New DeadBolt ransomware targets QNAP devices, asks 50 BTC for master key

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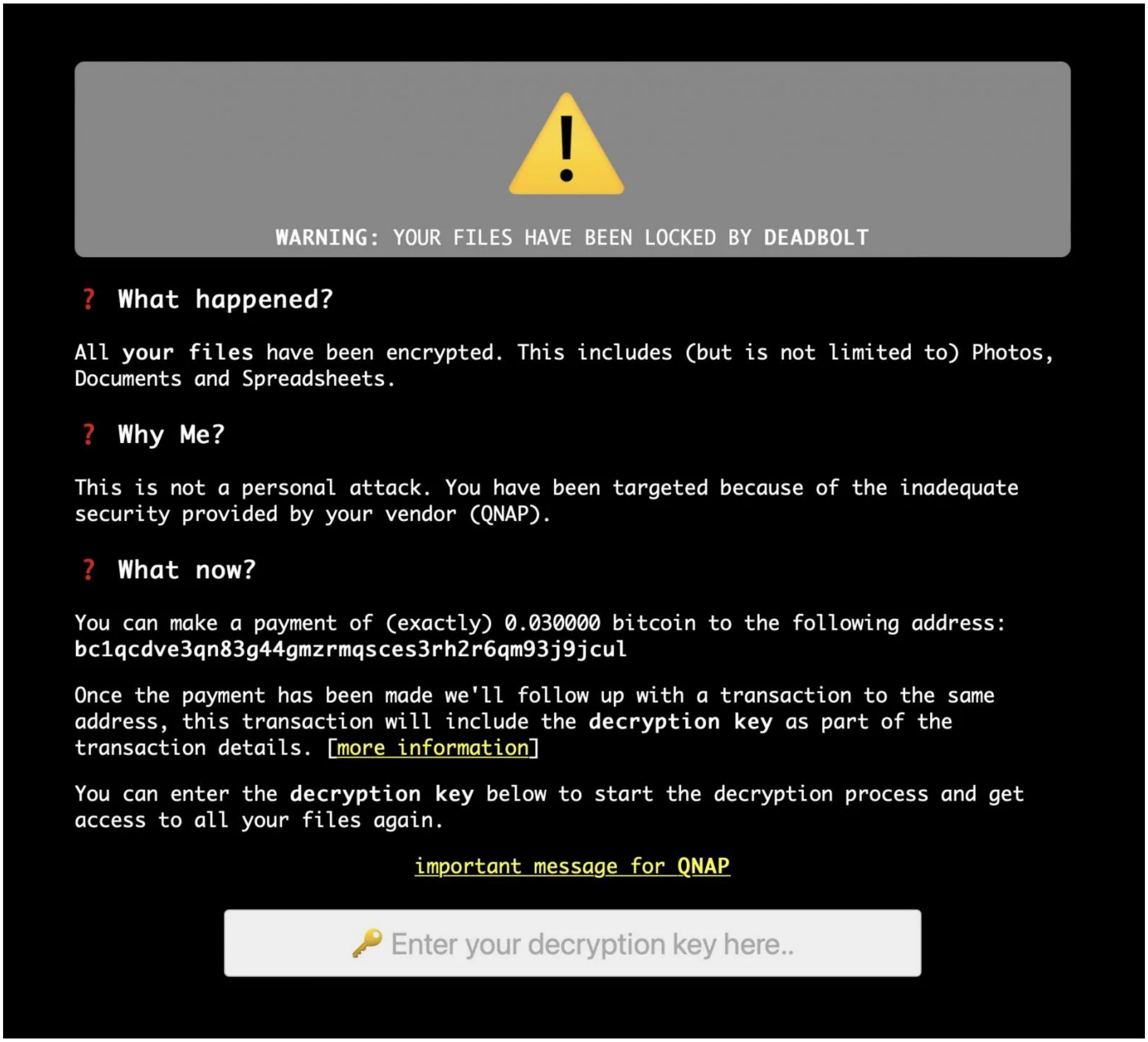
A new DeadBolt ransomware group is encrypting QNAP NAS devices worldwide using what they claim is a zero-day vulnerability in the device's software.

