

# #StopRansomware: Cuba Ransomware | CISA

Published: 2023-01-05 · Archived: 2026-04-05 20:31:15 UTC

## Summary

### Actions to take today to mitigate cyber threats from ransomware:

- Prioritize remediating [known exploited vulnerabilities](#).
- Train users to recognize and report [phishing attempts](#).
- Enable and enforce phishing-resistant multifactor authentication.

*Note: This joint Cybersecurity Advisory (CSA) is part of an ongoing #StopRansomware effort to publish advisories for network defenders that detail various ransomware variants and ransomware threat actors. These #StopRansomware advisories include recently and historically observed tactics, techniques, and procedures (TTPs) and indicators of compromise (IOCs) to help organizations protect against ransomware. Visit [stopransomware.gov](https://stopransomware.gov) to see all #StopRansomware advisories and to learn more about other ransomware threats and no-cost resources.*

The FBI and the Cybersecurity and Infrastructure Security Agency (CISA) are releasing this joint CSA to disseminate known Cuba ransomware IOCs and TTPs associated with Cuba ransomware actors identified through FBI investigations, third-party reporting, and open-source reporting. This advisory updates the December 2021 FBI Flash: Indicators of Compromise Associated with Cuba Ransomware.

**Note:** While this ransomware is known by industry as “Cuba ransomware,” there is no indication Cuba ransomware actors have any connection or affiliation with the Republic of Cuba.

Since the release of the December 2021 FBI Flash, the number of U.S. entities compromised by Cuba ransomware has doubled, with ransoms demanded and paid on the increase.

This year, Cuba ransomware actors have added to their TTPs, and third-party and open-source reports have identified a possible link between Cuba ransomware actors, RomCom Remote Access Trojan (RAT) actors, and Industrial Spy ransomware actors.

FBI and CISA encourage organizations to implement the recommendations in the Mitigations section of this CSA to reduce the likelihood and impact of Cuba ransomware and other ransomware operations.

Download the PDF version of this report: [pdf, 649 kb](#).

For a downloadable copy of IOCs, see:

- [AA22-335A.stix](#) (STIX 148 kb).
- **(Updated December 12, 2022)** [AA22-335A-2.stix](#) (STIX, 67 kb). **(End of Update.)**

## Technical Details

### Overview

Since the December 2021 release of FBI Flash: Indicators of Compromise Associated with Cuba Ransomware, FBI has observed Cuba ransomware actors continuing to target U.S. entities in the following five [critical infrastructure sectors](#): Financial Services, Government Facilities, Healthcare and Public Health, Critical Manufacturing, and Information Technology. As of August 2022, FBI has identified that Cuba ransomware actors have:

- Compromised 101 entities, 65 in the United States and 36 outside the United States.
- Demanded 145 million U.S. Dollars (USD) and received 60 million USD in ransom payments.

### Cuba Ransomware Actors’ Tactics, Techniques, and Procedures

As previously reported by FBI, Cuba ransomware actors have leveraged the following techniques to gain initial access into dozens of entities in multiple critical infrastructure sectors:

- Known vulnerabilities in commercial software [[T1190](#)]

- Phishing campaigns [T1566]
- Compromised credentials [T1078]
- Legitimate remote desktop protocol (RDP) tools [T1563.002]

After gaining initial access, the actors distributed Cuba ransomware on compromised systems through [Hancitor](#) —a loader known for dropping or executing stealers, such as Remote Access Trojans (RATs) and other types of ransomware, onto victims' networks.

