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THREAT PROFILE:

Abyss Ransomware

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Executive Summary

First Identified:
2023

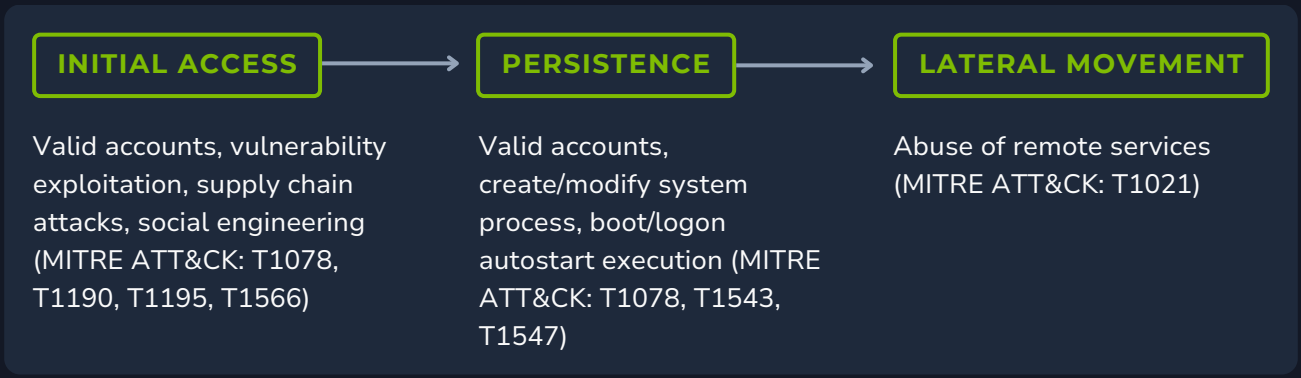
Operation style:
Unverified, likely a private operation.

Extortion method:
Double extortion – combining the traditional ransomware extortion method (encryption) with exfiltration of victim's sensitive data; the group threatens to leak the data via a data leak site if the ransom demand is not paid.

Most frequently targeted industry:
- Industrials (Manufacturing)

Most frequently targeted victim HQ region:
- United States, North America

Known Associations:
- Babuk Ransomware
- HelloKitty Ransomware
- Infoleak222



Description

Abyss (AKA Abyss Locker) ransomware operation has been active since, at least, March 2023 and participates in the double extortion method, where victims' data is stolen and leaked if the ransom demand is not paid. Abyss operates a Linux variant and focuses targeting on VMware ESXi instances.

The Abyss variant is based on the Babuk ransomware source code, while their encryption methods are similar to the HelloKitty ransomware method. The ransomware uses the ChaCha encryption method to encrypt files on the affected network.

The ransomware starts by creating a log file "work.log" to store the contents of the results from each step of the encryption process on disk. This file is held in the same directory of the running encryptor. The ransomware then checks to see if it can get to the "libcrypto.so" library – if so, it uses it to get the address of a symbol, "'EVP_MD_CTX_new." If not, the ransomware will display an error.

Prior to encryption, Abyss ransomware attempts to identify and kill each VM to allow for encryption. The ransomware uses all three shutdown options:

- "soft" attempts to gracefully shut down the VMs.
- "hard" shuts the VM down immediately without attempting to do so gracefully.
- "force" immediately shuts the VM down but may leave the instance in an unstable state. This command is used as a last resort.

