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ATTACK REPORT

DEEPDATA Empowers the Exploitation of Unpatched Fortinet Flaw

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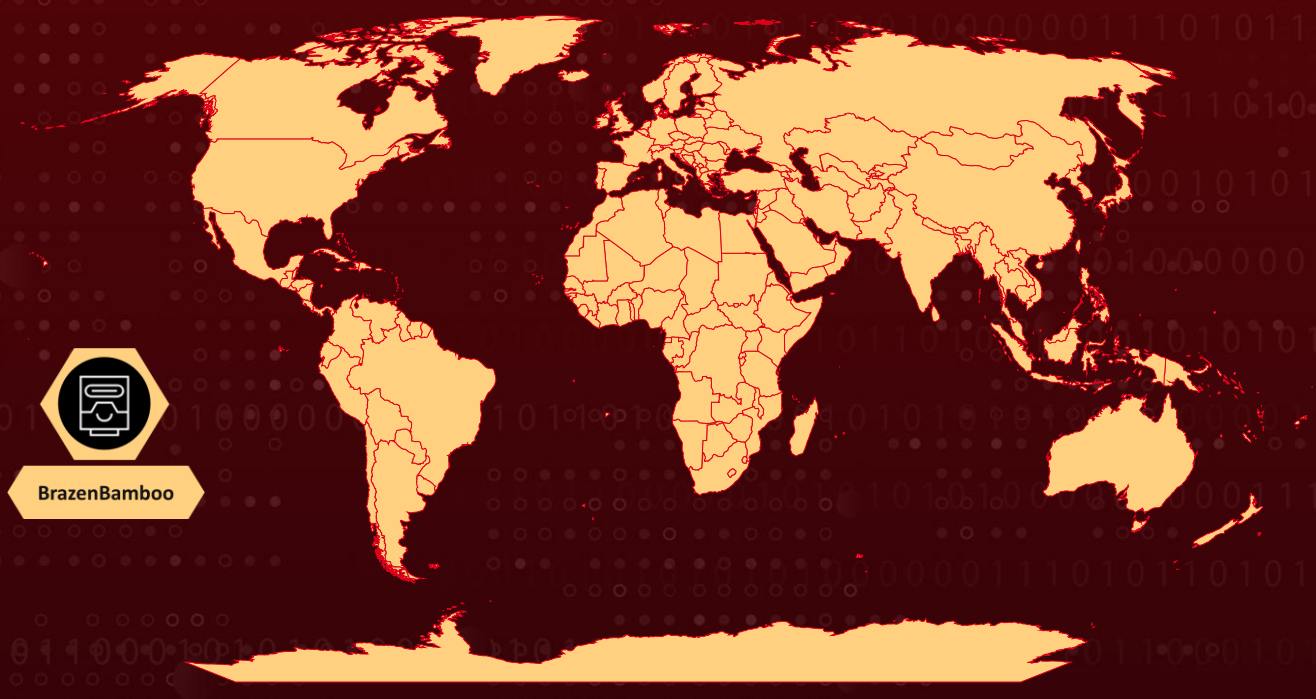
November 21, 2024	A1	TA2024439

Summary

Attack Commenced: July 2024
Threat Actor: BrazenBamboo
Malware: DEEPDATA, LIGHTSPY
Affected Product: FortiClient
Attack Region: Worldwide
Attack: Chinese threat actors, known as BrazenBamboo, are actively exploiting a zero-day vulnerability in Fortinet's FortiClient Windows VPN client with the DEEPDATA post-exploitation toolkit. This critical unpatched flaw enables attackers to extract user credentials from memory after VPN authentication, echoing a similar vulnerability reported in 2016.

Attack Regions



Attack Details

#1 Chinese threat actors identified as BrazenBamboo have been observed exploiting a zero-day vulnerability in Fortinet's FortiClient Windows VPN client through a custom post-exploitation toolkit known as DEEPDATA. This vulnerability, which remains unpatched and lacks a CVE designation, allows attackers to extract user credentials from memory after successful VPN authentication. Notably, this flaw mirrors a 2016 issue in FortiClient, where hardcoded memory offsets similarly exposed credentials.

