

NETMANAGEIT

Intelligence Report

Analysis of the backdoor in

XZ

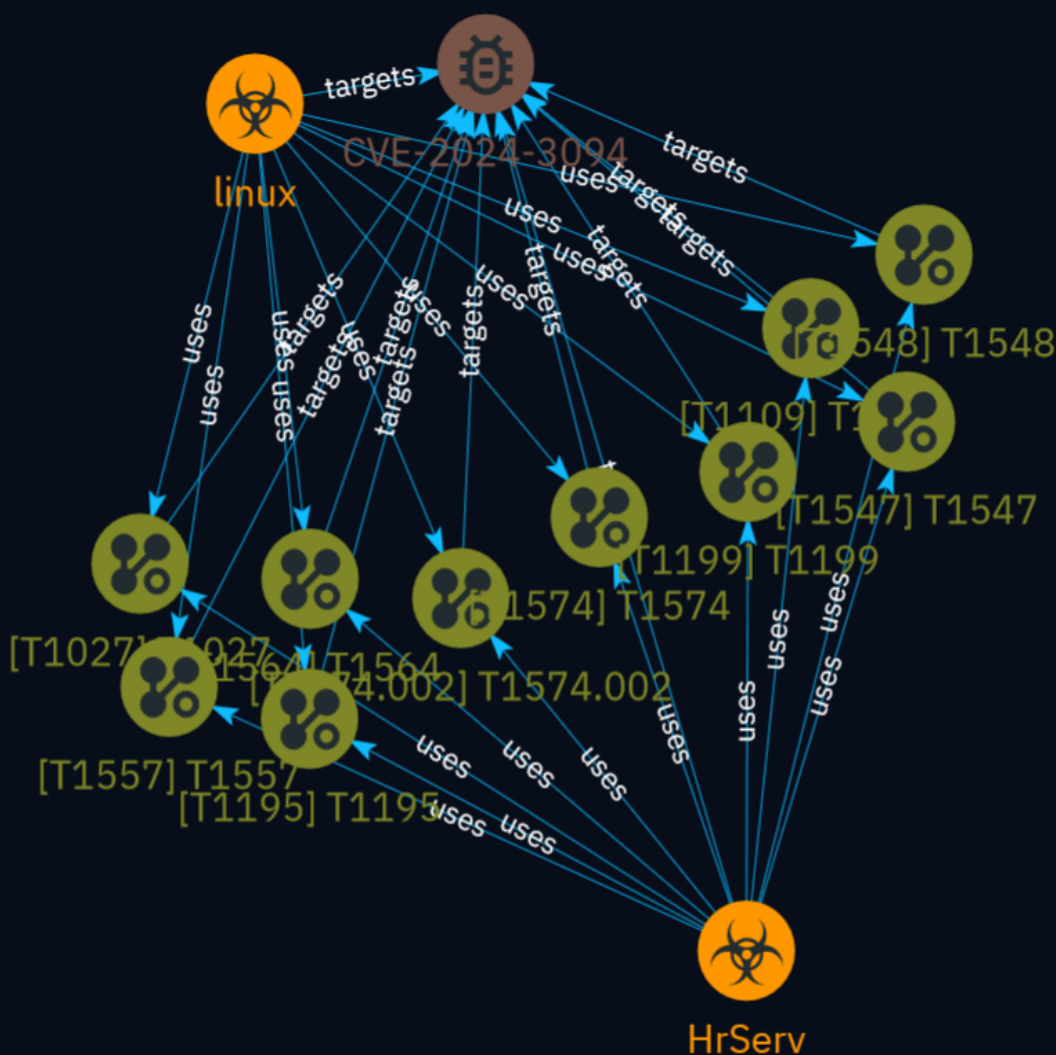


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Overview

Description

The report provides an in-depth analysis of a sophisticated multi-stage backdoor implanted in the XZ compression utility, a critical component integrated into many Linux distributions. The attackers employed advanced techniques, including modifying the build infrastructure and hiding malicious scripts within test files, ultimately introducing a remote code execution capability targeting sshd processes. The backdoor exhibited remarkable stealth and utilized intricate methods to evade detection, underscoring the severity of this supply chain compromise.

Confidence

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

100 / 100

Content

N/A

Attack-Pattern

Name

T1109

ID

T1109

Name

T1574.002

ID

T1574.002

Description

Adversaries may execute their own malicious payloads by side-loading DLLs. Similar to [DLL Search Order Hijacking](<https://attack.mitre.org/techniques/T1574/001>), side-loading involves hijacking which DLL a program loads. But rather than just planting the DLL within the search order of a program then waiting for the victim application to be invoked, adversaries may directly side-load their payloads by planting then invoking a legitimate application that executes their payload(s). Side-loading takes advantage of the DLL search order used by the loader by positioning both the victim application and malicious payload(s) alongside each other. Adversaries likely use side-loading as a means of masking actions they perform under a legitimate, trusted, and potentially elevated system or software process. Benign executables used to side-load payloads may not be flagged during delivery and/or execution. Adversary payloads may also be encrypted/packed or

otherwise obfuscated until loaded into the memory of the trusted process.(Citation: FireEye DLL Side-Loading)

