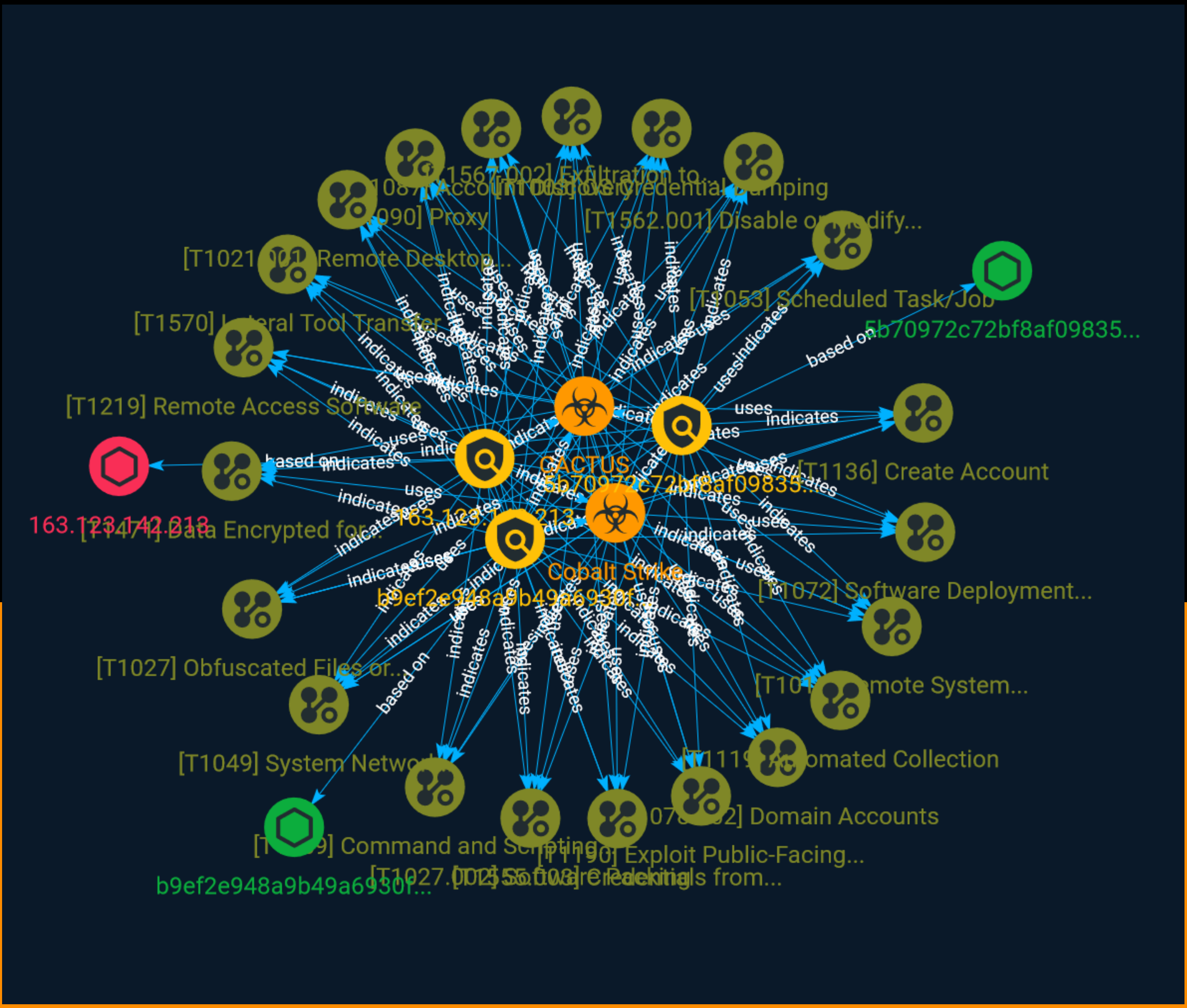
Jun 11 2023

NETMANAGEIT

Intelligence Report

CACTUS ransomware



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Overview

Description

CACTUS has deployed an overlapping set of tactics, techniques, and procedures (TTPs). These include the use of tools such as Chisel, Rclone, TotalExec, Scheduled Tasks, and custom scripts to disable security software to distribute the ransomware binary.