The attacks started today, January 25th, with QNAP devices suddenly finding their files encrypted and file names appended with a **.deadbolt** file extension.

Instead of creating ransom notes in each folder on the device, the QNAP device's login page is hijacked to display a screen stating, "WARNING: Your files have been locked by DeadBolt," as shown in the image below.



WARNING: YOUR FILES HAVE BEEN LOCKED BY **DEADBOLT**

? What happened?

All **your files** have been encrypted. This includes (but is not limited to) Photos, Documents and Spreadsheets.

? Why Me?

This is not a personal attack. You have been targeted because of the inadequate security provided by your vendor (QNAP).

? What now?

You can make a payment of (exactly) 0.030000 bitcoin to the following address:
bc1qcdve3qn83g44gmzrmqsces3rh2r6qm93j9jcul

Once the payment has been made we'll follow up with a transaction to the same address, this transaction will include the **decryption key** as part of the transaction details. [more information]

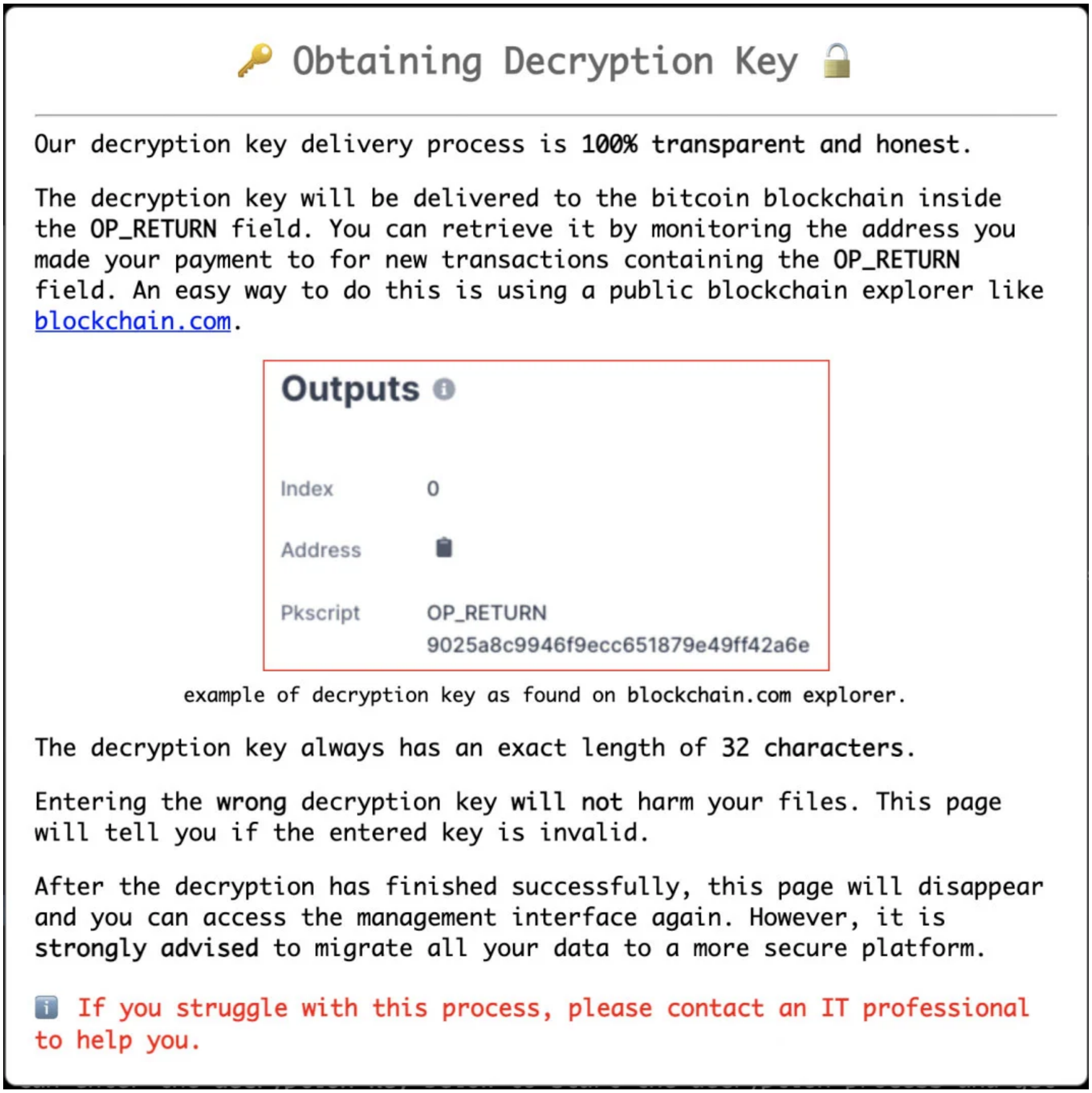
You can enter the **decryption key** below to start the decryption process and get access to all your files again.