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

T1199

ID

T1199

Description

Adversaries may breach or otherwise leverage organizations who have access to intended victims. Access through trusted third party relationship abuses an existing connection that may not be protected or receives less scrutiny than standard mechanisms of gaining access to a network. Organizations often grant elevated access to second or third-party

external providers in order to allow them to manage internal systems as well as cloud-based environments. Some examples of these relationships include IT services contractors, managed security providers, infrastructure contractors (e.g. HVAC, elevators, physical security). The third-party provider's access may be intended to be limited to the infrastructure being maintained, but may exist on the same network as the rest of the enterprise. As such, [Valid Accounts](<https://attack.mitre.org/techniques/T1078>) used by the other party for access to internal network systems may be compromised and used. (Citation: CISA IT Service Providers) In Office 365 environments, organizations may grant Microsoft partners or resellers delegated administrator permissions. By compromising a partner or reseller account, an adversary may be able to leverage existing delegated administrator relationships or send new delegated administrator offers to clients in order to gain administrative control over the victim tenant.(Citation: Office 365 Delegated Administration)

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

T1548

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

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 Dofail 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

T1564

ID

T1564

Description

Adversaries may attempt to hide artifacts associated with their behaviors to evade detection. Operating systems may have features to hide various artifacts, such as important system files and administrative task execution, to avoid disrupting user work environments and prevent users from changing files or features on the system. Adversaries may abuse these features to hide artifacts such as files, directories, user accounts, or other system activity to evade detection.(Citation: Sofacy Komplex Trojan) (Citation: Cybereason OSX Pirrit)(Citation: MalwareBytes ADS July 2015) Adversaries may also attempt to hide artifacts associated with malicious behavior by creating computing regions that are isolated from common security instrumentation, such as through the use of virtualization technology.(Citation: Sophos Ragnar May 2020)

Name

T1547

ID

T1547

Description

Adversaries may configure system settings to automatically execute a program during system boot or logon to maintain persistence or gain higher-level privileges on compromised systems. Operating systems may have mechanisms for automatically running a program on system boot or account logon.(Citation: Microsoft Run Key)(Citation: MSDN Authentication Packages)(Citation: Microsoft TimeProvider)(Citation: Cylance Reg Persistence Sept 2013)(Citation: Linux Kernel Programming) These mechanisms may include automatically executing programs that are placed in specially designated directories or are referenced by repositories that store configuration information, such as the Windows Registry. An adversary may achieve the same goal by modifying or extending features of the kernel. Since some boot or logon autostart programs run with higher privileges, an adversary may leverage these to elevate privileges.

Name

T1557

ID

T1557

Description

Adversaries may attempt to position themselves between two or more networked devices using an adversary-in-the-middle (AiTM) technique to support follow-on behaviors such as [Network Sniffing](<https://attack.mitre.org/techniques/T1040>), [Transmitted Data Manipulation](<https://attack.mitre.org/techniques/T1565/002>), or replay attacks ([Exploitation for Credential Access](<https://attack.mitre.org/techniques/T1212>)). By abusing features of common networking protocols that can determine the flow of network traffic (e.g. ARP, DNS, LLNMR, etc.), adversaries may force a device to communicate through an adversary controlled system so they can collect information or perform additional actions.(Citation: Rapid7 MiTM Basics) For example, adversaries may manipulate victim DNS settings to enable other malicious activities such as preventing/redirecting users from accessing legitimate sites and/or pushing additional malware.(Citation: ttint_rat)(Citation:

dns_changer_trojans)(Citation: ad_blocker_with_miner) Adversaries may also manipulate DNS and leverage their position in order to intercept user credentials and session cookies. (Citation: volexity_0day_sophos_FW) [Downgrade Attack](<https://attack.mitre.org/techniques/T1562/010>)s can also be used to establish an AiTM position, such as by negotiating a less secure, deprecated, or weaker version of communication protocol (SSL/TLS) or encryption algorithm.(Citation: mitm_tls_downgrade_att)(Citation: taxonomy_downgrade_att_tls)(Citation: tlseminar_downgrade_att) Adversaries may also leverage the AiTM position to attempt to monitor and/or modify traffic, such as in [Transmitted Data Manipulation](<https://attack.mitre.org/techniques/T1565/002>). Adversaries can setup a position similar to AiTM to prevent traffic from flowing to the appropriate destination, potentially to [Impair Defenses](<https://attack.mitre.org/techniques/T1562>) and/or in support of a [Network Denial of Service](<https://attack.mitre.org/techniques/T1498>).

Vulnerability

Name

CVE-2024-3094

Malware

Name

HrServ

Name

linux

External References

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- <https://securelist.com/xz-backdoor-story-part-1/112354/>
-
- <https://otx.alienvault.com/pulse/661ce294f4a794a42c60ffba>