Confidence

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

15 / 100

Attack-Pattern

Name
OS Credential Dumping
ID
T1003
Description
Adversaries may attempt to dump credentials to obtain account login and credential material, normally in the form of a hash or a clear text password, from the operating system and software. Credentials can then be used to perform [Lateral Movement](https://attack.mitre.org/tactics/TA0008) and access restricted information. Several of the tools mentioned in associated sub-techniques may be used by both adversaries and professional security testers. Additional custom tools likely exist as well.
Name
Domain Accounts
ID
T1078.002
Description
Adversaries may obtain and abuse credentials of a domain account as a means of gaining Initial Access, Persistence, Privilege Escalation, or Defense Evasion.(Citation: TechNet

Credential Theft) Domain accounts are those managed by Active Directory Domain Services where access and permissions are configured across systems and services that are part of that domain. Domain accounts can cover users, administrators, and services.(Citation: Microsoft AD Accounts) Adversaries may compromise domain accounts, some with a high level of privileges, through various means such as [OS Credential Dumping](https://attack.mitre.org/techniques/T1003) or password reuse, allowing access to privileged resources of the domain.

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

Scheduled Task/Job

ID

T1053

Description

Adversaries may abuse task scheduling functionality to facilitate initial or recurring execution of malicious code. Utilities exist within all major operating systems to schedule programs or scripts to be executed at a specified date and time. A task can also be scheduled on a remote system, provided the proper authentication is met (ex: RPC and file and printer sharing in Windows environments). Scheduling a task on a remote system typically may require being a member of an admin or otherwise privileged group on the remote system.(Citation: TechNet Task Scheduler Security) Adversaries may use task scheduling to execute programs at system startup or on a scheduled basis for persistence. These mechanisms can also be abused to run a process under the context of a specified account (such as one with elevated permissions/privileges). Similar to [System Binary Proxy Execution](https://attack.mitre.org/techniques/T1218), adversaries have also abused task scheduling to potentially mask one-time execution under a trusted system process. (Citation: ProofPoint Serpent)

Name

Credentials from Web Browsers

ID

T1555.003

Description

Adversaries may acquire credentials from web browsers by reading files specific to the target browser.(Citation: Talos Olympic Destroyer 2018) Web browsers commonly save credentials such as website usernames and passwords so that they do not need to be entered manually in the future. Web browsers typically store the credentials in an encrypted format within a credential store; however, methods exist to extract plaintext credentials from web browsers. For example, on Windows systems, encrypted credentials may be obtained from Google Chrome by reading a database file, `AppData\Local\Google\Chrome\User Data\Default\Login Data` and executing a SQL query: `SELECT action_url, username_value, password_value FROM logins;`. The plaintext password can then be obtained by passing the encrypted credentials to the Windows API function `CryptUnprotectData`, which uses the victim’s cached logon credentials as the decryption key.(Citation: Microsoft CryptUnprotectData April 2018) Adversaries have executed similar procedures for common web browsers such as FireFox, Safari, Edge, etc. (Citation: Proofpoint Vega Credential Stealer May 2018)(Citation: FireEye HawkEye Malware

July 2017) Windows stores Internet Explorer and Microsoft Edge credentials in Credential Lockers managed by the [Windows Credential Manager](https://attack.mitre.org/techniques/T1555/004). Adversaries may also acquire credentials by searching web browser process memory for patterns that commonly match credentials.(Citation: GitHub Mimikittenz July 2016) After acquiring credentials from web browsers, adversaries may attempt to recycle the credentials across different systems and/or accounts in order to expand access. This can result in significantly furthering an adversary's objective in cases where credentials gained from web browsers overlap with privileged accounts (e.g. domain administrator).

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

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

Exfiltration to Cloud Storage

ID

T1567.002

Description

Adversaries may exfiltrate data to a cloud storage service rather than over their primary command and control channel. Cloud storage services allow for the storage, edit, and retrieval of data from a remote cloud storage server over the Internet. Examples of cloud storage services include Dropbox and Google Docs. Exfiltration to these cloud storage services can provide a significant amount of cover to the adversary if hosts within the network are already communicating with the service.

