number where they are directed to visit a malicious URL, download malware,(Citation: sygnia Luna Month)(Citation: CISA Remote Monitoring and

Management Software) or install adversary-accessible remote management tools onto their computer (i.e., [User Execution](https://attack.mitre.org/techniques/T1204)).(Citation: Unit42 Luna Moth)

Name

Proxy

ID

T1090

Description

Adversaries may use a connection proxy to direct network traffic between systems or act as an intermediary for network communications to a command and control server to avoid direct connections to their infrastructure. Many tools exist that enable traffic redirection through proxies or port redirection, including [HTRAN](https://attack.mitre.org/software/S0040), ZXProxy, and ZXPortMap. (Citation: Trend Micro APT Attack Tools) Adversaries use these types of proxies to manage command and control communications, reduce the number of simultaneous outbound network connections, provide resiliency in the face of connection loss, or to ride over existing trusted communications paths between victims to avoid suspicion. Adversaries may chain together multiple proxies to further disguise the source of malicious traffic. Adversaries can also take advantage of routing schemes in Content Delivery Networks (CDNs) to proxy command and control traffic.

Name

Exploitation for Privilege Escalation

ID

T1068

Description

Adversaries may exploit software vulnerabilities in an attempt to elevate privileges. Exploitation of a software vulnerability occurs when an adversary takes advantage of a

programming error in a program, service, or within the operating system software or kernel itself to execute adversary-controlled code. Security constructs such as permission levels will often hinder access to information and use of certain techniques, so adversaries will likely need to perform privilege escalation to include use of software exploitation to circumvent those restrictions. When initially gaining access to a system, an adversary may be operating within a lower privileged process which will prevent them from accessing certain resources on the system. Vulnerabilities may exist, usually in operating system components and software commonly running at higher permissions, that can be exploited to gain higher levels of access on the system. This could enable someone to move from unprivileged or user level permissions to SYSTEM or root permissions depending on the component that is vulnerable. This could also enable an adversary to move from a virtualized environment, such as within a virtual machine or container, onto the underlying host. This may be a necessary step for an adversary compromising an endpoint system that has been properly configured and limits other privilege escalation methods. Adversaries may bring a signed vulnerable driver onto a compromised machine so that they can exploit the vulnerability to execute code in kernel mode. This process is sometimes referred to as Bring Your Own Vulnerable Driver (BYOVD).(Citation: ESET InvisiMole June 2020)(Citation: Unit42 AcidBox June 2020) Adversaries may include the vulnerable driver with files delivered during Initial Access or download it to a compromised system via [Ingress Tool Transfer](https://attack.mitre.org/techniques/T1105) or [Lateral Tool Transfer](https://attack.mitre.org/techniques/T1570).

Name

Impair Defenses

ID

T1562

Description

Adversaries may maliciously modify components of a victim environment in order to hinder or disable defensive mechanisms. This not only involves impairing preventative defenses, such as firewalls and anti-virus, but also detection capabilities that defenders can use to audit activity and identify malicious behavior. This may also span both native defenses as well as supplemental capabilities installed by users and administrators. Adversaries may also impair routine operations that contribute to defensive hygiene, such as blocking users from logging out of a computer or stopping it from being shut down. These restrictions can further enable malicious operations as well as the continued propagation of incidents.(Citation: Emotet shutdown) Adversaries could also target event

aggregation and analysis mechanisms, or otherwise disrupt these procedures by altering other system components.

Name

System Network Configuration Discovery

ID

T1016

Description

Adversaries may look for details about the network configuration and settings, such as IP and/or MAC addresses, of systems they access or through information discovery of remote systems. Several operating system administration utilities exist that can be used to gather this information. Examples include [Arp](https://attack.mitre.org/software/S0099), [ipconfig](https://attack.mitre.org/software/S0100)/[ifconfig](https://attack.mitre.org/software/S0101), [nbtstat](https://attack.mitre.org/software/S0102), and [route](https://attack.mitre.org/software/S0103). Adversaries may also leverage a [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) on network devices to gather information about configurations and settings, such as IP addresses of configured interfaces and static/dynamic routes (e.g. `show ip route`, `show ip interface`).(Citation: US-CERT-TA18-106A)(Citation: Mandiant APT41 Global Intrusion) Adversaries may use the information from [System Network Configuration Discovery](https://attack.mitre.org/techniques/T1016) during automated discovery to shape follow-on behaviors, including determining certain access within the target network and what actions to do next.