#2 The DEEPDATA toolkit is a modular post-exploitation framework designed to gather sensitive information from compromised Windows systems. Operating via command-line execution, its FortiClient plugin utilizes a library file, msenvico.dll, to exploit the zero-day vulnerability. Once deployed, the plugin retrieves VPN credentials directly from the process memory of the FortiClient application.

#3 In addition to the FortiClient plugin, DEEPDATA includes multiple plugins supporting a broad range of espionage-related functionalities, such as extracting files, system information, and credentials. The toolkit also integrates with DEEPPOST, a data exfiltration tool used to transfer stolen data to attacker-controlled systems.

#4 By exploiting FortiClient accounts, BrazenBamboo can gain initial access to corporate networks, enabling lateral movement, access to sensitive systems, and the expansion of their espionage campaigns. The LIGHTSPY malware family, previously linked to the Chinese-affiliated group APT41, has similarly demonstrated cross-platform adaptability.

#5 LIGHTSPY variants now target macOS, iOS, and most recently, Windows.This evolving threat highlights the critical risks associated with unpatched vulnerabilities in widely deployed software, as sophisticated threat actors continue to enhance their toolkits for broader, more impactful operations.

Recommendations

Limit FortiClient VPN Access: Configure your VPN to allow connections only from trusted IP addresses or specific geographic locations to minimize exposure. Implement Role-Based Access Control (RBAC) to ensure that users only have access to the resources necessary for their roles.

Implement Zero Trust Architecture: Adopt a Zero Trust security model that requires verification for every user and device attempting to access network resources, minimizing unauthorized access risks.

Monitor and Analyze Network Activity: Turn on detailed logging for VPN access and monitor logs regularly for unusual activity or unauthorized access attempts. Utilize IDS solutions to detect suspicious activities or potential breaches related to the VPN.

Explore Alternative Solutions: Consider transitioning to alternative VPN solutions while Fortinet addresses the existing security concerns. This proactive step can mitigate potential risks and maintain secure remote access continuity during the vulnerability resolution process.

Temporary Disablement of VPN Access: If the unpatched vulnerability is deemed to present an unacceptable security risk based on your organization's risk appetite, temporarily disabling VPN access until a patch is available can serve as a proactive precautionary measure to prevent exploitation. This approach ensures that risks are managed effectively while waiting for the necessary security update.

Potential MITRE ATT&CK TTPs

TA0002 Execution	TA0003 Persistence	TA0005 Defense Evasion	TA0006 Credential Access
TA0007 Discovery	TA0009 Collection	TA0011 Command and Control	TA0010 Exfiltration
TA0042 Resource Development	T1059 Command and Scripting Interpreter	T1059.003 Windows Command Shell	T1071 Application Layer Protocol
T1071.001 Web Protocols	T1083 File and Directory Discovery	T1584 Compromise Infrastructure	T1587 Develop Capabilities

T1587.001 Malware	T1587.004 Exploits	T1133 External Remote Services	T1078 Valid Accounts
T1543 Create or Modify System Process	T1562 Impair Defenses	T1212 Exploitation for Credential Access	T1005 Data from Local System

Indicators of Compromise (IOCs)

TYPE	VALUE
File Name	deepdata.zip, data.dll, mod.dat, readme.txt, frame.dll, ffmpeg.dll, vertdll.dll, iumdll.dll, ucrtbase_enclave.dll, d3dcompiler_47.dll, config.json, manifest.json, manifest1.json, date.ini
MD5	b9129d83af902908fa7757e906ec0afe, 0f0fadd0546734c5c82f3c33d8268046, 7efb1bc15ee6e3043f8eaefcf3f10864, d66776ee123ef2947bc3175653a68d05, ea47fd87c1b109d5fd529c213aea6b30, 8625c0cf0748d04d43db54884ee13672, 4b9aa7d571be1a6ec62931c4c6624328, 7529f56dde7a8302947982c43080bfcc, 6ce2477efe7e853cea90764db5a64e6e, fb99f5da9c0c46c27e17dc2dc1e162d7, 48f8b7e0db439336549b93bda8633cd2, d521bf0f24c839e7ceb5db77de090fbc, 3b61d82be05f18754238e26b835da103, 847ec30a4ff2391f1eb7669c22940e51, bdd8926f4be6576653ac96ee732d587a, e79da1e448c60e12d835b47735f9da03, 533297a7084039bf6bda702b752e6b82