Name

Exploit Public-Facing Application

ID

T1190

Description

Adversaries may attempt to exploit a weakness in an Internet-facing host or system to initially access a network. The weakness in the system can be a software bug, a temporary glitch, or a misconfiguration. Exploited applications are often websites/web servers, but can also include databases (like SQL), standard services (like SMB or SSH), network device administration and management protocols (like SNMP and Smart Install), and any other system with Internet accessible open sockets.(Citation: NVD CVE-2016-6662)(Citation: CIS Multiple SMB Vulnerabilities)(Citation: US-CERT TA18-106A Network Infrastructure Devices 2018)(Citation: Cisco Blog Legacy Device Attacks)(Citation: NVD CVE-2014-7169) Depending on the flaw being exploited this may also involve [Exploitation for Defense Evasion](https://attack.mitre.org/techniques/T1211). If an application is hosted on cloud-based infrastructure and/or is containerized, then exploiting it may lead to compromise of the underlying instance or container. This can allow an adversary a path to access the cloud or container APIs, exploit container host access via [Escape to Host](https://attack.mitre.org/techniques/T1611), or take advantage of weak identity and access management policies. Adversaries may also exploit edge network infrastructure and related appliances, specifically targeting devices that do not support robust host-based defenses.(Citation: Mandiant Fortinet Zero Day)(Citation: Wired Russia Cyberwar) For websites and databases, the OWASP top 10 and CWE top 25 highlight the most common web-based vulnerabilities.(Citation: OWASP Top 10)(Citation: CWE top 25)

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

Create Account

ID

T1136

Description

Adversaries may create an account to maintain access to victim systems. With a sufficient level of access, creating such accounts may be used to establish secondary credentialed access that do not require persistent remote access tools to be deployed on the system. Accounts may be created on the local system or within a domain or cloud tenant. In cloud environments, adversaries may create accounts that only have access to specific services, which can reduce the chance of detection.

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

Account Discovery

ID

T1087

Description

Adversaries may attempt to get a listing of valid accounts, usernames, or email addresses on a system or within a compromised environment. This information can help adversaries determine which accounts exist, which can aid in follow-on behavior such as brute-forcing, spear-phishing attacks, or account takeovers (e.g., [Valid Accounts](https://attack.mitre.org/techniques/T1078)). Adversaries may use several methods to enumerate accounts, including abuse of existing tools, built-in commands, and potential misconfigurations that leak account names and roles or permissions in the targeted environment. For examples, cloud environments typically provide easily accessible interfaces to obtain user lists. On hosts, adversaries can use default [PowerShell](https://attack.mitre.org/techniques/T1059/001) and other command line functionality to identify accounts. Information about email addresses and accounts may also be extracted by searching an infected system's files.

Name

Automated Collection
ID
T1119
Description
Once established within a system or network, an adversary may use automated techniques for collecting internal data. Methods for performing this technique could include use of a [Command and Scripting Interpreter](https://attack.mitre.org/techniques/T1059) to search for and copy information fitting set criteria such as file type, location, or name at specific time intervals. In cloud-based environments, adversaries may also use cloud APIs, command line interfaces, or extract, transform, and load (ETL) services to automatically collect data. This functionality could also be built into remote access tools. This technique may incorporate use of other techniques such as [File and Directory Discovery](https://attack.mitre.org/techniques/T1083) and [Lateral Tool Transfer](https://attack.mitre.org/techniques/T1570) to identify and move files, as well as [Cloud Service Dashboard](https://attack.mitre.org/techniques/T1538) and [Cloud Storage Object Discovery](https://attack.mitre.org/techniques/T1619) to identify resources in cloud environments.
Name
Data Encrypted for Impact
ID
T1471
Description
An adversary may encrypt files stored on a mobile device to prevent the user from accessing them. This may be done in order to extract monetary compensation from a victim in exchange for decryption or a decryption key (ransomware) or to render data permanently inaccessible in cases where the key is not saved or transmitted.
Name