Name

User Execution

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

Native API

ID

T1106

Description

Adversaries may interact with the native OS application programming interface (API) to execute behaviors. Native APIs provide a controlled means of calling low-level OS services within the kernel, such as those involving hardware/devices, memory, and processes. (Citation: NT API Windows)(Citation: Linux Kernel API) These native APIs are leveraged by the OS during system boot (when other system components are not yet initialized) as well as carrying out tasks and requests during routine operations. Native API functions (such as `NtCreateProcess`) may be directed invoked via system calls / syscalls, but these features are also often exposed to user-mode applications via interfaces and libraries.(Citation: OutFlank System Calls)(Citation: CyberBit System Calls)(Citation: MDSec System Calls) For example, functions such as the Windows API `CreateProcess()` or GNU `fork()` will allow programs and scripts to start other processes.(Citation: Microsoft CreateProcess)(Citation:

GNU Fork) This may allow API callers to execute a binary, run a CLI command, load modules, etc. as thousands of similar API functions exist for various system operations. (Citation: Microsoft Win32)(Citation: LIBC)(Citation: GLIBC) Higher level software frameworks, such as Microsoft .NET and macOS Cocoa, are also available to interact with native APIs. These frameworks typically provide language wrappers/abstractions to API functionalities and are designed for ease-of-use/portability of code.(Citation: Microsoft NET)(Citation: Apple Core Services)(Citation: MACOS Cocoa)(Citation: macOS Foundation) Adversaries may abuse these OS API functions as a means of executing behaviors. Similar to [Command and Scripting Interpreter](https://attack.mitre.org/techniques/T1059), the native API and its hierarchy of interfaces provide mechanisms to interact with and utilize various components of a victimized system. While invoking API functions, adversaries may also attempt to bypass defensive tools (ex: unhooking monitored functions via [Disable or Modify Tools](https://attack.mitre.org/techniques/T1562/001)).

Name

Remote System Discovery

ID

T1018

Description

Adversaries may attempt to get a listing of other systems by IP address, hostname, or other logical identifier on a network that may be used for Lateral Movement from the current system. Functionality could exist within remote access tools to enable this, but utilities available on the operating system could also be used such as [Ping](https://attack.mitre.org/software/S0097) or `net view` using [Net](https://attack.mitre.org/software/S0039). Adversaries may also analyze data from local host files (ex: `C:\Windows\System32\Drivers\etc\hosts` or `/etc/hosts`) or other passive means (such as local [Arp](https://attack.mitre.org/software/S0099) cache entries) in order to discover the presence of remote systems in an environment. Adversaries may also target discovery of network infrastructure as well as leverage [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) commands on network devices to gather detailed information about systems within a network (e.g. `show cdp neighbors`, `show arp`).(Citation: US-CERT-TA18-106A)(Citation: CISA AR21-126A FIVEHANDS May 2021)

Name

Obfuscated Files or Information

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

Hijack Execution Flow

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

Ingress Tool Transfer

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)). 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) 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)

Name

Non-Application Layer Protocol

ID

T1095

Description

Adversaries may use an OSI non-application layer protocol for communication between host and C2 server or among infected hosts within a network. The list of possible protocols is extensive.(Citation: Wikipedia OSI) Specific examples include use of network layer protocols, such as the Internet Control Message Protocol (ICMP), transport layer protocols, such as the User Datagram Protocol (UDP), session layer protocols, such as Socket Secure (SOCKS), as well as redirected/tunneled protocols, such as Serial over LAN (SOL). ICMP communication between hosts is one example.(Citation: Cisco Synful Knock Evolution) Because ICMP is part of the Internet Protocol Suite, it is required to be implemented by all IP-compatible hosts.(Citation: Microsoft ICMP) However, it is not as commonly monitored as other Internet Protocols such as TCP or UDP and may be used by adversaries to hide communications.

