HC3: Threat Profile

June 18, 2024 TLP:CLEAR Report: 202406181500

Qilin, aka Agenda Ransomware

Executive Summary

Qilin is a ransomware-as-a-service (RaaS) offering in operation since 2022, and which continues to target healthcare organizations and other industries worldwide. The group likely originates from Russia, and was recently observed recruiting affiliates in late 2023. The ransomware has variants written in Golang and Rust, and is known to gain initial access through spear phishing, as well as leverage Remote Monitoring and Management (RMM) and other common tools in its attacks. The group is also known to practice double extortion, demanding ransom payments from victims to prevent data from being leaked.

Background

The Qilin ransomware operation was initially launched as "Agenda" in July 2022. However, by September, it had rebranded under the name Qilin, which it continues to operate as to this day. It operates as a ransomware-as-a-service (RaaS) offering in which affiliates leverage its tools and infrastructure to carry out ransomware attacks in exchange for 15-20% of the proceeds. In 2023, Qilin's typical ransom demand was between $50,000 and $800,000, according to Group-IB. The group has steadily increased its activity over the past year, claiming responsibility for more than 60 ransomware attacks since January 2024. Researchers have identified dark web posts associated with Qilin in 2022 by a user who is likely connected to the RaaS group. In October 2023, Qilin was observed recruiting affiliates on a hacking forum and specifically excluding CIS countries from its targets. Qilin's recruitment post includes details about its functionalities, including the encryption algorithms ChaCha20, AES-256, and RSA4096.

Technical Details

There are multiple variants of Agenda ransomware written in different programming languages. The malware was originally writing in the Go programming language (also referred to as Golang). In general, malware written in the Golang has become common among threat actors. However, researchers recently discovered updated versions of the ransomware written in Rust. While the ransomware primarily targets Windows machines, a Linux version was identified in December 2023 targeting VMware ESXi servers.

To gain initial access, Agenda ransomware targets its victims through phishing and spear phishing emails. The actors are also known to leverage exposed applications and interfaces such as Citrix and remote desktop protocol (RDP). According to observations from Trend Micro, Agenda ransomware group uses Remote Monitoring and Management (RMM) tools, and Cobalt Strike for deployment of the binary.

The Agenda ransomware executable has the ability to propagate via PsExec and SecureShell, while also making use of different vulnerable SYS drivers for defense evasion. Agenda ransomware has some customization options, which include changing the filename extensions of encrypted files (such as ".MmXReVIxLV") and the list of processes and services to terminate. The ransomware supports multiple encryption modes, all of which are controlled by the operator. The ransomware also employs various code obfuscation methods, such as renaming functions, altering control flows, and encrypting strings.

Agenda actors practice double extortion and operate a data leak site (DLS) where victims are posted. Victims are directed to communicate with the attackers via dark web portals or encrypted messaging services, ensuring the attackers' anonymity and complicating law enforcement efforts to track interactions. Payments are demanded in cryptocurrencies, such as Bitcoin or Monero. However, even after payment, there is no guarantee that victims will receive the decryption tools required to recover their data.