Disable or Modify Tools

ID

T1562.001

Description

Adversaries may modify and/or disable security tools to avoid possible detection of their malware/tools and activities. This may take many forms, such as killing security software processes or services, modifying / deleting Registry keys or configuration files so that tools do not operate properly, or other methods to interfere with security tools scanning or reporting information. Adversaries may also disable updates to prevent the latest security patches from reaching tools on victim systems.(Citation: SCADAfence_ransomware) Adversaries may also tamper with artifacts deployed and utilized by security tools. Security tools may make dynamic changes to system components in order to maintain visibility into specific events. For example, security products may load their own modules and/or modify those loaded by processes to facilitate data collection. Similar to [Indicator Blocking](https://attack.mitre.org/techniques/T1562/006), adversaries may unhook or otherwise modify these features added by tools (especially those that exist in userland or are otherwise potentially accessible to adversaries) to avoid detection.(Citation: OutFlank System Calls)(Citation: MDSec System Calls) Adversaries may also focus on specific applications such as Sysmon. For example, the “Start” and “Enable” values in `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\WMI\Autologger\EventLog-Microsoft-Windows-Sysmon-Operational` may be modified to tamper with and potentially disable Sysmon logging.(Citation: disable_win_evt_logging) In cloud environments, tools disabled by adversaries may include cloud monitoring agents that report back to services such as AWS CloudWatch or Google Cloud Monitor. Furthermore, although defensive tools may have anti-tampering mechanisms, adversaries may abuse tools such as legitimate rootkit removal kits to impair and/or disable these tools.(Citation: chasing_avaddon_ransomware)(Citation: dharma_ransomware)(Citation: demystifying_ryuk)(Citation: doppelpaymer_crowdstrike) For example, adversaries have used tools such as GMER to find and shut down hidden processes and antivirus software on infected systems.(Citation: demystifying_ryuk) Additionally, adversaries may exploit legitimate drivers from anti-virus software to gain access to kernel space (i.e. [Exploitation for Privilege Escalation](https://attack.mitre.org/techniques/T1068)), which may lead to bypassing anti-tampering features.(Citation: avoslocker_ransomware)

Name

Software Packing

ID

T1027.002

Description

Adversaries may perform software packing or virtual machine software protection to conceal their code. Software packing is a method of compressing or encrypting an executable. Packing an executable changes the file signature in an attempt to avoid signature-based detection. Most decompression techniques decompress the executable code in memory. Virtual machine software protection translates an executable's original code into a special format that only a special virtual machine can run. A virtual machine is then called to run this code.(Citation: ESET FinFisher Jan 2018) Utilities used to perform software packing are called packers. Example packers are MPRESS and UPX. A more comprehensive list of known packers is available, but adversaries may create their own packing techniques that do not leave the same artifacts as well-known packers to evade defenses.(Citation: Awesome Executable Packing)

Name

Remote Desktop Protocol

ID

T1021.001

Description

Adversaries may use [Valid Accounts](https://attack.mitre.org/techniques/T1078) to log into a computer using the Remote Desktop Protocol (RDP). The adversary may then perform actions as the logged-on user. Remote desktop is a common feature in operating systems. It allows a user to log into an interactive session with a system desktop graphical user interface on a remote system. Microsoft refers to its implementation of the Remote Desktop Protocol (RDP) as Remote Desktop Services (RDS).(Citation: TechNet Remote Desktop Services) Adversaries may connect to a remote system over RDP/RDS to expand access if the service is enabled and allows access to accounts with known credentials.

Adversaries will likely use Credential Access techniques to acquire credentials to use with RDP. Adversaries may also use RDP in conjunction with the [Accessibility Features](https://attack.mitre.org/techniques/T1546/008) or [Terminal Services DLL](https://attack.mitre.org/techniques/T1505/005) for Persistence.(Citation: Alperovitch Malware)

Name

Software Deployment Tools

ID

T1072

Description

Adversaries may gain access to and use third-party software suites installed within an enterprise network, such as administration, monitoring, and deployment systems, to move laterally through the network. Third-party applications and software deployment systems may be in use in the network environment for administration purposes (e.g., SCCM, HBSS, Altiris, etc.). Access to a third-party network-wide or enterprise-wide software system may enable an adversary to have remote code execution on all systems that are connected to such a system. The access may be used to laterally move to other systems, gather information, or cause a specific effect, such as wiping the hard drives on all endpoints. The permissions required for this action vary by system configuration; local credentials may be sufficient with direct access to the third-party system, or specific domain credentials may be required. However, the system may require an administrative account to log in or to perform it's intended purpose.