Name

Command and Scripting Interpreter

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

Remote Services

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

Application Layer Protocol

ID

T1071

Description

Adversaries may communicate using OSI application layer protocols to avoid detection/network filtering by blending in with existing traffic. Commands to the remote system, and often the results of those commands, will be embedded within the protocol traffic between the client and server. Adversaries may utilize many different protocols, including those used for web browsing, transferring files, electronic mail, or DNS. For connections that occur internally within an enclave (such as those between a proxy or pivot node and other nodes), commonly used protocols are SMB, SSH, or RDP.

Name

Deobfuscate/Decode Files or Information

ID

T1140

Description

Adversaries may use [Obfuscated Files or Information](https://attack.mitre.org/techniques/T1027) to hide artifacts of an intrusion from analysis. They may require separate mechanisms to decode or deobfuscate that information depending on how they intend to use it. Methods for doing that include built-in functionality of malware or by

using utilities present on the system. One such example is the use of [certutil](https://attack.mitre.org/software/S0160) to decode a remote access tool portable executable file that has been hidden inside a certificate file.(Citation: Malwarebytes Targeted Attack against Saudi Arabia) Another example is using the Windows `copy /b` command to reassemble binary fragments into a malicious payload.(Citation: Carbon Black Obfuscation Sept 2016) Sometimes a user's action may be required to open it for deobfuscation or decryption as part of [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)

Name

System Binary Proxy Execution

ID

T1218

Description

Adversaries may bypass process and/or signature-based defenses by proxying execution of malicious content with signed, or otherwise trusted, binaries. Binaries used in this technique are often Microsoft-signed files, indicating that they have been either downloaded from Microsoft or are already native in the operating system.(Citation: LOLBAS Project) Binaries signed with trusted digital certificates can typically execute on Windows systems protected by digital signature validation. Several Microsoft signed binaries that are default on Windows installations can be used to proxy execution of other files or commands. Similarly, on Linux systems adversaries may abuse trusted binaries such as `split` to proxy execution of malicious commands.(Citation: split man page)(Citation: GTFO split)

Name

File and Directory Discovery

ID

T1083

Description

Adversaries may enumerate files and directories or may search in specific locations of a host or network share for certain information within a file system. Adversaries may use the information from [File and Directory Discovery](https://attack.mitre.org/techniques/T1083) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions. Many command shell utilities can be used to obtain this information. Examples include `dir`, `tree`, `ls`, `find`, and `locate`.(Citation: Windows Commands JPCERT) Custom tools may also be used to gather file and directory information and interact with the [Native API](https://attack.mitre.org/techniques/T1106). Adversaries may also leverage a [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) on network devices to gather file and directory information (e.g. `dir`, `show flash`, and/or `nvram`).(Citation: US-CERT-TA18-106A)

Name

Network Share Discovery

ID

T1135

Description

Adversaries may look for folders and drives shared on remote systems as a means of identifying sources of information to gather as a precursor for Collection and to identify potential systems of interest for Lateral Movement. Networks often contain shared network drives and folders that enable users to access file directories on various systems across a network. File sharing over a Windows network occurs over the SMB protocol. (Citation: Wikipedia Shared Resource) (Citation: TechNet Shared Folder) [Net](https://attack.mitre.org/software/S0039) can be used to query a remote system for available shared drives using the `net view \\\\remotesystem` command. It can also be used to query shared drives on the local system using `net share`. For macOS, the `sharing -l` command lists all shared points used for smb services.

Sector

Name
Heavy industries
Description
Private entities working to transform raw materials into manufactured products (Chemicals, metal etc.).

StixFile

Value
bd93d88cb70f1e33ff83de4d084bb2b247d0b2a9cec61ae45745f2da85ca82d2
cf87a44c575d391df668123b05c207eef04b91e54300d1cbbec2f48f5209d4a4
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3a8b7c1fe9bd9451c0a51e4122605efc98e7e4e13ed117139a13e4749e211ed0

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