Since spring 2022, Cuba ransomware actors have modified their TTPs and tools to interact with compromised networks and extort payments from victims.[1], [2]

Cuba ransomware actors have exploited known vulnerabilities and weaknesses and have used tools to elevate privileges on compromised systems. According to Palo Alto Networks Unit 42,[2] Cuba ransomware actors have:

- Exploited [CVE-2022-24521](#) in the Windows Common Log File System (CLFS) driver to steal system tokens and elevate privileges.
- Used a PowerShell script to identify and target service accounts for their associated Active Directory Kerberos ticket. The actors then collected and cracked the Kerberos tickets offline via Kerberoasting [T1558.003].
- Used a tool, called KerberCache, to extract cached Kerberos tickets from a host's Local Security Authority Server Service (LSASS) memory [T1003.001].
- Used a tool to exploit [CVE-2020-1472](#) (also known as "ZeroLogon") to gain Domain Administrative privileges [T1068]. This tool and its intrusion attempts have been reportedly related to [Hancitor](#) and Qbot.

According to Palo Alto Networks Unit 42, Cuba ransomware actors use tools to evade detection while moving laterally through compromised environments before executing Cuba ransomware. Specifically, the actors, "leveraged a dropper that writes a kernel driver to the file system called Apchelper.sys. This targets and terminates security products. The dropper was not signed; however, the kernel driver was signed using the certificate found in the LAPSUS NVIDIA leak." [T1562.001]. [2]

In addition to deploying ransomware, the actors have used "double extortion" techniques, in which they exfiltrate victim data, and (1) demand a ransom payment to decrypt it and, (2) threaten to publicly release it if a ransom payment is not made. [2]

### **Cuba Ransomware Link to RomCom and Industrial Spy Marketplace**

Since spring 2022, third-party and open-source reports have identified an apparent link between Cuba ransomware actors, RomCom RAT actors, and Industrial Spy ransomware actors:

- According to Palo Alto Networks Unit 42, Cuba ransomware actors began using RomCom malware, a custom RAT, for command and control (C2).[2]
- Cuba ransomware actors may also be leveraging Industrial Spy ransomware. According to third-party reporting, suspected Cuba ransomware actors compromised a foreign healthcare company. The threat actors deployed Industrial Spy ransomware, which shares distinct similarities in configuration to Cuba ransomware. Before deploying the ransomware, the actors moved laterally using [Impacket](#) and deployed the RomCom RAT and Meterpreter Reverse Shell HTTP/HTTPS proxy via a C2 server [T1090].
- Cuba ransomware actors initially used their leak site to sell stolen data; however, around May 2022, the actors began selling their data on Industrial Spy's online market for selling stolen data.[2]

RomCom actors have targeted foreign military organizations, IT companies, food brokers and manufacturers.[3] [4] The actors copied legitimate HTML code from public-facing webpages, modified the code, and then incorporated it in spoofed domains [T1584.001], which allowed the RomCom actors to:

- Host counterfeit Trojanized applications for
  - SolarWinds Network Performance Monitor (NPM),
  - KeePass password manager,
  - PDF Reader Pro, (by PDF Technologies, Inc., not an Adobe Acrobat or Reader product), and
  - Advanced IP Scanner software;
- Deploy the RomCom RAT as the final stage.

### **INDICATORS OF COMPROMISE**

See tables 1 through 5 for Cuba ransomware IOCs that FBI obtained during threat response investigations as of late August 2022. In addition to these tables, see the publications in the References section below for aid in detecting possible exploitation or compromise.