important message for QNAP
🔑 Enter your decryption key here..

Ransom note on the hijacked QNAP login page
Source: Twitter

This screen informs the victim that they should pay 0.03 bitcoins (approximately $1,100) to an enclosed Bitcoin address unique to each victim.

After payment is made, the threat actors claim they will make a follow-up transaction to the same address that includes the decryption key, which can be retrieved using the following instructions.



🔑 Obtaining Decryption Key 🔒

Our decryption key delivery process is **100% transparent and honest.**

The decryption key will be delivered to the bitcoin blockchain inside the **OP_RETURN** field. You can retrieve it by monitoring the address you made your payment to for new transactions containing the **OP_RETURN** field. An easy way to do this is using a public blockchain explorer like blockchain.com.

Outputs ℹ

Index	0
Address	📋
Pkscript	OP_RETURN 9025a8c9946f9ecc651879e49ff42a6e

example of decryption key as found on blockchain.com explorer.

The decryption key always has an exact length of **32 characters.**

Entering the **wrong decryption key will not** harm your files. This page will tell you if the entered key is invalid.

After the decryption has finished successfully, this page will disappear and you can access the management interface again. However, it is **strongly advised** to migrate all your data to a more secure platform.

ℹ If you struggle with this process, please contact an IT professional to help you.

Decryption key instructions

Source: landski at BleepingComputer

This decryption key can then be entered into the screen to decrypt the device's files.

QNAP has told BleepingComputer that users can bypass the ransom screen and access their admin page by using the **http://nas_ip:8080/cgi-bin/index.cgi** or **https://nas_ip/cgi-bin/index.cgi** URLs.

BleepingComputer is aware of at least fifteen victims of the new DeadBolt ransomware attack, with no specific region being targeted.

As with all ransomware attacks against QNAP devices, the DeadBolt attacks only affect devices accessible to the Internet.

As the threat actors claim the attack is conducted through a zero-day vulnerability, it is strongly advised that all QNAP users disconnect their devices from the Internet and place them behind a firewall.

QNAP further told us that their Product Security Incident Response Team (PSIRT) is investigating the attack vectors now and that owners should follow these steps to protect their data and NAS.

With QNAP owners being targeted by ongoing attacks from two other ransomware families known as Qlocker and eCh0raix, all owners should follow these steps to prevent future attacks.

BleepingComputer has created a DeadBolt ransomware support topic that can be used to discuss the attacks and potentially receive help from other QNAP owners.