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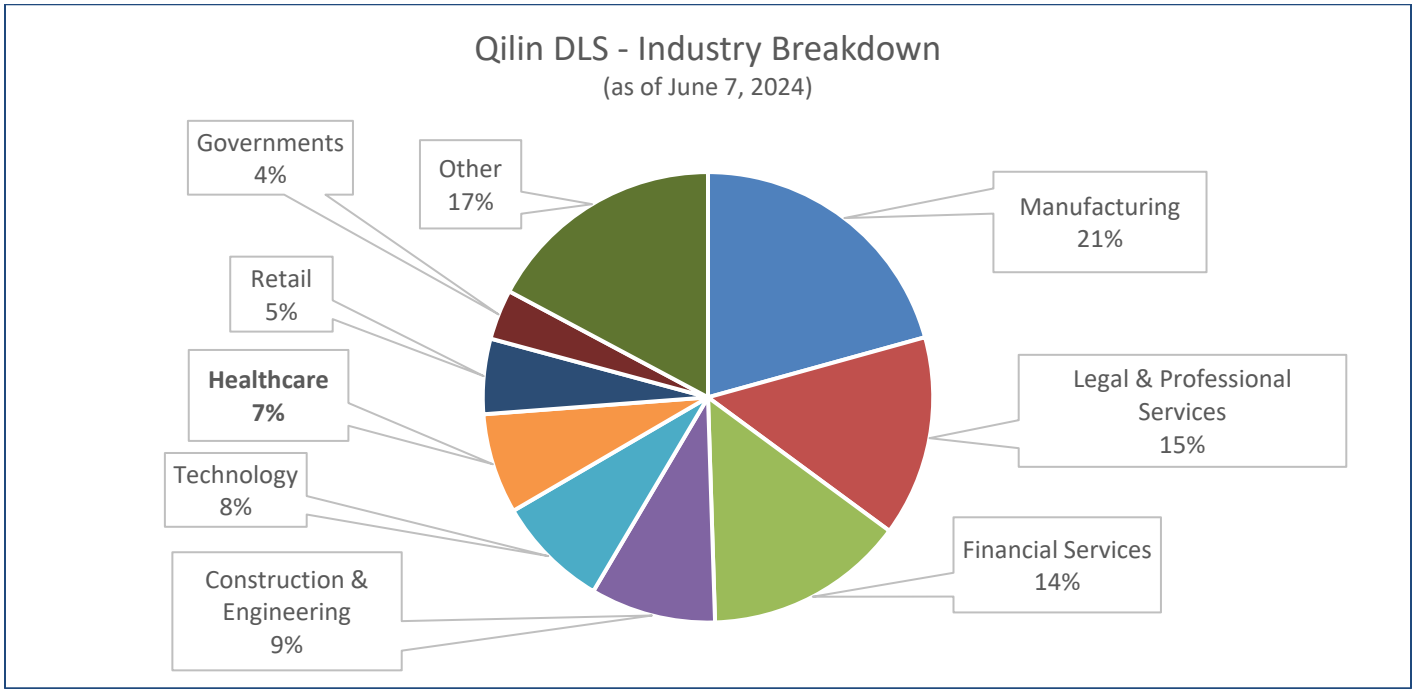
Industry Targeting

Qilin is known to target organizations in various countries and industries, including education, healthcare and critical services, with geographical regions targeted including Australia, Canada, the United Kingdom, and the United States, among others. The group's targeting appears to be opportunistic rather than targeted. According to a trusted third party's monitoring of the Qilin DLS, healthcare victims accounted for just over 7% of the more than 100 victims appearing on the DLS, and the most targeted industries included Manufacturing, Legal and Professional Services, and Financial Services, as of June 7, 2024.



Impact to HPH Sector

HC3 has identified at least fifteen incidents involving Qilin/Agenda ransomware in the Healthcare and Public Health Sector (HPH) sector worldwide since October 2022, around half of which impacted HPH sector organizations in the United States. Most recently, on June 3, 2024, a United Kingdom-based pathology and diagnostic services provider fell victim to a Qilin ransomware attack, which impacted healthcare services at multiple major hospitals in London, according to open-source reports.

Overall, U.S. HPH sector victim organization revenues range from USD $6 million to USD $40 million, while victim states include Indiana, Florida, Ohio, Georgia, Minnesota, Nevada, and Arizona. These U.S. HPH victim organizations include dental clinics, a healthcare communications company, an emergency medicine specialist, a radiology company, a home healthcare provider, a neurology center, and a cardiovascular medicine clinic.

Analyst Comment

While the Qilin RaaS group is likely a financially-motivated cyber criminal group with Russian origins and/or Russian-speaking members, a "qilin" (Chinese: 麒麟) is a legendary hooved chimerical creature that appears in Chinese mythology. An alternative spelling of the word, "Kylin" is also an operating system developed by academics at the National University of Defense Technology in the People's Republic of

China (PRC) since 2001. The first versions were intended for use by the Chinese military and other government organizations.

Additionally, while HC3 is aware of a single U.S. HPH victim appearing both on the LockBit 3.0 data leak site (DLS) and the Qilin DLS, there are no publicly known connections between these two RaaS operations at this time. Additionally, while re-victimization occasionally occurs across multiple RaaS groups, this instance would not be considered re-victimization, but rather a single incident where multiple RaaS groups are claiming to possess data allegedly exfiltrated from the victim to demand a ransom payment. Earlier this year, numerous existing LockBit victims also appeared on a new Dispossessor DLS, for example.

