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Overview

Description

A recent Linux variant of the Bifrost remote access Trojan uses a deceptive domain, `download.vmfare.com`, mimicking a legitimate VMware domain to bypass security measures. Bifrost allows attackers to gather sensitive information and there has been a spike in Linux variants in recent months.

Confidence

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

100 / 100

Content

N/A

Malware

Name

jRAT - S0283

Name

linux

Name

jRAT

Description

[jRAT](<https://attack.mitre.org/software/S0283>) is a cross-platform, Java-based backdoor originally available for purchase in 2012. Variants of [jRAT](<https://attack.mitre.org/software/S0283>) have been distributed via a software-as-a-service platform, similar to an online subscription model.(Citation: Kaspersky Adwind Feb 2016) (Citation: jRAT Symantec Aug 2018)

Intrusion-Set

Name

Bifrost

Attack-Pattern

Name

T1056.004

ID

T1056.004

Description

Adversaries may hook into Windows application programming interface (API) functions to collect user credentials. Malicious hooking mechanisms may capture API calls that include parameters that reveal user authentication credentials.(Citation: Microsoft TrojanSpy:Win32/Ursnif.gen!! Sept 2017) Unlike [Keylogging](https://attack.mitre.org/techniques/T1056/001), this technique focuses specifically on API functions that include parameters that reveal user credentials. Hooking involves redirecting calls to these functions and can be implemented via: * **Hooks procedures**, which intercept and execute designated code in response to events such as messages, keystrokes, and mouse inputs.(Citation: Microsoft Hook Overview)(Citation: Elastic Process Injection July 2017) * **Import address table (IAT) hooking**, which use modifications to a process's IAT, where pointers to imported API functions are stored.(Citation: Elastic Process Injection July 2017) (Citation: Adlice Software IAT Hooks Oct 2014)(Citation: MWRInfoSecurity Dynamic Hooking 2015) * **Inline hooking**, which overwrites the first bytes in an API function to redirect code flow.(Citation: Elastic Process Injection July 2017)(Citation: HighTech Bridge Inline Hooking Sept 2011)(Citation: MWRInfoSecurity Dynamic Hooking 2015)

Name

T1566.003

ID

T1566.003

Description

Adversaries may send spearphishing messages via third-party services in an attempt to gain access to victim systems. Spearphishing via service is a specific variant of spearphishing. It is different from other forms of spearphishing in that it employs the use of third party services rather than directly via enterprise email channels. All forms of spearphishing are electronically delivered social engineering targeted at a specific individual, company, or industry. In this scenario, adversaries send messages through various social media services, personal webmail, and other non-enterprise controlled services. These services are more likely to have a less-strict security policy than an enterprise. As with most kinds of spearphishing, the goal is to generate rapport with the target or get the target's interest in some way. Adversaries will create fake social media accounts and message employees for potential job opportunities. Doing so allows a plausible reason for asking about services, policies, and software that's running in an environment. The adversary can then send malicious links or attachments through these services. A common example is to build rapport with a target via social media, then send content to a personal webmail service that the target uses on their work computer. This allows an adversary to bypass some email restrictions on the work account, and the target is more likely to open the file since it's something they were expecting. If the payload doesn't work as expected, the adversary can continue normal communications and troubleshoot with the target on how to get it working.

Name

T1071.001

ID

T1071.001

Description

Adversaries may communicate using application layer protocols associated with web traffic 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. Protocols such as HTTP/S(Citation: CrowdStrike Putter Panda) and WebSocket(Citation: Brazking-Websockets) that carry web traffic may be very common in environments. HTTP/S packets have many fields and headers in which data can be concealed. An adversary may abuse these protocols to communicate with systems under their control within a victim network while also mimicking normal, expected traffic.

Name

T1056

ID

T1056

Description

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](<https://attack.mitre.org/techniques/T1056/004>)) or rely on deceiving the user into providing input into what they believe to be a genuine service (e.g. [Web Portal Capture](<https://attack.mitre.org/techniques/T1056/003>)).

Name

T1041

ID

T1041

Description

Adversaries may steal data by exfiltrating it over an existing command and control channel. Stolen data is encoded into the normal communications channel using the same protocol as command and control communications.