Attackers demand 50 bitcoin for master key

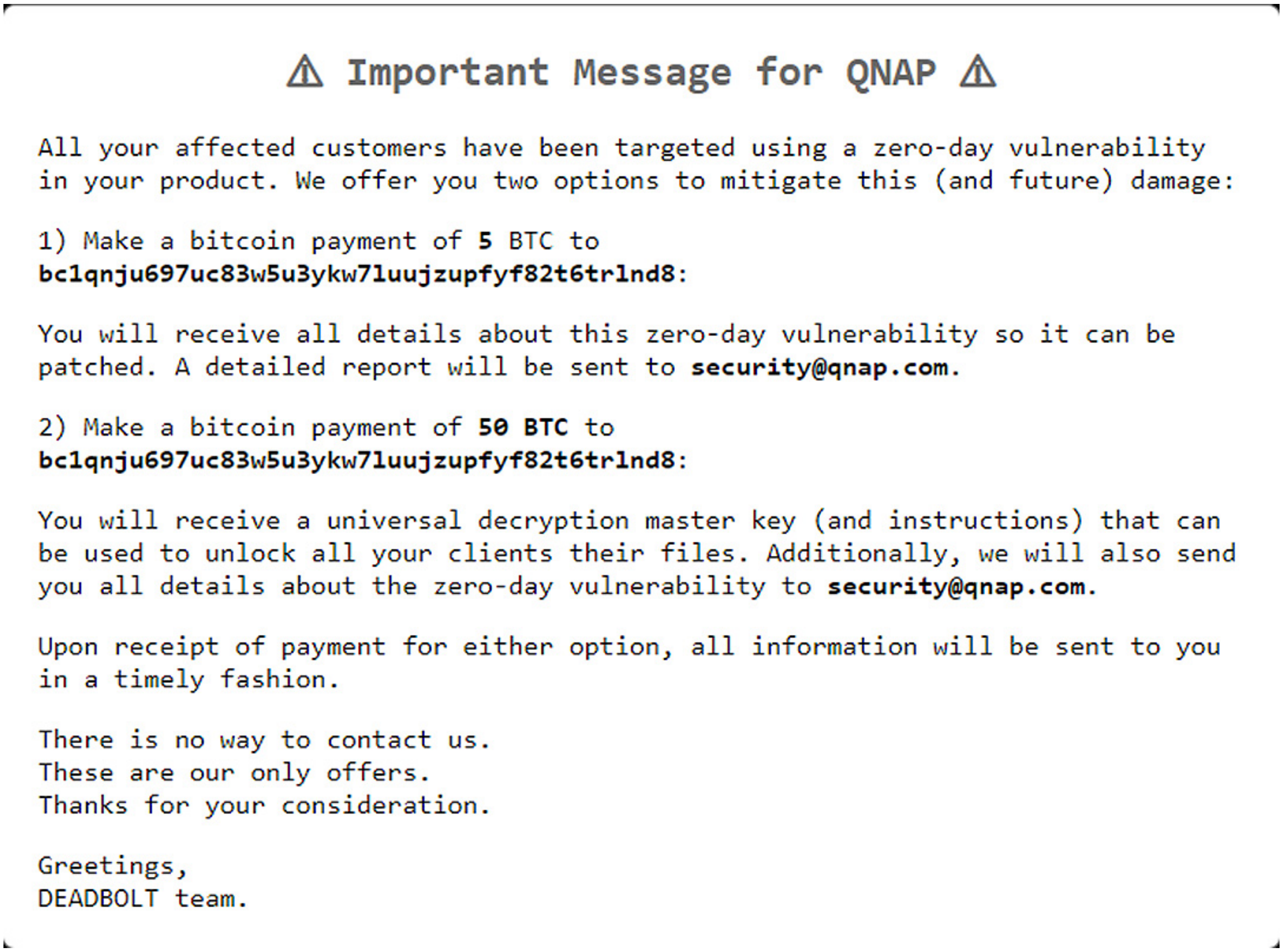
On the main ransom note screen, there is a link titled "important message for QNAP," that when clicked, will display a message from the DeadBolt gang specifically for QNAP.

On this screen, the DeadBolt ransomware gang is offering the full details of the alleged zero-day vulnerability if QNAP pays them 5 Bitcoins worth $184,000.

They are also willing to sell QNAP the master decryption key that can decrypt the files for all affected victims and the zero-day info for 50 bitcoins, or approximately $1.85 million.

"Make a bitcoin payment of 50 BTC to bc1qnju697uc83w5u3ykw7luujzupfyf82t6trlnd8," the threat actors wrote in a message to QNAP.