Mitigations

The following resources and guidance are provided by various elements of the federal government to assist the health sector in defending against, mitigating the effects of, and reporting ransomware attacks:

- DHS/CISA Stop Ransomware: https://www.cisa.gov/stopransomware
- FBI Cybercrime: https://www.fbi.gov/investigate/cyber
- FBI Internet Crime Complaint Center (IC3): https://www.ic3.gov/Home/ComplaintChoice/default.aspx/
- FDA - Medical Device Security Information: https://www.fda.gov/medical-devices/digital-healthcenter-excellence/cybersecurity
- H-ISAC White Papers: https://h-isac.org/category/h-isac-blog/white-papers/
- 405(d) Resource Library: https://405d.hhs.gov/resources
- HC3 Products: https://www.hhs.gov/about/agencies/asa/ocio/hc3/index.html

Furthermore, the FBI recommends the following steps:

- Review domain controllers, servers, workstations, and active directories for new or unrecognized user accounts.
- Regularly back up data, air gap, and password-protect backup copies offline. Ensure copies of critical data are not accessible for modification or deletion from the system where the data resides.
- Review Task Scheduler for unrecognized scheduled tasks. Additionally, manually review operating system-defined or system-recognized scheduled tasks for unrecognized “actions.” (For example, review the steps each scheduled task is expected to perform.)
- Review anti-virus logs for indications that they were unexpectedly turned off.
- Implement network segmentation.
- Require administrator credentials to install software.
- Implement a recovery plan to maintain and retain multiple copies of sensitive or proprietary data and servers in a physically separate, segmented, secure location (e.g., hard drive, storage device, the cloud).
- Install updates/patch operating systems, software, and firmware as soon as updates/patches are released.
- Use multi-factor authentication where possible.
- Regularly change the passwords to network systems and accounts and avoid re-using passwords for different accounts.
- Implement the shortest acceptable timeframe for password changes.
- Disable unused remote access/Remote Desktop Protocol (RDP) ports and monitor remote access/RDP logs.

- Audit user accounts with administrative privileges and configure access controls with least privilege in mind.
- Install and regularly update anti-virus and anti-malware software on all hosts.
- Only use secure networks and avoid using public Wi-Fi networks. Consider installing and using a virtual private network (VPN).
- Consider adding an email banner to emails received from outside your organization.
- Disable hyperlinks in received emails.

Indicators of Compromise (IOCs)

Type	Indicator
MD5	64ca549e78ad1bd3a4bd2834b0f81080
SHA-1	493ff413528f752c5fce3ceabd89d2ab37397b86
SHA-256	93c16c11ffca4ede29338eac53ca9f7c4fbcf68b8ea85ea5ae91a9e00dc77f01
MD5	eb6fff4ee0f03ae5191f11570ff221c5
SHA-1	c2dfbf554e068195ecc40bebd0617ce09ad65784
SHA-256	54ff98956c3a0a3bc03a5f43d2c801ebcc1255bed644c78bad55d7f7beebd294
MD5	923c5af6fd29158b757fb876979d250b
SHA-1	6b3e3ff0495d39c85eca41f336bfd5ff92c97412
SHA-256	9e1f8165ca3265ef0ff2d479370518a5f3f4467cd31a7b4b006011621a2dd752
MD5	31edb01d243e8d989eb7e5aeeeef54dc
SHA-1	05f60fc706754b317ffc7839a2b0490f7cd6f71d
SHA-256	e4882b8e8e414e983cf003a5c4038043002a004b63c4f0844a15268332597e80
MD5	a7ab0969bf6641cd0c7228ae95f6d217
SHA-1	002971b6d178698bf7930b5b89c201750d80a07e
SHA-256	117fc30c25b1f28cd923b530ab9f91a0a818925b0b89b8bc9a7f820a9e630464
MD5	417ad60624345ef85e648038e18902ab
SHA-1	e18e6f975ef8fce97790fb8ae583caad1ec7d5b3
SHA-256	555964b2fed3cced4c75a383dd4b3cf02776dae224f4848dcc03510b1de4dbf4
MD5	e01776ec67b9f1ae780c3e24ecc4bf06
SHA-1	3ef805009f8694e78699932563c09ac3b6bc08a5
SHA-256	0629cd5e187174cb69f3489675f8c84cc0236f11f200be384ed6c1a9aa1ce7a1
MD5	63b89a42c39b2b56aae433712f96f619
SHA-1	50927809fa3f1ec408d7a1715a714831f41160db
SHA-256	bf9fc34ef4734520a1f65c1ec0a91b563bf002ac63982cbd2df10791493e9147
MD5	d0a711e4a51891ddf00f704d508b1ef2
SHA-1	d9ea05933353d1f32b18696877a3396140022f03
SHA-256	cd27a31e618fe93df37603e5ece3352a91f27671ee73bdc8ce9ad793cad72a0f
MD5	14dec91fdcaab96f51382a43adb84016
SHA-1	a85d9d2a3913011cd282abc7d9711b2346c23899
SHA-256	37546b811e369547c8bd631fa4399730d3bdaff635e744d83632b74f44f56cf6
MD5	88bb86494cb9411a9692f9c8e67ed32c
SHA-1	82f8060575de96dc4edc4f7b02ec31ba7637fa03