Name

T1083

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

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

T1082

ID

T1082

Description

An adversary may attempt to get detailed information about the operating system and hardware, including version, patches, hotfixes, service packs, and architecture. Adversaries may use the information from [System Information Discovery](https://attack.mitre.org/techniques/T1082) during automated discovery to shape follow-on behaviors, including whether or not the adversary fully infects the target and/or attempts specific actions. Tools such as [Systeminfo](https://attack.mitre.org/software/S0096) can be used to gather detailed system information. If running with privileged access, a breakdown of system data can be gathered through the `systemsetup` configuration tool on macOS. As an example, adversaries with user-level access can execute the `df -aH` command to obtain currently mounted disks and associated freely available space. Adversaries may also leverage a [Network Device CLI](https://attack.mitre.org/techniques/T1059/008) on network devices to gather detailed system information (e.g. `show version`).(Citation: US-CERT-TA18-106A)

[System Information Discovery](<https://attack.mitre.org/techniques/T1082>) combined with information gathered from other forms of discovery and reconnaissance can drive payload development and concealment.(Citation: OSX.FairyTale)(Citation: 20 macOS Common Tools and Techniques) Infrastructure as a Service (IaaS) cloud providers such as AWS, GCP, and Azure allow access to instance and virtual machine information via APIs. Successful authenticated API calls can return data such as the operating system platform and status of a particular instance or the model view of a virtual machine.(Citation: Amazon Describe Instance)(Citation: Google Instances Resource)(Citation: Microsoft Virtual Machine API)

Name

T1071

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

T1566.001

ID

T1566.001

Description

Adversaries may send spearphishing emails with a malicious attachment in an attempt to gain access to victim systems. Spearphishing attachment is a specific variant of spearphishing. Spearphishing attachment is different from other forms of spearphishing in that it employs the use of malware attached to an email. All forms of spearphishing are electronically delivered social engineering targeted at a specific individual, company, or industry. In this scenario, adversaries attach a file to the spearphishing email and usually rely upon [User Execution](<https://attack.mitre.org/techniques/T1204>) to gain execution. Spearphishing may also involve social engineering techniques, such as posing as a trusted source. There are many options for the attachment such as Microsoft Office documents, executables, PDFs, or archived files. Upon opening the attachment (and potentially clicking past protections), the adversary's payload exploits a vulnerability or directly executes on the user's system. The text of the spearphishing email usually tries to give a plausible reason why the file should be opened, and may explain how to bypass system protections in order to do so. The email may also contain instructions on how to decrypt an attachment, such as a zip file password, in order to evade email boundary defenses. Adversaries frequently manipulate file extensions and icons in order to make attached executables appear to be document files, or files exploiting one application appear to be a file for a different one.

Name

T1566.002

ID

T1566.002

Description

Adversaries may send spearphishing emails with a malicious link in an attempt to gain access to victim systems. Spearphishing with a link is a specific variant of spearphishing. It is different from other forms of spearphishing in that it employs the use of links to download malware contained in email, instead of attaching malicious files to the email itself, to avoid defenses that may inspect email attachments. Spearphishing may also involve social engineering techniques, such as posing as a trusted source. All forms of spearphishing are electronically delivered social engineering targeted at a specific individual, company, or industry. In this case, the malicious emails contain links. Generally, the links will be accompanied by social engineering text and require the user to actively click or copy and paste a URL into a browser, leveraging [User Execution](<https://attack.mitre.org/techniques/T1204>). The visited website may compromise the web browser

using an exploit, or the user will be prompted to download applications, documents, zip files, or even executables depending on the pretext for the email in the first place. Adversaries may also include links that are intended to interact directly with an email reader, including embedded images intended to exploit the end system directly. Additionally, adversaries may use seemingly benign links that abuse special characters to mimic legitimate websites (known as an "IDN homograph attack").(Citation: CISA IDN ST05-016) URLs may also be obfuscated by taking advantage of quirks in the URL schema, such as the acceptance of integer- or hexadecimal-based hostname formats and the automatic discarding of text before an "@" symbol: for example, `hxxp://google.com@1157586937`. (Citation: Mandiant URL Obfuscation 2023) Adversaries may also utilize links to perform consent phishing, typically with OAuth 2.0 request URLs that when accepted by the user provide permissions/access for malicious applications, allowing adversaries to [Steal Application Access Token](<https://attack.mitre.org/techniques/T1528>). (Citation: Trend Micro Pawn Storm OAuth 2017) These stolen access tokens allow the adversary to perform various actions on behalf of the user via API calls. (Citation: Microsoft OAuth 2.0 Consent Phishing 2021)

Sector

Name

Technologies

Description

Private entities related to the research, development, manufacturing and distribution of electronics, softwares, computers and products related to information technologies.

External References

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- <https://unit42.paloaltonetworks.com/new-linux-variant-bifrost-malware/>
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- <https://otx.alienvault.com/pulse/65e0cfca4d953f54a1e38b34>