"You will receive a universal decryption master key (and instructions) that can be used to unlock all your clients their files. Additionally, we will also send you all details about the zero-day vulnerability to security@qnap.com."



⚠ Important Message for QNAP ⚠

All your affected customers have been targeted using a zero-day vulnerability
in your product. We offer you two options to mitigate this (and future) damage:

1) Make a bitcoin payment of **5** BTC to
bc1qnju697uc83w5u3ykw7luujzupfyf82t6trlnd8:

You will receive all details about this zero-day vulnerability so it can be
patched. A detailed report will be sent to **security@qnap.com**.

2) Make a bitcoin payment of **50 BTC** to
bc1qnju697uc83w5u3ykw7luujzupfyf82t6trlnd8:

You will receive a universal decryption master key (and instructions) that can
be used to unlock all your clients their files. Additionally, we will also send
you all details about the zero-day vulnerability to **security@qnap.com**.

Upon receipt of payment for either option, all information will be sent to you
in a timely fashion.

There is no way to contact us.
These are our only offers.
Thanks for your consideration.

Greetings,
DEADBOLT team.

Message from threat actors for QNAP
Source: Twitter
The ransomware gang further states that there is no way to contact them other than through Bitcoin payments.

This method of communication is a very different approach than other ransomware attacks that usually provide some form of communication, whether through a dedicated Tor website, email, or messaging platforms.

QNAP force updates to

On January 26th, QNAP began force-updating customers' NAS devices to firmware version 5.0.0.1891, which is the latest universal firmware released on December 23rd, 2021.

QNAP told BleepingComputer that they forced-installed this update as they believe the threat actors are using a remote code execution vulnerability fixed in the 5.0.0.1891 firmware version.

However, a customer posted to the QNAP forum stating that they were encrypted even when they had this firmware version installed, indicating that the threat actors are likely exploiting a different vulnerability.

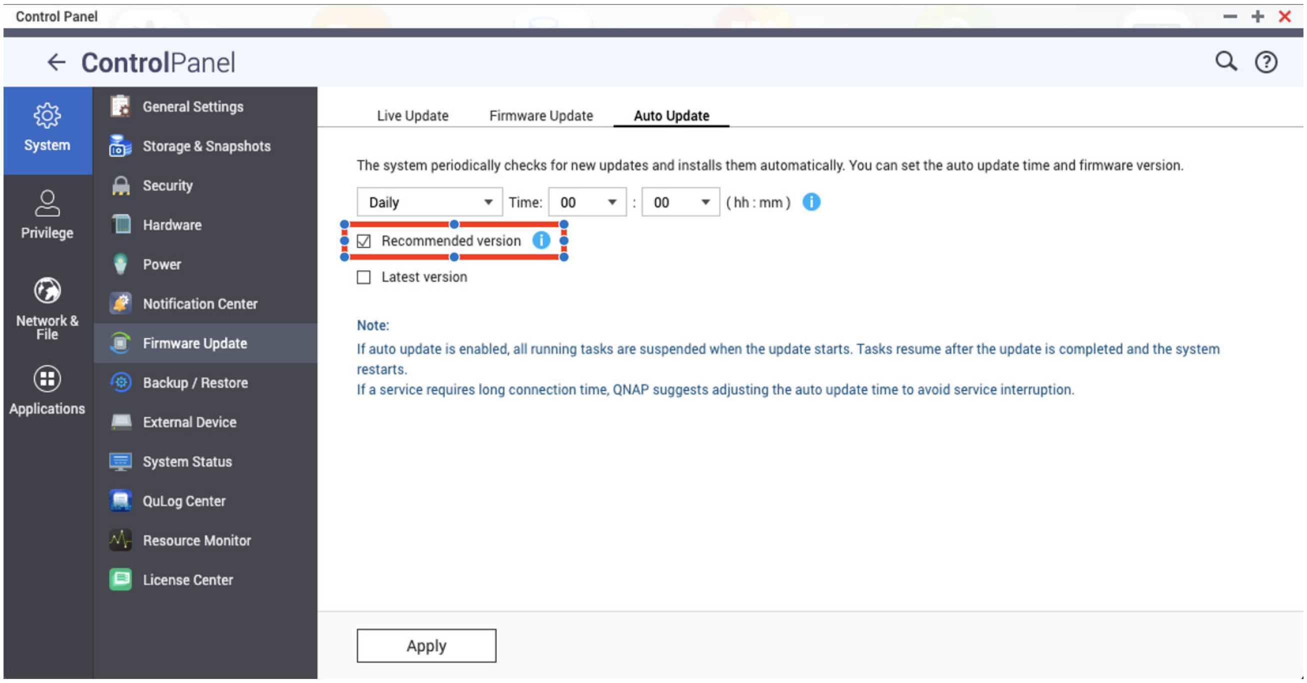
"Confirmed getting hit with deadbolt while using 5.0.0.1891 build 20211221 on a tvs-1282t3," the NAS owner posted to the QNAP forums.