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Type	Indicator
SHA-256	c26ce932f3609ecd710a3a1ca7f7b96f1b103a11b49a86e9423e03664eaabd40
MD5	470d0261d18ed69990ce94f05d940de1
SHA-1	890581fca724935118606a4d92dbc206f9eff04c
SHA-256	411b2ed12df1ace6559d3ea666c672617ce23e2ace06806bb53c55bcccb83303
MD5	d67303ba66bcb4dd89de87c83f3f831f
SHA-1	34bfe0c8aa61f90ca03b7e80271d5a8afae0be4b
SHA-256	8e1eb0ad22236e325387fdb45aea63f318a672c5d035a21d7b3a64eeafb4c5a2
MD5	440810b008eed766f085b69b1723f54b
SHA-1	9692644974071cd484455e355f8d79ce8c486e20
SHA-256	aa0772fc6784799d59649654879c2b4a23919cda410bede0162751e6d6d6b558
MD5	6b7eeb860917aa44982d8bd2d971aff1
SHA-1	d4e3a066e1c1a21e3d44f2ef81a94aec42f5df11
SHA-256	ebb2a1b46a13c308ffe62dda4d9da316d550433707b2c2a38ad710ea4456c608
MD5	a42d36f1af2c396e645ffa356fa47a1e
SHA-1	5914e976598ece1a271a60615a17420319a77812
SHA-256	ceed9fdce420c0558e56bb705664d59f67d62c12d7356ca8643908261638b256
MD5	e1d41939dc4cc4116cc3439a01cfb666
SHA-1	6e35dfdf0d09a0313a33fcc6c77f4fe00a79b9dc
SHA-256	5e9fc42cf65e1a87e953d00cb2755d3b5b00c1414259534c3a85742295bb6ff9
MD5	1410b418a078559581725d14fa389cdd
SHA-1	081cd6c242d472db9148fd0ce33346f7a3e87ac2
SHA-256	a25097d2ae808df410c2f35d725a500fb680f38605e62c9e3b619e389ef6733f

File Names

Type	Indicator	Last Submission
File Name	decryptor_399060b2.exe	2024-05-26 21:32:55 UTC
File Name	enc.exe	2024-05-26 12:28:54 UTC
File Name	8e1eb0ad22236e325387fdb45aea63f318a672c5d035a21d7b3a64eeafb4c5a2	2024-05-15 10:47:47 UTC
File Name	555964b2fed3cced4c75a383dd4b3cf02776dae224f4848dcc03510b1de4dbf4.elf	2024-05-15 07:15:47 UTC
File Name	99.dll	2024-05-09 23:37:37 UTC
File Name	update.exe	2024-04-26 06:35:03 UTC
File Name	inter.exe	2024-04-17 23:55:45 UTC
File Name	ceed9fdce420c0558e56bb705664d59f67d62c12d7356ca8643908261638b256	2024-04-14 12:26:28 UTC