**Note:** For IOCs as of early November 2021, see FBI Flash: Indicators of Compromise Associated with Cuba Ransomware.

*Table 1: Cuba Ransomware Associated Files and Hashes, as of Late August 2022*

File Name	File Path	File Hash
netping.dll	c:\windows\temp	SHA256: f1103e627311e73d5f29e877243e7ca203292f9419303c661aec57745e
shar.bat		MD5: 4c32ef0836a0af7025e97c6253054bca SHA256: a7c207b9b83648f69d6387780b1168e2f1eabd23ae6e162dd700ae8112
Psexesvc.exe		SHA256: 141b2190f51397dbd0dfde0e3904b264c91b6f81feb823ff0c33da980f
1.bat		
216155s.dll		
23246s.bat		SHA256: 02a733920c7e69469164316e3e96850d55fca9f5f9d19a241fad906466
23246s.dll		SHA256: 0cf6399db55d40bc790a399c6bbded375f5a278dc57a143e4b21ea3f40
23246st.dll		SHA256: f5db51115fa0c910262828d0943171d640b4748e51c9a140d06ea81aef
259238e.exe		
31-100.bat		
3184.bat		
3184.dll		
45.dll		SHA256: 857f28b8fe31cf5db6d45d909547b151a66532951f26cda5f3320d2d4461b583
4ca736d.exe		
62e2e37.exe		
64.235.39.82		
64s.dll		
7z.sfx		
7zCon.sfx		
7-zip.chm		
82.ps1		
9479.bat		SHA256: 08eb4366cf0722696edb03981f00778701266a2e57c40cd2e9d765bf8f
9479p.bat		SHA256: f8144fa96c036a8204c7bc285e295f9cd2d1deb0379e39ee8a84145311
9479p.ps1		SHA256: 88d13669a994d2e04ec0a9940f07ab8aab8563eb845a9c13f2b0fec497
a.exe		MD5: 03c835b684b21ded9a4ab285e4f686a3 SHA1: eaced2fcfdcbf3dca4dd77333aaab055345f3ab4 SHA256: 0f385cc69a93abeaf84994e7887cb173e889d309a515b55b2205805bdl

		SHA256: 0d5e3483299242bf504bd3780487f66f2ec4f48a7b38baa6c6bc8ba16e SHA256: 7e00bfb622072f53733074795ab581cf6d1a8b4fc269a50919dda63502 SHA256: af4523186fe4a5e2833bbbe14939d8c3bd352a47a2f77592d8adcb569f
a220.bat		
a220.dll		SHA256: 8a3d71c668574ad6e7406d3227ba5adc5a230dd3057edddc4d0ec5f81:
a82.exe		SHA256: 4306c5d152cdd86f3506f91633ef3ae7d8cf0dd25f3e37bec43423c474:
a91.exe		SHA256: 3d4502066a338e19df58aa4936c37427feecce9ab8d43abff4a7367643:
a99.exe		SHA256: f538b035c3de87f9f8294bec272c1182f90832a4e86db1e47cbb1ab26c:
aa.exe		
aa2.exe		
aaa.stage.16549040.dns.alleivice.com		
add2.exe		
advapi32.dll		
agent.13.ps1		
agent.bat		SHA256: fd87ca28899823b37b2c239fbbd236c555bcab7768d67203f86d37ede:
agent.dll		
agent13.bat		
agent13.ps1		SHA256: 1817cc163482eb21308adb43fb6be57cb5ff11fd74b344469190bb48
agent64.bin		SHA256: bff4d37febd5465e0091d9ea68006be475c0191bd8c7a79a44fbf4b99:
agsyst121.bat		
agsyst121.dll		
all.bat		SHA256: ecefd9bb8b3783a81ab934b44eb3d84df5e58f0289f089ef6760264352
all.dll		SHA256: db3b1f224aec1a7c58946d819d729d0903751d1867113aae5cca87e38:
anet.exe		SHA1: 241ce8af441db2d61f3eb7852f434642739a6cc3 SHA256: 74fbf3cc44dd070bd5cb87ca2eed03e1bbeec4fec644a25621052f0a73e SHA256: b160bd46b6efc6d79bfb76cf3eeacca2300050248969decba139e9e1cb SHA256: f869e8fbd8aa1f037ad862cf6e8bbbf797ff49556fb100f2197be4ee196e
App.exe		
appnetwork.exe		
AppVClient.man		
aswSP_arPot2		
aus.exe		SHA256: 0c2ffed470e954d2bf22807ba52c1ffd1ecce15779c0afdf15c292e3444c SHA256: 310afba59ab8e1bda3ef750a64bf39133e15c89e8c7cf4ac65ee463b26f

