



◆ Research ◆ Threat Intelligence ◆ Digital Forensics and Incident Response (DFIR)

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Summary

tl;dr

This blog post documents some of the TTPs employed by a threat actor group who were observed deploying Black Basta ransomware during a recent incident response engagement, as well as a breakdown of the executable file which performs the encryption.

A summary of the findings can be found below:

- Lateral movement through use of Qakbot.
- Gathering internal IP addresses of all hosts on the network.
- Disabling Windows Defender.
- Deleting Veeam backups from Hyper-V servers.
- Use of WMI to push out the ransomware.
- Technical analysis of the ransomware executable.

Black Basta



Black Basta are a ransomware group who have recently emerged, with the first public reports of attacks occurring in April this year. As is popular with other ransomware groups, Black Basta uses double-extortion attacks where data is first exfiltrated from the network before the ransomware is deployed. The threat actor then threatens to leak the data on the “Black Basta Blog” or “Basta News” Tor site. There are two Tor sites used by Black Basta, one which leaks stolen data and one which the victims can use to contact the ransomware operators. The latter site is provided in the ransom note which is dropped by the ransomware executable.

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The first used the batch script d.bat which was deployed locally on compromised hosts and executed the following PowerShell commands:

- powershell -ExecutionPolicy Bypass -command "New-ItemProperty -Path 'HKLM:SOFTWARE\Policies\Microsoft\Windows Defender' -Name DisableAntiSpyware -Value 1 -PropertyType DWORD -Force"

- powershell -ExecutionPolicy Bypass -command "Set-MpPreference -DisableRealtimeMonitoring 1"
- powershell -ExecutionPolicy Bypass Uninstall-WindowsFeature -Name Windows-Defender

The second technique involved creating a GPO (Group Policy Object) on a compromised Domain Controller which would push out the below changes to the Windows Registry of domain-joined hosts:

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Qakbot was the primary method utilised by the threat actor to maintain their presence on the network. The threat actor was also observed using Cobalt Strike beacons during the compromise.

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920fe42b1bd69804080f904f0426ed784a8ebbc2	SHA1	Batch script to disable Windows Defender (d.bat)
C:WindowsPsExec.exe	Filename	PsExec
C:WindowsSYSVOLsysvol.dll	Filename	Qakbot payload
C:Windows C:Windows		Output

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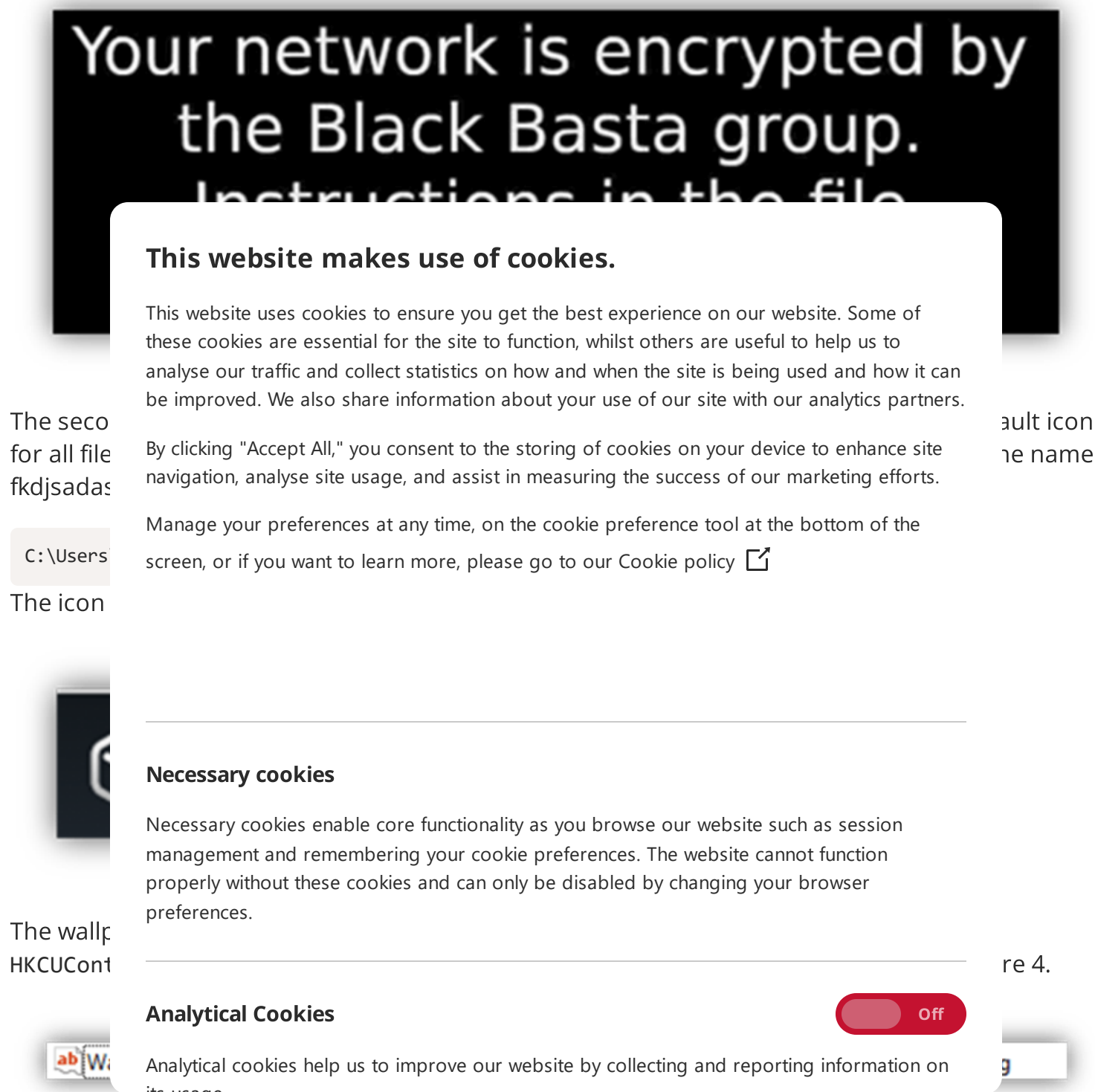