Name

System Network Connections Discovery

ID

T1049

Description

Adversaries may attempt to get a listing of network connections to or from the compromised system they are currently accessing or from remote systems by querying for information over the network. An adversary who gains access to a system that is part of a cloud-based environment may map out Virtual Private Clouds or Virtual Networks in order to determine what systems and services are connected. The actions performed are likely the same types of discovery techniques depending on the operating system, but the resulting information may include details about the networked cloud environment relevant to the adversary's goals. Cloud providers may have different ways in which their virtual networks operate.(Citation: Amazon AWS VPC Guide)(Citation: Microsoft Azure Virtual Network Overview)(Citation: Google VPC Overview) Similarly, adversaries who gain access to network devices may also perform similar discovery activities to gather information about connected systems and services. Utilities and commands that acquire this information include [netstat](https://attack.mitre.org/software/S0104), "net use," and "net session" with [Net](https://attack.mitre.org/software/S0039). In Mac and Linux, [netstat](https://attack.mitre.org/software/S0104) and `lsof` can be used to list current connections. `who -a` and `w` can be used to show which users are currently logged in, similar to "net session". Additionally, built-in features native to network devices and [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) may be used (e.g. `show ip sockets`, `show tcp brief`).(Citation: US-CERT-TA18-106A)

Indicator

Name
163.123.142.213
Description
ISP: Serverion LLC **OS:** Windows (Build 10.0.17763) ------------------------- Hostnames: ------------------------- Domains: ------------------------- Services: **3389:** ``` Remote Desktop Protocol \x03\x00\x00\x13\x0e\xd0\x00\x00\x124\x00\x02\x1f\x08\x00\x02\x00\x00\x00 Remote Desktop Protocol NTLM Info: OS: Windows 10/Windows Server 2019 OS Build: 10.0.17763 Target Name: WIN-HM6FI4VOIEP NetBIOS Domain Name: WIN-HM6FI4VOIEP NetBIOS Computer Name: WIN-HM6FI4VOIEP DNS Domain Name: WIN-HM6FI4VOIEP FQDN: WIN-HM6FI4VOIEP ; Administrator SES ``` ------------------
Pattern Type
stix
Pattern
[ipv4-addr:value = '163.123.142.213']
Name
5b70972c72bf8af098350f8a53ec830ddbd5c2c7809c71649c93f32a8a3f1371
Description

ConventionEngine_Keyword_Bot SHA256 of d9f15227fefb98ba69d98542fbe7e568

Pattern Type

stix

Pattern

[file:hashes.'SHA-256' =
'5b70972c72bf8af098350f8a53ec830ddbd5c2c7809c71649c93f32a8a3f1371']

Name

b9ef2e948a9b49a6930fc190b22cbdb3571579d37a4de56564e41a2ef736767b

Description

HackTool:Win32/Chisel.A SHA256 of be7b13aee7b510b052d023dd936dc32f

Pattern Type

stix

Pattern

[file:hashes.'SHA-256' =
'b9ef2e948a9b49a6930fc190b22cbdb3571579d37a4de56564e41a2ef736767b']

Malware

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)
Name
CACTUS

StixFile

Value
5b70972c72bf8af098350f8a53ec830ddbd5c2c7809c71649c93f32a8a3f1371
b9ef2e948a9b49a6930fc190b22cbdb3571579d37a4de56564e41a2ef736767b

IPv4-Addr

Value
163.123.142.213

External References

- https://www.kroll.com/en/insights/publications/cyber/cactus-ransomware-prickly-new-variant-evades-detection
- https://otx.alienvault.com/pulse/6464e63d7b9feededadb3186