av.bat		SHA256: b5d202456ac2ce7d1285b9c0e2e5b7ddc03da1cbca51b5da98d9ad72e
c2.ps1		
c2.ps1		
cdzehlzcwvzcmcr.aspx		
check.exe		
checkk.exe		
checkk.txt		SHA256: 1f842f84750048bb44843c277edeaa8469697e97c4dbf8dc571ec5522e
client32.exe		
comctl32.dll		
comp2.ps1		
comps2.ps1		
cqyrrxzhumiklndm.aspx		
defendercontrol.exe		
ff.exe		SHA256: 1b943afac4f476d523310b8e3afe7bca761b8cbaa9ea2b9f01237ca4652
File__agsyst121.dll		
File__aswArPot.sys		
File__s9239.dll		
File_agsyst121.dll		
File_aswArPot.sys		
File_s9239.dll		
ga.exe		
gdi32.dll		
geumspbgvvytqrih.aspx		
IObit UNLOCKER.exe		
kavsa32.exe		MD5: 236f5de8620a6255f9003d054f08574b SHA1: 9b546bd99272cf4689194d698c830a2510194722
kavsyst32.exe		
kernel32.dll		
komar.bat		SHA256: B9AFE016DBDBA389000B01CE7645E7EEA1B0A50827CDED1CBAA48FI
komar.dll		
komar121.bat		
komar121.dll		
komar2.ps1		SHA256: 61971d3cbf88d6658e5209de443e212100afc8f033057d9a4e79000f6f
komar64.dll		SHA256: 8E64BACAF40110547B334EADCB0792BDC891D7AE298FBFFF136712575

mfcappk32.exe		
newpass.ps1		SHA256: c646199a9799b6158de419b1b7e36b46c7b7413d6c35bfffafaaa8700b2
npall.exe		SHA256: bd270853db17f94c2b8e4bd9fa089756a147ed45cbc44d6c2b0c78f361
ole32.dll		
oleaut32.dll		
open.bat		SHA256: 2EB3EF8A7A2C498E87F3820510752043B20CBE35B0CBD9AF3F69E8B8F
open.exe		
pass.ps1		SHA256: 0afed8d1b7c36008de188c20d7f0e2283251a174261547aab7fb56e31c
pdfdecrypt.exe		
powerview.ps1		
prt3389.bat		SHA256: e0d89c88378dcb1b6c9ce2d2820f8d773613402998b8dcd02485801c
ra.ps1		SHA256: 571f8db67d463ae80098edc7a1a0cad59153ce6592e42d370a45df46f1
rg1.exe		
Rg2.exe		
rundll32		
s64174.bat		SHA256: 10a5612044599128981cb41d71d7390c15e7a2a0c2848ad751c3da1cb SHA256: 1807549af1c8fdc5b04c564f4026e41790c554f339514d326f8b55cb7b
s64174.dll		
s9239.bat		
s9239.dll		
shell32.dll		
stel.exe		
syskav64.exe		
sysra64.exe		
systav332.bat		SHA256: 01242b35b6def71e42cc985e97d618e2fabd616b16d23f7081d575364
TC-9.22a.2019.3.exe		
TeamViewer.exe		
testDLL.dll		
tug4rigd.dll		SHA256: 952b34f6370294c5a0bb122febfaa80612fef1f32eddd48a3d00556c428f
UpdateNotificationPipeline.002.etl		
user32.dll		
v1.bat		
v2.bat		
v3.bat		

veeamp.exe		SHA256: 9aa1f37517458d635eae4f9b43cb4770880ea0ee171e7e4ad155bbdee0
version.dll		
vlhqbvgvudfnirmzx.aspx		
wininet.dll		
wlog.exe		
wpeqawzp.sys		
y3lcx345.dll		
zero.exe		SHA256: 3a8b7c1fe9bd9451c0a51e4122605efc98e7e4e13ed117139a13e4749e

Table 2: Cuba Ransomware Associated Email Addresses, as of Late August 2022

Email Provider	Email Addresses
Cuba-supp[.]com	admin@cuba-supp[.]com
Encryption-support[.]com	admin@encryption-support[.]com
Mail.supports24[.]net	inbox@mail.supports24[.]net

Table 3: Cuba Ransomware Associated Jabber Address, as of Late August 2022

cuba_support@exploit[.]im
---------------------------

Table 4: IP Addresses Associated with Cuba Ransomware, as of Late August 2022

**Note:** Some of these observed IP addresses are more than a year old. FBI and CISA recommend vetting or investigating these IP addresses prior to taking forward-looking action such as blocking.