TYPE	VALUE
SHA1	20214e2e93b1bb37108aa1b8666f6406fabca8a0
File Path	D:\Code\OtherWork\DeepDataH\bin\data.pdb, D:\tmpWork\deepdata-v2\deepdata\bin\frame.pdb, G:\xmh_miqu_key\xmh\密取\appdata\Release\appdata.pdb, G:\xmh_miqu_key\xmh\密取\appdata\Release\Whatsapp.pdb, G:\xmh_miqu_key\xmh\密取\appdata\Release\signal.pdb, G:\xmh_miqu_key\xmh\密取\SystemInfo\Release\SystemInfo.pdb, E:\zyx\dll\Dll1\Debug\wifiList.pdb, D:\tmpWork\deepdata-v2\deepdata\bin\x86\WebBrowser.pdb, G:\xmh_miqu_key\xmh\密取\Pass\Release\Pass.pdb, G:\xmh_miqu_key\xmh\密\outlook\outlook_2022.12.14\OUTLOOK\Bin\OutlookX32.pdb, E:\zyx\dll\ProductList\Debug\ProductList.pdb, D:\tmpWork\deepdata-v2\deepdata\bin\x86\SocialSoft.pdb, C:\Users\GT1\source\repos\Audio_miqu\Release\Audio.pdb, C:\Users\GT1\source\repos\Audio_miqu\Release\audio.core.pdb, G:\xmh_miqu_key\xmh\密取\ChatIndexedDb\Release\ChatIndexedDb.pdb, E:\xmh\密取\appdata\Release\Whatsapp.pdb, D:\Code\project\MiQuH\MiQuH\Release\Tdm.pdb, D:\CodeS\compile\tg471\tdesktop\out\Release\Telegram.pdb
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TYPE	VALUE
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TYPE	VALUE
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TYPE	VALUE
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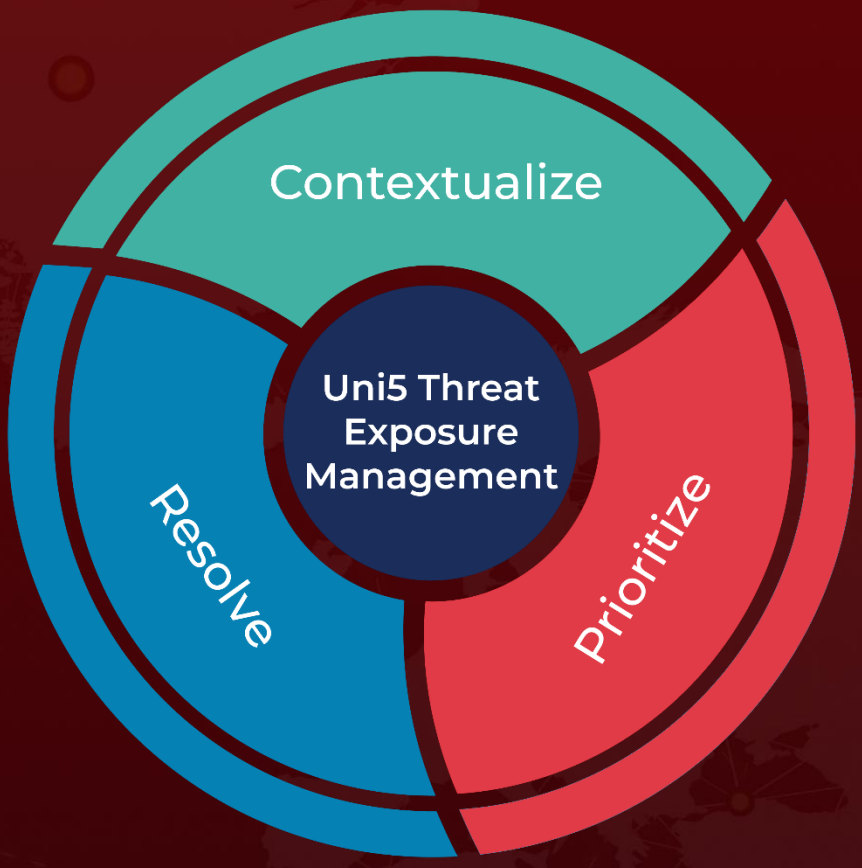

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