After asking for a comment on this, QNAP conceded that it could be another vulnerability exploited by the threat actors.

"All the information we have shows DEADBOLT could be prevented with the build. Theoretically, we cannot exclude the possibility that there is the other vulnerability exploited. We are also interested in the user's observation," QNAP told BleepingComputer.

"If possible, we would suggest users with similar situation could submit a ticket to Technical Support."

QNAP also told BleepingComputer that the update should only have been installed by those with the 'Recommended version' setting enabled in the Auto Updates settings, as shown below.



The system periodically checks for new updates and installs them automatically. You can set the auto update time and firmware version.

Daily Time: 00 : 00 (hh : mm)

☑ Recommended version

☐ Latest version

Note:
If auto update is enabled, all running tasks are suspended when the update starts. Tasks resume after the update is completed and the system restarts.
If a service requires long connection time, QNAP suggests adjusting the auto update time to avoid service interruption.

QNAP auto update settings

QNAP asks customers to contact technical support if they are still receiving updates with that setting unchecked.

DeadBolt technical details

When a QNAP NAS device is compromised, the threat actors will install the DeadBolt malware executable as a randomly named file in the **/mnt/HDA_ROOT/** folder. For example, the DeadBolt ransomware executable could be located at /mnt/HDA_ROOT/27855.

Ransomware expert Michael Gillespie told BleepingComputer that ransomware is initially launched with a config file, which likely contains various data, including an encryption key used to encrypt files.

The initial command to encrypt files is:

```
[random_file_name] -e [config] /share
```

The **/share** folder is where QNAP NAS devices store user folders and files.