Figure 4 String de-obfuscation example

The next operation creates a new registry key with the name .basta under HKEY_CLASSES_ROOT and sets the DefaultIcon subkey to display the dropped .ico file. This results in files given a .basta file extension inheriting the Black Basta logo. The registry key can be seen below in Figure 5.

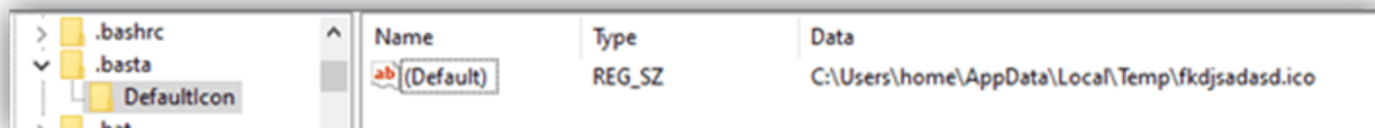


Figure 5 Desktop wallpaper image

Ransom Note

The ransom note shown in the standard operator

A computer

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Exclusions

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Extension exclusions:

- .exe
- .cmd
- .bat
- .com

- \$Recycle.Bin
- Windows
- Documents and Settings
- Local Settings

- Application
- OUT.txt

- Boot
- Readme:
- Dlaksjdoi
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Address	Hex	ASCII
01107C70	69 66 D0 9B 92 BC 68 C5 81 72 B8 5E 8A ED CA E0	i f Ð . . x h A . r ^ . i Ê a
01107C80	E5 94 F8 C4 50 B7 23 F6 83 BD D1 00 4C 50 B7 BE	ä . ø Å P . # ö . % N . L P . %
01107C90	AB AB AB AB AB AB AB AB 00 00 00 00 00 00 00 00	<<<<<<<<<.....

Figure 8 Encryption key

The last 8 bytes are used as the ChaCha20 nonce.

The encryption key is encrypted using an implementation of RSA provided through the Mini GMP library. A public key is obtained from the binary that results in an output similar to the below output in

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00000010 29 80 44 AC A7 0B 7F 97 93 78 E5 61 0F 93 43 16 )eD-S...-xaa."C.
00000020 34 73 C1 91 AA 22 EE 24 FC 83 57 18 28 6B 96 86 4sA'*=i0ufW. (k-t
00000030 D2 DE 67 10 46 45 9E D5 B1 2D FC 39 24 25 98 D9 00g.FEz0+-u90t-U
00000040 0E 1F BA 0E 00 B4 09 CD 21 B8 01 4C CD 21 54 68 ..*...'.I!..LI!Th
00000050 69 73 20 70 72 6F 67 72 61 6D 20 63 61 6E 6E 6F is program canno
00000060 74 20 62 65 20 72 75 6E 20 69 6E 20 44 4F 53 20 t be run in DOS
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Figure 12 Example of the unencrypted file