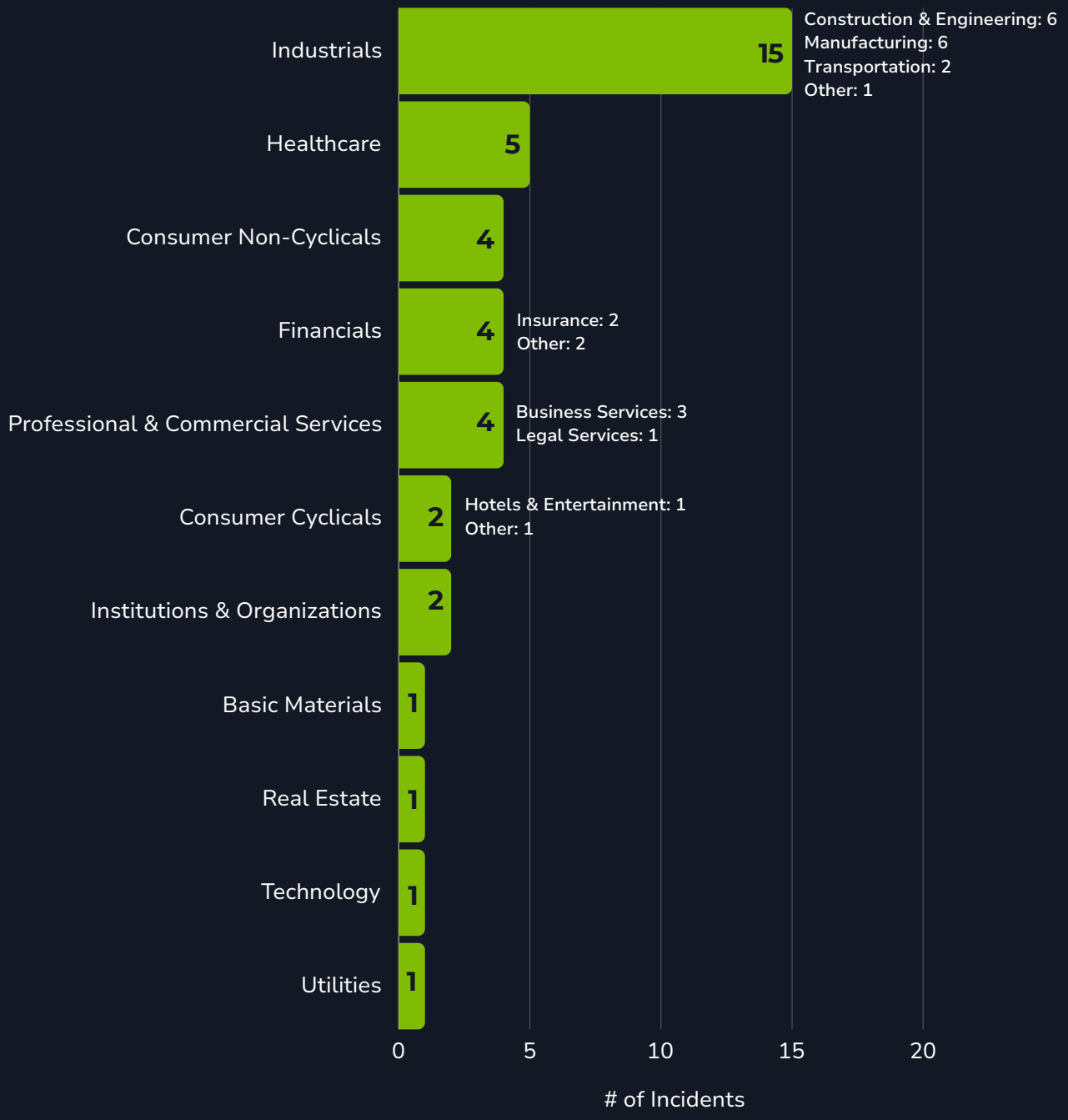
The Abyss variant is based on the Babuk ransomware source code, while their encryption methods are similar to the HelloKitty ransomware method.

Once the ransomware shuts down the VMs, the ransomware attempts to find and log all VM files on the network. The ransomware then attempts to process all the directories, skipping file system directories. Once it does so, it recursively iterates through each directory using the "DirEnt" structure. When it finds a file, it checks the file against the list to determine if it is an extension to skip.

