Hive Pro

Threat Level

Red

HiveForce Labs

# THREAT ADVISORY

## ACTOR REPORT

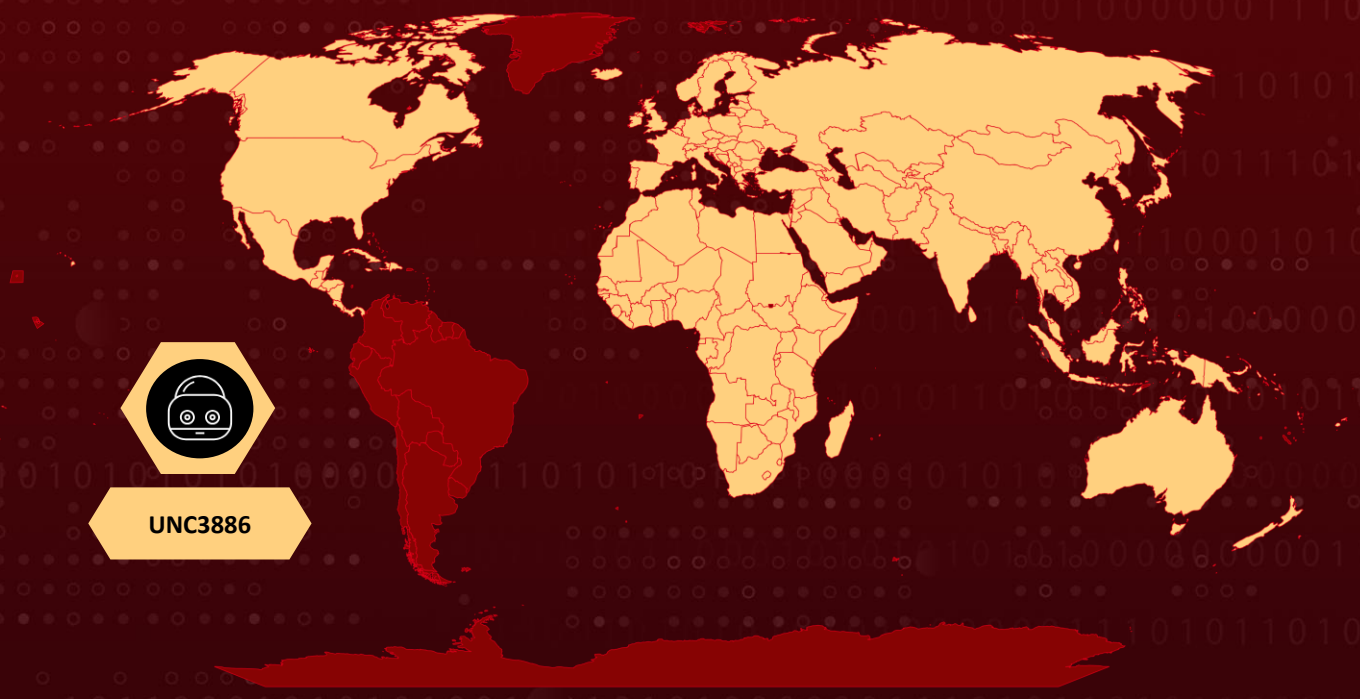
# UNC3886 Covert Operations Leveraging Rootkits and Backdoored Applications

| Date of Publication | Last Update Date | Admiralty code | TA Number |
|---|---|---|---|
| June 21, 2024 | August 2, 2024 | A1 | TA2024240 |

# Summary

**First Appearance:** September 2022
**Actor Name:** UNC3886
**Targeted Countries:** North America, Oceania, Europe, Africa, and Asia
**Malware:** VirtualPita, VirtualPie, VirtualGate, MOPSLED and RIFLESPINE
**Targeted Industries:** Government, Telecommunications, Technology, Aerospace, Defense, Energy and Utility

## Actor Map



## CVEs

| CVE | NAME | AFFECTED PRODUCT | ZERO -DAY | CISA KEV | PATCH |
|---|---|---|---|---|---|
| CVE-2023-34048 | VMware vCenter Server Out-of-Bounds Write Vulnerability | VMware vCenter Server | ✓ | ✓ | ✓ |
| CVE-2022-41328 | Fortinet FortiOS Path Traversal Vulnerability | Fortinet FortiOS | ✓ | ✓ | ✓ |
| CVE-2022-22948 | Vmware vCenter Server Information Disclosure Vulnerability | Vmware vCenter Server | ✗ | ✓ | ✓ |
| CVE-2023-20867 | VMware Tools Authentication Bypass Vulnerability | VMware Tools | ✓ | ✓ | ✓ |
| CVE-2022-42475 | Fortinet FortiOS Heap-Based Buffer Overflow Vulnerability | Fortinet FortiOS | ✓ | ✓ | ✓ |

# Attack Details

**#1**

A China-linked cyber espionage group, tracked as UNC3886, has been employing various techniques to evade detection and maintain access to compromised systems after initial zero-day attacks. UNC3886 has exploited vulnerabilities in Fortinet, and VMware systems to gain access. To sustain long-term access, the group uses multiple layers of persistence across network devices, hypervisors, and virtual machines. Their attacks focus on entities in North America, Southeast Asia, Oceania, and other regions, including industries like government, telecommunications, technology, aerospace, defense, and energy.