193.23.244[.]244	144.172.83[.]13	216.45.55[.]30
94.103.9[.]79	149.255.35[.]131	217.79.43[.]148
192.137.101[.]46	154.35.175[.]225	222.252.53[.]33
92.222.172[.]39	159.203.70[.]39	23.227.198[.]246
92.222.172[.]172	171.25.193[.]9	31.184.192[.]44
10.13.102[.]1	185.153.199[.]169	37.120.247[.]39
10.13.102[.]58	192.137.100[.]96	37.44.253[.]21
10.133.78[.]41	192.137.100[.]98	38.108.119[.]121
10.14.100[.]20	192.137.101[.]205	45.164.21[.]13
103.114.163[.]197	193.34.167[.]17	45.32.229[.]66
103.27.203[.]197	194.109.206[.]212	45.86.162[.]34
104.217.8[.]100	195.54.160[.]149	45.91.83[.]176
107.189.10[.]143	199.58.81[.]140	64.52.169[.]174
108.170.31[.]115	204.13.164[.]118	64.235.39[.]82
128.31.0[.]34	209.76.253[.]84	79.141.169[.]220
128.31.0[.]39	212.192.241[.]230	84.17.52[.]135
131.188.40[.]189	213.32.39[.]43	86.59.21[.]38

141.98.87[.]124	216.45.55[.]3	
-----------------	---------------	--

Table 5: Cuba Bitcoin Wallets Receiving Payments, as of Late August 2022

bc1q4vr25xkth35qslenqwd7aw020w85qrvlrvh7hc
bc1q5uc0fdnz0ve5pg4nl4upa9ly586t6wmnghfe7x
bc1q6rsj3cn37dngypu5kad9gdw5ykhctpwjhvn3z
bc1q6zkemtyrre2mkk23g93zyq98ygrygvx7z2q0t
bc1q9cj0n9k2m282x0nzj6lhqjvhkkd4h95sewek83
bc1qaselp9nhejc3safcq3vn5wautx6w33x0llk7dl
bc1qc48q628t93xwzljtvurpqhcvahvesadpwqtsza
bc1qgsuf5m9tgxuv4ylxcmx8eeqn3wmlmu7f49zkus
bc1qhpepeeh7hlz5jvrp50uhkz59lhakcfvme0w9qh
bc1qjep0vx2lap93455p7h29unruvr05cs242mrcah
bc1qr9l0gcl0nvmngap6ueyy5gqdwvm34kdmtevjyx
bc1qs3lv77udkap2enxv928x59yuact5df4t95rsqr
bc1qyd05q2m5qt3nwpd3gcqkyer0gspqx5p6evcf7h
bc1qzz7xweq8ee2j35tq6r5m687kctq9huskt50edv
bc1qvpk8k8l3my6kjezjss9p28cqj4dmpmmjx5yl3y
bc1qhtwfcysclc7pck2y3vmjtpzkaezhcm6perc99x
bc1qft3s53ur5uq5ru6sl3zyr247dpr55mnggwucd3
bc1qp7h9fszlqxjwyfthv0uppamsgx56x7v7wfx4x7
bc1q4vr25xkth35qslenqwd7aw020w85qrvlrvh7hc
bc1q5uc0fdnz0ve5pg4nl4upa9ly586t6wmnghfe7x
bc1q6rsj3cn37dngypu5kad9gdw5ykhctpwjhvn3z
bc1q6zkemtyrre2mkk23g93zyq98ygrygvx7z2q0t
bc1q9cj0n9k2m282x0nzj6lhqjvhkkd4h95sewek83
bc1qaselp9nhejc3safcq3vn5wautx6w33x0llk7dl
bc1qc48q628t93xwzljtvurpqhcvahvesadpwqtsza
bc1qgsuf5m9tgxuv4ylxcmx8eeqn3wmlmu7f49zkus
bc1qhpepeeh7hlz5jvrp50uhkz59lhakcfvme0w9qh
bc1qjep0vx2lap93455p7h29unruvr05cs242mrcah
bc1qr9l0gcl0nvmngap6ueyy5gqdwvm34kdmtevjyx
bc1qs3lv77udkap2enxv928x59yuact5df4t95rsqr
bc1qyd05q2m5qt3nwpd3gcqkyer0gspqx5p6evcf7h
bc1qzz7xweq8ee2j35tq6r5m687kctq9huskt50edv