Finally, the earlier generated RSA encrypted key and 0x00020000 are appended to the end of the file, which would be used for decryption purposes.

```
0005CFF0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0005D000 5E DB 54 0D CD AE 2B 52 DE 1E F9 BC AE 89 3B DA ^0T.i8+Rb.0+8t;0
0005D010 AB E3 DC EE 2E 70 FD 76 EE A4 2D DB F0 AD 65 0E e&0i.pyvi=-08.e.
0005D020 FD 51 A3 FA 12 13 99 2B 67 D7 69 9E D3 8A 18 82 yQtd.."+q=i20S.,
0005D030 08 EB 4F 05 32 51 7B D5 BE 00 34 1B 5A FF B5 9E .e0.2Q(0%4.2ypu
0005D040 A2 0F E1 5B DE AB D1 1F 02 2F E2 A1 28 18 85 F8 e.&[p=8.../8;(.e
0005D050 1D 26 0C 4F E3 8E 09 CC F2 3B 26 95 C4 52 AC 5F .&.0&2.i0;4*AR=
0005D060 AE 35 F0 A5 31 0F 3A 90 56 46 3C 33 7C 88 29 5D 858Vl.:.VF<3[~)]
0005D070 0C D7 53 5D 85 DD D6 35 C6 34 F6 49 73 87 03 DC .e1 40viamat.e.0
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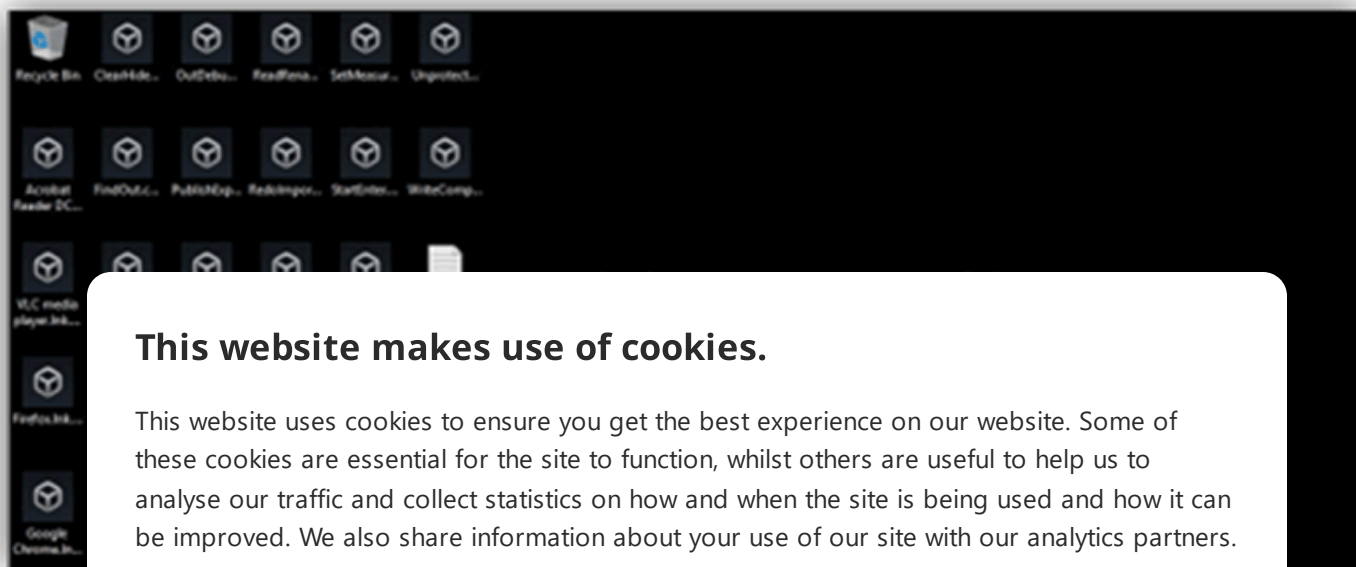
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Cyber security is an arms race where both attackers and defenders continually update and improve their tools and ways of working. To ensure that our managed services remain effective against the latest threats, NCC Group operates a Global Fusion Center with Fox-IT at its core. This multidisciplinary team converts our leading

cyber threat intelligence into powerful detection strategies.



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