**#2**

UNC3886 utilize publicly available rootkits like REPTILE and MEDUSA to maintain access and evade detection, bypassing security software to infiltrate networks. They employs malware such as MOPSLED and RIFLESPINE, using trusted third-party services like GitHub and Google Drive as command-and-control (C2) channels. They also acquire and use valid credentials to move laterally between virtual machines on compromised VMware ESXi systems, sometimes utilizing backdoored SSH executables.

**#3** Additionally, UNC3886 uses backdoored SSH clients and custom SSH servers to harvest credentials and employs LOOKOVER to decrypt TACACS+ authentication packets. Other malware used includes a trojanized TACACS daemon, VIRTUALSHINE (a VMware VMCI sockets-based backdoor), VIRTUALPIE (a Python backdoor), and VIRTUALSPHERE (a VMCI-based controller module).

**#4** One of the defining characteristics of UNC3886 is its focus on environments lacking Endpoint Detection and Response (EDR) solutions. This includes virtualized infrastructures and certain types of network devices, which are often less monitored and protected compared to traditional endpoints. By targeting these environments, UNC3886 can operate with a lower risk of detection, leveraging advanced persistence techniques to maintain long-term access to compromised systems.

**#5** The increasing appeal of virtual machines as targets due to their widespread use in cloud environments and essential role in IT infrastructure. Overall, UNC3886's operations underscore the importance of securing virtual environments against sophisticated cyber threats.

## Actor Group

| NAME | ORIGIN | TARGET REGIONS | TARGET INDUSTRIES |
|---|---|---|---|
| UNC3886 | China<br>**MOTIVE**<br>Espionage | North America, Oceania, Europe, Africa, and Asia | Government, Telecommunications, Technology, Aerospace, Defense, Energy and Utility |

# Recommendations

**Implement Robust Endpoint Protection:** Deploy advanced endpoint protection solutions that include behavior-based detection, machine learning algorithms, and threat intelligence. These solutions can detect and block malicious activities associated with UNC3886. Regularly update endpoint security software to ensure protection against the latest threats.

**Patch and Update Software:** Keep all operating systems, applications, and firmware up to date with the latest security patches and updates. UNC3886 threat actors often exploit known vulnerabilities to gain initial access to systems. By promptly applying patches, organizations can mitigate the risk of these vulnerabilities being exploited and prevent unauthorized access to their networks.

**Advanced Threat Detection and Response:** Deploying advanced threat detection and response solutions is essential for identifying and mitigating sophisticated attacks. This includes using Endpoint Detection and Response (EDR) tools, Intrusion Detection Systems (IDS), and Intrusion Prevention Systems (IPS). These tools can detect unusual activity and provide alerts on potential intrusions, allowing for quicker response times.

**Network Segmentation:** Segmenting the network can limit the spread of an attack and protect sensitive information. By creating isolated network segments for different parts of the infrastructure, organizations can control access more effectively and contain potential breaches. Implementing strict access controls and monitoring traffic between segments can further enhance security.

## Potential MITRE ATT&CK TTPs

| | | | |
|---|---|---|---|
| TA0002<br>Execution | TA0004<br>Privilege Escalation | TA0042<br>Resource Development | TA0005<br>Defense Evasion |
| TA0006<br>Credential Access | TA0011<br>Command and Control | TA0003<br>Persistence | TA0008<br>Lateral Movement |

| | | | |
|---|---|---|---|
| T1588.006<br>Vulnerabilities | T1588.005<br>Exploits | T1588<br>Obtain Capabilities | T1059<br>Command and Scripting Interpreter |
| T1014<br>Rootkit | T1021.004<br>SSH | T1021<br>Remote Services | T1078<br>Valid Accounts |
| T1202<br>Indirect Command Execution | T1140<br>Deobfuscate/Decode Files or Information | T1095<br>Non-Application Layer Protocol | T1588.004<br>Digital Certificates |
| T1584<br>Compromise Infrastructure | T1071.001<br>Web Protocols | T1071<br>Application Layer Protocol | T1600<br>Weaken Encryption |