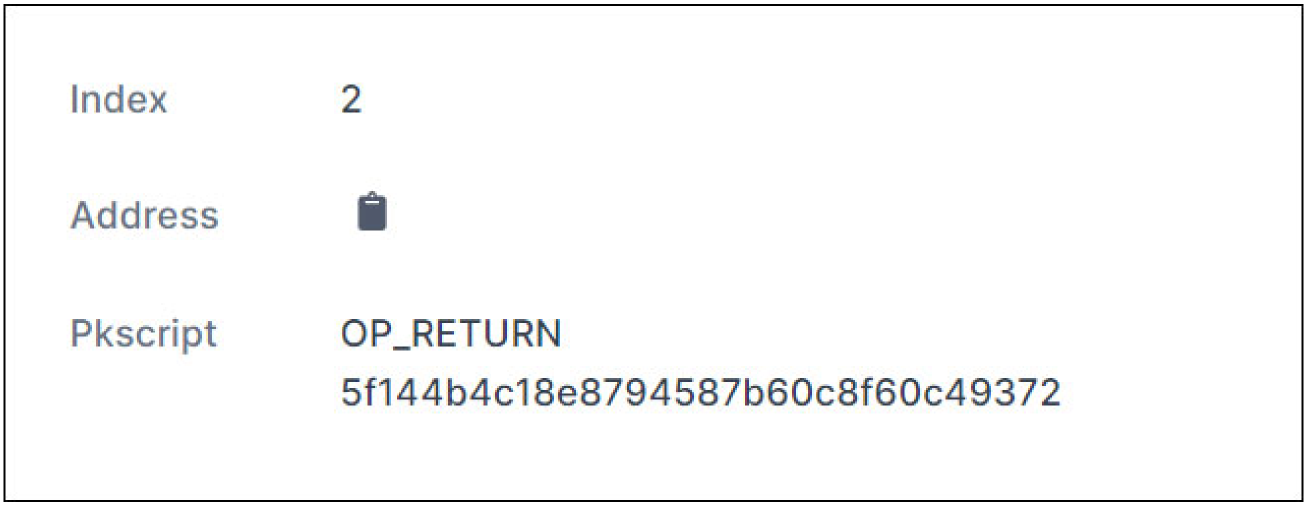
When encrypting files, the ransomware will only target files with the following file extensions:

```
.3dm, .3ds, .3fr, .3g2, .3gp, .3pr, .ab4, .accdb, .accdc, .accde, .accdr, .accdt,
.ach, .acr, .act, .adb, .ads, .agdl, .ait, .apj, .arw, .asf, .asm, .asp, .aspx,
.asx, .avhd, .avi, .awg, .back, .backup, .backupdb, .bak, .bank, .bay, .bdb, .bgt,
.bik, .bin, .bkf, .bkp, .blend, .bpw, .cdf, .cdr, .cdr3, .cdr4, .cdr5, .cdr6, .cdrw,
.cdx, .ce1, .ce2, .cer, .cfg, .cfp, .cgm, .cib, .class, .cls, .cmt, .conf, .cpi,
.cpp, .cr2, .craw, .crl, .crt, .crw, .csh, .csl, .csr, .csv, .dac, .dat, .db3, .db4,
.db_journal, .dbc, .dbf, .dbx, .dc2, .dcr, .dcs, .ddd, .ddoc, .ddrw, .dds, .der,
.des, .design, .dev, .dgc, .disk, .djvu, .dng, .doc, .docm, .docx, .dot, .dotx,
.drf, .drw, .dtd, .dwg, .dxb, .dxf, .dxg, .edb, .eml, .eps, .erbsql, .erf, .exf,
.fdb, .ffd, .fff, .fhd, .fla, .flac, .flv, .fpx, .fxg, .gdb, .git, .gray, .grey,
.gry, .hbk, .hdd, .hpp, .ibank, .ibd, .ibz, .idx, .iif, .iiq, .incpas, .indd, .iso,
.jar, .java, .jpe, .jpeg, .jpg, .jrs, .kc2, .kdbx, .kdc, .key, .kpdx, .lua, .m4v,
.mail, .max, .mdb, .mdbx, .mdc, .mdf, .mef, .mfw, .mkv, .mmw, .moneywell, .mos,
.mov, .mp3, .mp4, .mpg, .mrw, .msi, .myd, .ndd, .nef, .nk2, .nop, .nrg, .nrw, .ns2,
.ns3, .ns4, .nsd, .nsf, .nsg, .nsh, .nsn, .nwb, .nx2, .nxl, .nyf, .obj, .oda, .odb,
.odc, .odf, .odg, .odm, .odp, .ods, .odt, .oil, .orf, .ost, .otg, .oth, .otp, .ots,
.ott, .ova, .ovf, .p12, .p7b, .p7c, .p7r, .pages, .pas, .pat, .pcd, .pct, .pdb,
.pdd, .pdf, .pef, .pem, .pfx, .php, .pio, .piz, .plc, .pmf, .png, .pot, .potm,
.potx, .ppam, .pps, .ppsm, .ppsx, .ppt, .pptm, .pptx, .prf, .ps1, .psafe3, .psd,
.pspimage, .pst, .ptx, .pvi, .pvk, .pyc, .qba, .qbb, .qbm, .qbr, .qbw, .qbx, .qby,
.r3d, .raf, .rar, .rat, .raw, .rdb, .rtf, .rw2, .rwl, .rwz, .s3db, .sas7bdat, .say,
.sd0, .sda, .sdb, .sdf, .sl3, .sldm, .sldx, .spc, .sql, .sqlite, .sqlite3,
.sqlitedb, .sr2, .srf, .srt, .srw, .st4, .st5, .st6, .st7, .st8, .stc, .std, .sti,
.stw, .stx, .svg, .swf, .sxc, .sxd, .sxg, .sxi, .sxm, .sxw, .tar, .tex, .tga, .thm,
.tiff, .tlg, .txt, .vbk, .vbm, .vbox, .vcb, .vdi, .vfd, .vhd, .vhdx, .vmc, .vmdk,
.vmem, .vmfx, .vmsd, .vmx, .vmxf, .vob, .vsd, .vsdx, .vsv, .wallet, .wav, .wb2,
.wdb, .wmv, .wpd, .wps, .x11, .x3f, .xis, .xla, .xlam, .xlk, .xlm, .xlr, .xls,
.xlsb, .xlsm, .xlsx, .xlt, .xltm, .xltx, .xlw, .xvd, .ycbcra, .yuv, .zip
```