See figure 1 for an example of a Cuba ransomware note.

Figure 1: Sample Cuba Ransom Note 2, as of late August 2022

Greetings! Unfortunately we have to report that your company were compromised. All your files were encrypted and you can't restore them without our private key. Trying to restore it without our help may cause complete loss of your data. Also we researched whole your corporate network and downloaded all your sensitive data to our servers. If we will not get any contact from you in the next 3 days we will public it in our news site.

You can find it there ( <https://cuba4ikm4jakjgmkeztawtdgr2xymvy6nvgw5cglswg3si76icnqd.onion/> )

Tor Browser is needed ( <https://www.torproject.org/download/> )

Also we respect your work and time and we are open for communication.

In that case we are ready to discuss recovering your files and work. We can grant absolute privacy and compliance with agreements by our side.

Also we can provide all necessary evidence to confirm performance of our products and statements.

Feel free to contact us with quTox ( <https://tox.chat/download.html> )

Our ToxID: 37790E2D198DFD20C9D2887D4EF7C3E295188842480192689864DCCA3C8BD808A18956768271

Alternative method is email: [inbox@mail.supports24\[.\]net](mailto:inbox@mail.supports24[.]net)

Mark your messages with your personal ID:

Additional resources to detect possible exploitation or compromise:

- Palo Alto Networks [Novel News on Cuba Ransomware: Greetings From Tropical Scorpius](#)
- BlackBerry blog [RomCom Threat Actor Abuses KeePass and SolarWinds to Target Ukraine and Potentially the United Kingdom](#)
- BlackBerry blog [Unattributed RomCom Threat Actor Spoofing Popular Apps Now Hits Ukrainian Militaries](#)

### MITRE ATT&CK TECHNIQUES

Cuba ransomware actors use the ATT&CK techniques listed in Table 6. **Note:** For details on TTPs listed in the table, see FBI Flash Indicators of Compromise Associated with Cuba Ransomware.

Resource Development		
Technique Title	ID	Use
Compromise Infrastructure: Domains	<a href="#">T1584.001</a> ☞	Cuba ransomware actors use compromised networks to conduct their operations.
Initial Access		