## Indicator of Compromise (IOCs)

| TYPE | VALUE |
|---|---|
| MD5 | 381b7a2a6d581e3482c829bfb542a7de,<br>876787f76867ecf654019bd19409c5b8,<br>827d8ae502e3a4d56e6c3a238ba855a7,<br>9ea86dccd5bbde47f8641b62a1eeff07,<br>fcb742b507e3c074da5524d1a7c80f7f,<br>129ba90886c5f5eb0c81d901ad10c622,<br>0f76936e237bd87dfa2378106099a673,<br>d18a5f1e8c321472a31c27f4985834a4,<br>4ddca39b05103aeb075ebb0e03522064,<br>0e43a0f747a60855209b311d727a20bf,<br>1d89b48548ea1ddf0337741ebdb89d92,<br>ecb34a068eeb2548c0cbe2de00e53ed2,<br>89339821cdf6e9297000f3e6949f0404,<br>c870ea6a598c12218e6ac36d791032b5,<br>1079d416e093ba40aa9e95a4c2a5b61f,<br>ed9be20fea9203f4c4557c66c5b9686c,<br>568074d60dd4759e963adc5fe9f15eb1,<br>4d5e4f64a9b56067704a977ed89aa641,<br>1b7aee68f384e252286559abc32e6dd1,<br>b754237c7b5e9461389a6d960156db1e, |

| TYPE | VALUE |
| --- | --- |
| MD5 | f41ad99b8a8c95e4132e850b3663cb40,<br>48f9bbdb670f89fce9c51ad433b4f200,<br>4fb72d580241f27945ec187855efd84a,<br>e2cdf2a3380d0197aa11ff98a34cc59e,<br>fd3834d566a993c549a13a52d843a4e1,<br>4282de95cc54829d7ac275e436e33b78,<br>c9c00c627015bd78fda22fa28fd11cd7,<br>047ac6aebe0fe80f9f09c5c548233407,<br>bca2ccff0596a9f102550976750e2a89,<br>3a8a60416b7b0e1aa5d17eefb0a45a16,<br>6e248f5424810ea67212f1f2e4616aa5,<br>5d232b72378754f7a6433f93e6380737,<br>3c7316012cba3bbfa8a95d7277cda873,<br>9c428a35d9fc1fdaf31af186ff6eec08,<br>2716c60c28cf7f7568f55ac33313468b,<br>61ab3f6401d60ec36cd3ac980a8deb75,<br>bd6e38b6ff85ab02c1a4325e8af29ce4,<br>9ef5266a9fdd25474227c3e33b8e6d77,<br>a7cd7b61d13256f5478feb28ab34be72,<br>cd3e9e4df7e607f4fe83873b9d1142e3,<br>62bed88bd426f91ddbbbcfcd8508ed6a,<br>8e80b40b1298f022c7f3a96599806c43,<br>c9f2476bf8db102fea7310abadeb9e01,<br>2c28ec2d541f555b2838099ca849f965,<br>2bade2a5ec166d3a226761f78711ce2f,<br>969d7f092ed05c72f27eef5f2c8158d6,<br>084132b20ed65b2930129b156b99f5b3 |
| IPv4 | 8[.]222[.]218[.]20,<br>8[.]222[.]216[.]144,<br>8[.]219[.]131[.]77,<br>8[.]219[.]0[.]112,<br>8[.]210[.]75[.]218,<br>8[.]210[.]103[.]134,<br>47[.]252[.]54[.]82,<br>47[.]251[.]46[.]35,<br>47[.]246[.]68[.]13,<br>47[.]243[.]116[.]155,<br>47[.]241[.]56[.]157,<br>45[.]77[.]106[.]183,<br>45[.]32[.]252[.]98,<br>207[.]246[.]64[.]38, |