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Type	Indicator	Last Submission
File Name	e1d41939dc4cc4116cc3439a01cfb666	2024-04-14 12:11:53 UTC
File Name	BackupsFrst.exe1	2024-04-06 07:27:26 UTC
File Name	2023-12-15_63b89a42c39b2b56aae433712f96f619_revil	2024-03-14 12:45:31 UTC
File Name	update.exe	2024-03-09 17:31:18 UTC
File Name	31edb01d243e8d989eb7e5aeeeef54dc.virus	2024-02-24 22:05:23 UTC
File Name	2023-11-14_d0a711e4a51891ddf00f704d508b1ef2_revil	2024-01-27 11:50:20 UTC
File Name	0629cd5e187174cb69f3489675f8c84cc0236f11f200be384ed6c1a9aa1ce7a1.elf	2024-01-19 02:31:04 UTC
File Name	c26ce932f3609ecd710a3a1ca7f7b96f1b103a11b49a86e9423e03664eaabd40.dll	2023-12-24 08:14:00 UTC
File Name	55ee6bb3deb3385052d7f57e6a48c3c5bba0f558f0d17653908550ffe37e1bea	2023-12-14 12:41:48 UTC
File Name	37546b811e369547c8bd631fa4399730d3bdaff635e744d83632b74f44f56cf6.exe	2023-11-23 09:09:40 UTC
File Name	enc.exe	2022-06-18 17:55:23 UTC

Detection Names

Detection Name	Vendor
Gen:Variant.Ransom.Agenda.1	BitDefender
Gen:Variant.Ransom.Agenda.1 (B)	Emsisoft
W32/QilinCrypt!tr.ransom	Fortinet
HEUR:Trojan-Ransom.Linux.Qilin.a	Kaspersky
Trojan:Win64/AgendaGoLauncher.A!dha	Microsoft
Ransom:Win32/QilinCrypt.PA!MTB	Microsoft
Ransom:Win32/Qilin.MA!MTB	Microsoft
Ransom:Linux/Qilin.A!MTB	Microsoft
Ransom.Qilin	Symantec
Gen:Variant.Ransom.Agenda.1	Trellix (FireEye)
Trojan.Win64.AGENDA.SVT	Trend Micro
Ransom.Win32.AGENDA.SMYXDLM	Trend Micro
Ransom.Win32.AGENDA.YXECJT	Trend Micro
Ransom.Linux.AGENDA.YXDLOT	Trend Micro
Ransom.Win32.AGENDA.THIAIBB	Trend Micro
Ransom.Win32.QILIN.R002C0XK523	Trend Micro
HEUR:Trojan-Ransom.Linux.Qilin.a	ZoneAlarm by Check Point

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MITRE ATT&CK Tactics & Techniques

Tactic	Technique	ID
Initial Access	Valid Accounts	T1078
	Phishing	T1566
	Spearphishing Attachment	T1566.001
	Spearphishing Link	T1566.002
	Exploit Public-Facing Application	T1190
Execution	Scheduled Task/Job	T1053
	Command and Scripting Interpreter	T1059.003
	PowerShell	T1059.001
Persistence	Boot or Logon Initialization Scripts	T1037
Privilege Escalation	Exploitation of Vulnerabilities	T1068
	Abuse Elevation Control Mechanism	T1548
Defense Evasion	Process Injection	T1055
	Rootkit	T1014
	Exploitation for Defense Evasion	T1211
	Execution Guardrails	T1480
	Virtualization/Sandbox Evasion	T1497
	Obfuscated Files or Information	T1027
Credential Access	OS Credential Dumping, LSASS Memory	T1003.001
Discovery	System Information Discovery	T1082
	Application Window Discovery	T1010
	Network Service Scanning	T1046
	Remote System Discovery	T1018
Lateral Movement	Remote Services, Remote Desktop Protocol, SSH	T1021.001
		T1021.004
	Lateral Tool Transfer	T1570
Execution	System Services: Service Execution	T1569.002
Collection	Data from Local System	T1005
Exfiltration	Exfiltration Over Other Network Medium, Exfiltration Over Bluetooth	T1011.001
Command and Control	Data Obfuscation, Junk Data	T1001.001
Impact	Data Encrypted for Impact	T1486
	Data Destruction	T1485
	Inhibit System Recovery	T1490
	Disk Wipe	T1561.001

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Contact Information

If you have any additional questions, we encourage you to contact us at HC3@hhs.gov.

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