Technique Title	ID	Use
Valid Accounts	<a href="#">T1078</a>	Cuba ransomware actors have been known to use compromised credentials to get into a victim’s network.
External Remote Services	<a href="#">T1133</a>	Cuba ransomware actors may leverage external-facing remote services to gain initial access to a victim’s network.
Exploit Public-Facing Application	<a href="#">T1190</a>	Cuba ransomware actors are known to exploit vulnerabilities in public-facing systems.
Phishing	<a href="#">T1566</a>	Cuba ransomware actors have sent phishing emails to obtain initial access to systems.
<b>Execution</b>		
Technique Title	ID	Use
Command and Scripting Interpreter: PowerShell	<a href="#">T1059.001</a>	Cuba ransomware actors have used PowerShell to escalate privileges.
Software Deployment Tools	<a href="#">T1072</a>	Cuba ransomware actors use Hancitor as a tool to spread malicious files throughout a victim’s network.
<b>Privilege Escalation</b>		
Technique Title	ID	Use
Exploitation for Privilege Escalation	<a href="#">T1068</a>	Cuba ransomware actors have exploited ZeroLogon to gain administrator privileges. <a href="#">[2]</a>
<b>Defense Evasion</b>		
Technique Title	ID	Use
Impair Defenses: Disable or Modify Tools	<a href="#">T1562.001</a>	Cuba ransomware actors leveraged a loader that disables security tools within the victim network.
<b>Lateral Movement</b>		
Technique Title	ID	Use
Remote Services Session: RDP Hijacking	<a href="#">T1563.002</a>	Cuba ransomware actors used RDP sessions to move laterally.
<b>Credential Access</b>		
Technique Title	ID	Use
Credential Dumping: LSASS Memory	<a href="#">T1003.001</a>	Cuba ransomware actors use LSASS memory to retrieve stored compromised credentials.
Steal or Forge Kerberos Tickets: Kerberoasting	<a href="#">T1558.003</a>	Cuba ransomware actors used the Kerberoasting technique to identify service accounts linked to active directory. <a href="#">[2]</a>
<b>Command and Control</b>		
Technique Title	ID	Use
Proxy: Manipulate Command and Control Communications	<a href="#">T1090</a>	Industrial Spy ransomware actors use HTTP/HTTPS proxy via a C2 server to direct traffic to avoid direct connection. <a href="#">[2]</a>

**Mitigations**

FBI and CISA recommend network defenders apply the following mitigations to limit potential adversarial use of common system and network discovery techniques and to reduce the risk of compromise by Cuba ransomware:

- **Implement a recovery plan** to maintain and retain multiple copies of sensitive or proprietary data and servers in a physically separate, segmented, and secure location (i.e., hard drive, storage device, the cloud).
- **Require all accounts** with password logins (e.g., service account, admin accounts, and domain admin accounts) **to comply** with [National Institute for Standards and Technology \(NIST\) standards](#) for developing and managing password policies.
  - Use longer passwords consisting of at least 8 characters and no more than 64 characters in length.
  - Store passwords in hashed format using industry-recognized password managers.
  - Add password user “salts” to shared login credentials.
  - Avoid reusing passwords.
  - Implement multiple failed login attempt account lockouts.
  - Disable password “hints.”
  - Refrain from requiring password changes more frequently than once per year.
  - **Note:** NIST guidance suggests favoring longer passwords instead of requiring regular and frequent password resets. Frequent password resets are more likely to result in users developing password “patterns” cyber criminals can easily decipher.
  - Require administrator credentials to install software.
- **Require [multifactor authentication](#)** for all services to the extent possible, particularly for webmail, virtual private networks, and accounts that access critical systems.
- **Keep all operating systems, software, and firmware up to date.** Timely patching is one of the most efficient and cost-effective steps an organization can take to minimize its exposure to cybersecurity threats. Prioritize patching SonicWall firewall vulnerabilities and [known exploited vulnerabilities](#) in internet-facing systems. **Note:** SonicWall maintains a vulnerability list that includes Advisory ID, CVE, and mitigation. Their list can be found at [psirt.global.sonicwall.com/vuln-list](https://psirt.global.sonicwall.com/vuln-list) .
- **Segment networks** to prevent the spread of ransomware. Network segmentation can help prevent the spread of ransomware by controlling traffic flows between—and access to—various subnetworks and by restricting adversary lateral movement.
- **Identify, detect, and investigate abnormal activity and potential traversal of the indicated ransomware with a networking monitoring tool.** To aid in detecting the ransomware, implement a tool that logs and reports all network traffic, including lateral movement activity on a network. Endpoint detection and response (EDR) tools are particularly useful for detecting lateral connections as they have insight into common and uncommon network connections for each host.
- **Install, regularly update, and enable real time detection for antivirus software** on all hosts.
- **Review domain controllers, servers, workstations, and active directories** for new and/or unrecognized accounts.
- **Audit user accounts** with administrative privileges and configure access controls according to the principle of least privilege.
- **Disable unused ports.**
- **Consider adding an email banner to emails** received from outside your organization.
- **Disable hyperlinks** in received emails.
- **Implement time-based access for accounts set at the admin level and higher.** For example, the Just-in-Time (JIT) access method provisions privileged access when needed and can support enforcement of the principle of least privilege (as well as the Zero Trust model). JIT sets a network-wide policy in place to automatically disable admin accounts at the Active Directory level when the account is not in direct need. Individual users may submit their requests through an automated process that grants them access to a specified system for a set timeframe when they need to support the completion of a certain task.
- **Disable command-line and scripting activities and permissions.** Privilege escalation and lateral movement often depend on software utilities running from the command line. If threat actors are not able to run these tools, they will have difficulty escalating privileges and/or moving laterally.
- **Maintain offline backups of data,** and regularly maintain backup and restoration. By instituting this practice, the organization ensures they will not be severely interrupted, and/or only have irretrievable data.
- **Ensure all backup data is encrypted, immutable** (i.e., cannot be altered or deleted), and covers the entire organization’s data infrastructure.