| TYPE | VALUE |
| --- | --- |
| IPv4 | 149[.]28[.]122[.]119,<br>155[.]138[.]161[.]47,<br>154[.]216[.]2[.]149,<br>103[.]232[.]86[.]217,<br>103[.]232[.]86[.]210,<br>103[.]232[.]86[.]209,<br>58[.]64[.]204[.]165,<br>58[.]64[.]204[.]142,<br>58[.]64[.]204[.]139,<br>165[.]154[.]7[.]145,<br>165[.]154[.]135[.]108,<br>165[.]154[.]134[.]40,<br>152[.]32[.]231[.]251,<br>152[.]32[.]205[.]208,<br>152[.]32[.]144[.]15,<br>152[.]32[.]129[.]162,<br>123[.]58[.]207[.]86,<br>123[.]58[.]196[.]34,<br>118[.]193[.]63[.]40,<br>118[.]193[.]61[.]71,<br>118[.]193[.]61[.]178, |
| SHA1 | 0962e10dc34256c6b31509a5ced498f8f6a3d6b6,<br>93d5c4ebec2aa45dcbd6ddbaad5d80614af82f84,<br>a3cc666e0764e856e65275bd4f32a56d76e51420,<br>abff003edf67e77667f56bbcfc391e2175cb0f8a,<br>e35733db8061b57b8fcdb83ab51a90d0a8ba618c,<br>e9cbac1f64587ce1dc5b92cde9637affb3b58577 |
| SHA256 | 13f11c81331bdce711139f985e6c525915a72dc5443fbbfe99c8ec1dd7ad2209,<br>4a6f559426493abc0d056665f23457e2779abd3482434623e1f61f4cd5b41843,<br>4cf3e0b60e880e6a6ba9f45187ac5454813ae8c2031966d8b264ae0d1e15e70d,<br>505eb3b90cd107cf7e2c20189889afdff813b2fbb98bbdeab65cde520893b168,<br>5731d988781c9a1d2941f7333615f6292fb359f6d48498f32c29878b5bedf00f,<br>c2ef08af063f6d416233a4b2b2e991c177fc72d70a76c24bca9080521d41040f,<br>1893523f2a4d4e7905f1b688c5a81b069f06b3c3d8c0ff9d16620468d117edbb |

# Patch Links

https://www.vmware.com/security/advisories/VMSA-2023-0023.html

https://fortiguard.com/psirt/FG-IR-22-369

https://www.vmware.com/security/advisories/VMSA-2022-0009.html

https://www.vmware.com/security/advisories/VMSA-2023-0013.html

https://fortiguard.com/psirt/FG-IR-22-398

# References

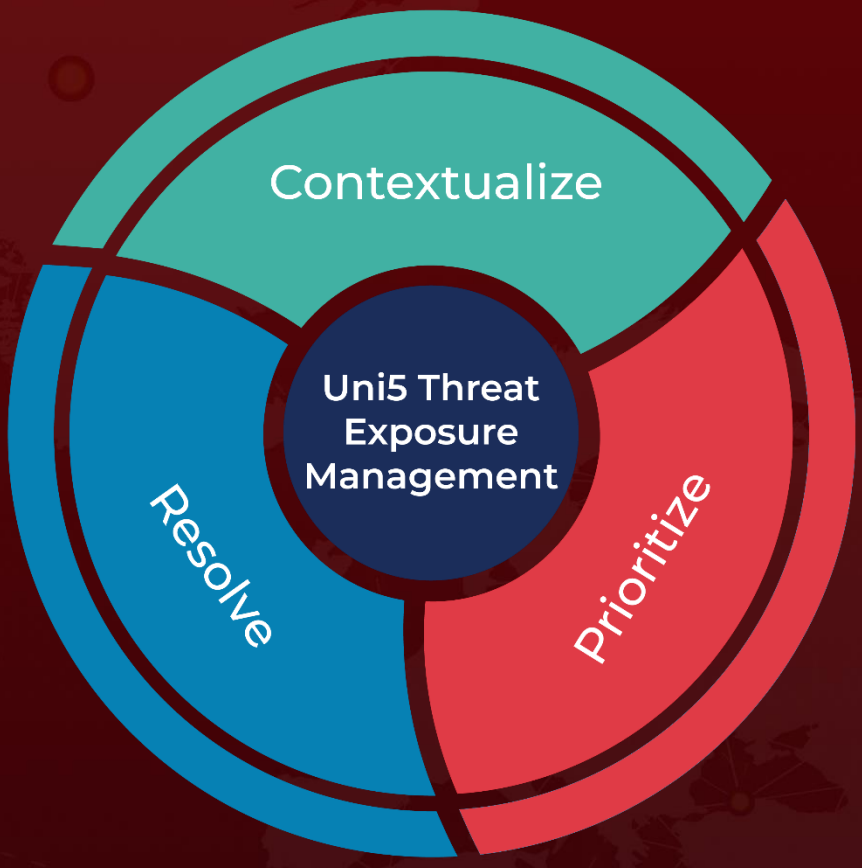
https://cloud.google.com/blog/topics/threat-intelligence/uncovering-unc3886-espionage-operations

https://www.hivepro.com/threat-advisory/unc3886-targets-technologies-with-custom-malware-and-exploits-zero-day-vulnerabilities/

# What Next?

At **Hive Pro**, it is our mission to detect the most likely threats to your organization and to help you prevent them from happening.

Book a free demo with **HivePro Uni5**: Threat Exposure Management Platform.




REPORT GENERATED ON

**June 21, 2024 • 6:30 AM**



More at www.hivepro.com