Gillespie says the files are encrypted with AES128 encryption and will have the **.deadbolt** extension appended to file names. For example, test.jpg will be encrypted and renamed to **test.jpg.deadbolt**.

DeadBolt will also replace the **/home/httpd/index.html** file so that when victims access the device, they will see the ransom screen demanding a ransom of 0.03 bitcoins to a specified bitcoin address.

If a ransom is paid, the threat actors will create a bitcoin transaction to the same bitcoin ransom address that contains the decryption key for the victim. The decryption key is located under the OP_RETURN output, as shown below.



Index	2
Address	
Pkscript	OP_RETURN 5f144b4c18e8794587b60c8f60c49372

Bitcoin transaction's OP_RETURN output containing decryption key
Source: BleepingComputer
When you enter this key into the ransom note screen, the web page will convert it into a SHA256 hash and compare it to the SHA256 hash of the victim's decryption key and the SHA256 hash of the master decryption key.

The SHA256 hash for the master decryption key is **93f21756aeeb5a9547cc62dea8d58581b0da4f23286f14d10559e6f89b078052**.

If the decryption key matches either SHA256 hash, it will decrypt the files using the following command:

```
/mnt/HDA_ROOT/[encryptor_name] -d "[decryption_key]" /share
```

Multiple victims have reported paying the ransom and receiving a decryption key that has successfully decrypted their files.

However, QNAP's forced firmware updates are causing the executable and index.html ransom screen to be deleted from the device, which prevents the decryption of files.

Gillespie has created a free Windows decryptor that can be downloaded from Emsisoft and decrypt files without needing the ransomware executable. However, users will still need a valid decryption key, which QNAP owners can only obtain at this time by paying a ransom.

Update: Added further information on how the decryption key will be retrieved.
Update 1/26/22: Added further information from QNAP
Update 1/28/22: Added technical details, information on exploited vulnerabilities, and number of victims.

Related Articles:

QNAP alerts NAS customers of new DeadBolt ransomware attacks

QNAP warns of ransomware targeting Internet-exposed NAS devices

QNAP urges customers to disable UPnP port forwarding on routers

QNAP warns severe OpenSSL bug affects most of its NAS devices

Windows 11 KB5014019 breaks Trend Micro ransomware protection

- DeadBolt
- NAS
- QNAP
- Ransomware

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Lawrence Abrams is the owner and Editor in Chief of BleepingComputer.com. Lawrence's area of expertise includes Windows, malware removal, and computer forensics. Lawrence Abrams is a co-author of the Winternals Defragmentation, Recovery, and Administration Field Guide and the technical editor for Rootkits for Dummies.

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  I don't even expose any containers to the internet let alone the NAS.

-

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  -
  -

  yep it was stupid to think I could secure the nas and expose to the web depending on qnap to lock down their vulnerabilities. last time I buy from qnap. it will remain local and will never purchase from them again. fortunately Im a backup freak and was able to get 90% of my data back. what I lost was not important and they only locked about 10% of the 1 share I had. the others were untouched.

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