## RESOURCES

- [Stopransomware.gov](#) is a whole-of-government approach that gives one central location for ransomware resources and alerts.

- Resource to mitigate a ransomware attack: [CISA-Multi-State Information Sharing and Analysis Center \(MS-ISAC\) Joint Ransomware Guide](#).
- No-cost cyber hygiene services: [Cyber Hygiene Services](#) and [Ransomware Readiness Assessment](#) <sup>↗</sup>.

## REPORTING

FBI is seeking any information that can be shared, to include boundary logs showing communication to and from foreign IP addresses, a sample ransom note, communications with ransomware actors, Bitcoin wallet information, decryptor files, and/or a benign sample of an encrypted file.

FBI and CISA do not encourage paying ransom as payment does not guarantee victim files will be recovered. Furthermore, payment may also embolden adversaries to target additional organizations, encourage other criminal actors to engage in the distribution of ransomware, and/or fund illicit activities. Regardless of whether you or your organization have decided to pay the ransom, FBI and CISA urge you to promptly report ransomware incidents immediately. Report to a [local FBI Field Office](#), or CISA at [us-cert.cisa.gov/report](https://us-cert.cisa.gov/report).

## DISCLAIMER

The information in this report is being provided “as is” for informational purposes only. FBI and CISA do not endorse any commercial product or service, including any subjects of analysis. Any reference to specific commercial products, processes, or services by service mark, trademark, manufacturer, or otherwise, does not constitute or imply endorsement, recommendation, or favoring by FBI or CISA.

## ACKNOWLEDGEMENTS

FBI and CISA would like to thank BlackBerry, ESET, The National Cyber-Forensics and Training Alliance (NCFTA), Palo Alto Networks, and PRODAFT for their contributions to this CSA.

## References

[1] [Palo Alto Networks: Tropical Scorpius](#) <sup>↗</sup>

[2] [Palo Alto Networks: Novel News on Cuba Ransomware - Greetings From Tropical Scorpius](#) <sup>↗</sup>

[3] [BlackBerry: Unattributed RomCom Threat Actor Spoofing Popular Apps Now Hits Ukrainian Militaries](#) <sup>↗</sup>

[4] [BlackBerry: RomCom Threat Actor Abuses KeePass and SolarWinds to Target Ukraine and Potentially the United Kingdom](#) <sup>↗</sup>

## Revisions

December 1, 2022: Initial Version|December 12, 2022: Added new IP addresses and IOCs

---

Source: <https://www.cisa.gov/news-events/cybersecurity-advisories/aa22-335a>