The ransomware attempts to use the "daemon" function call to detach the program from the controlling terminal. It does not change the std input, output, or error redirects. The sample then starts a new threat using the "pthread_create" call.

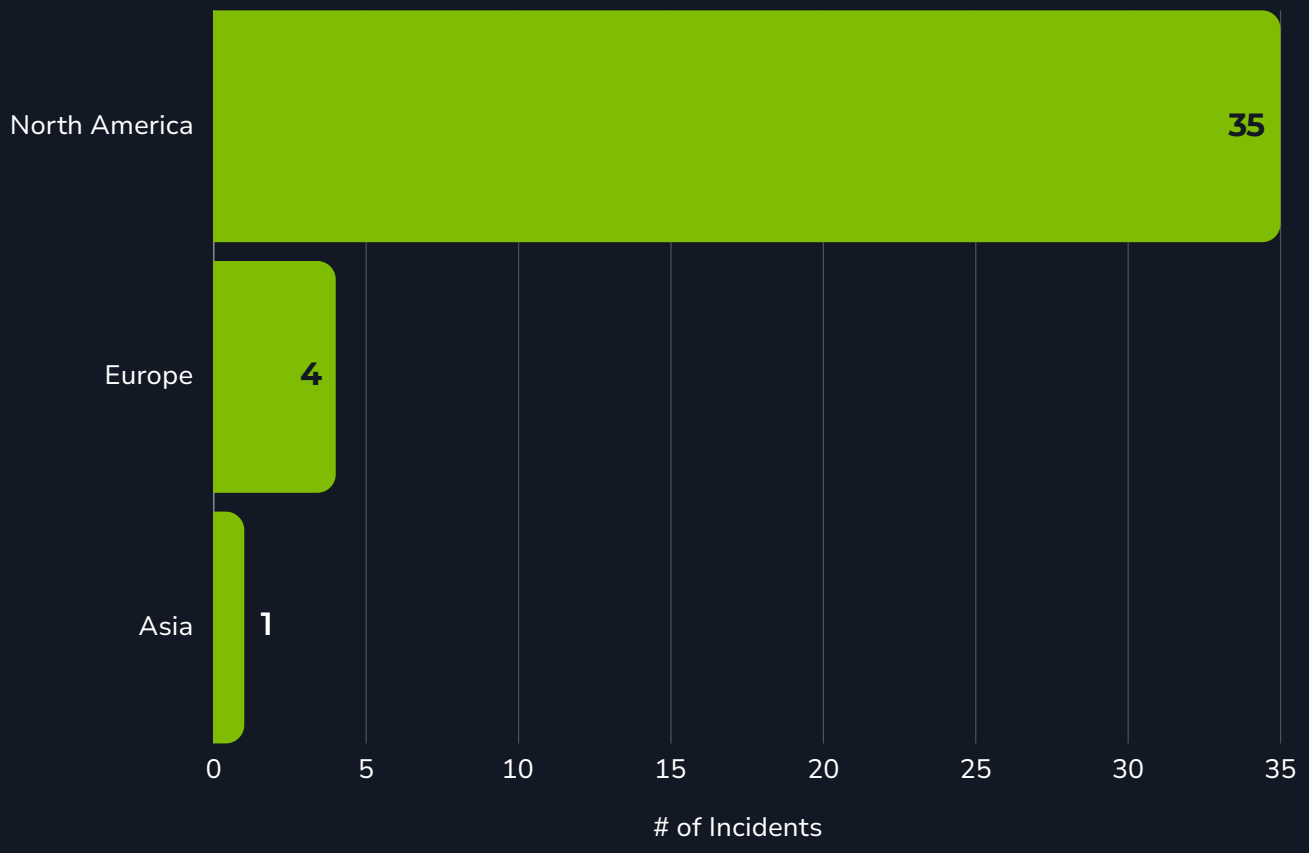
Previous Targets: Abyss

Previous Industry Targets from 01 Oct 2023 to 30 Sep 2024

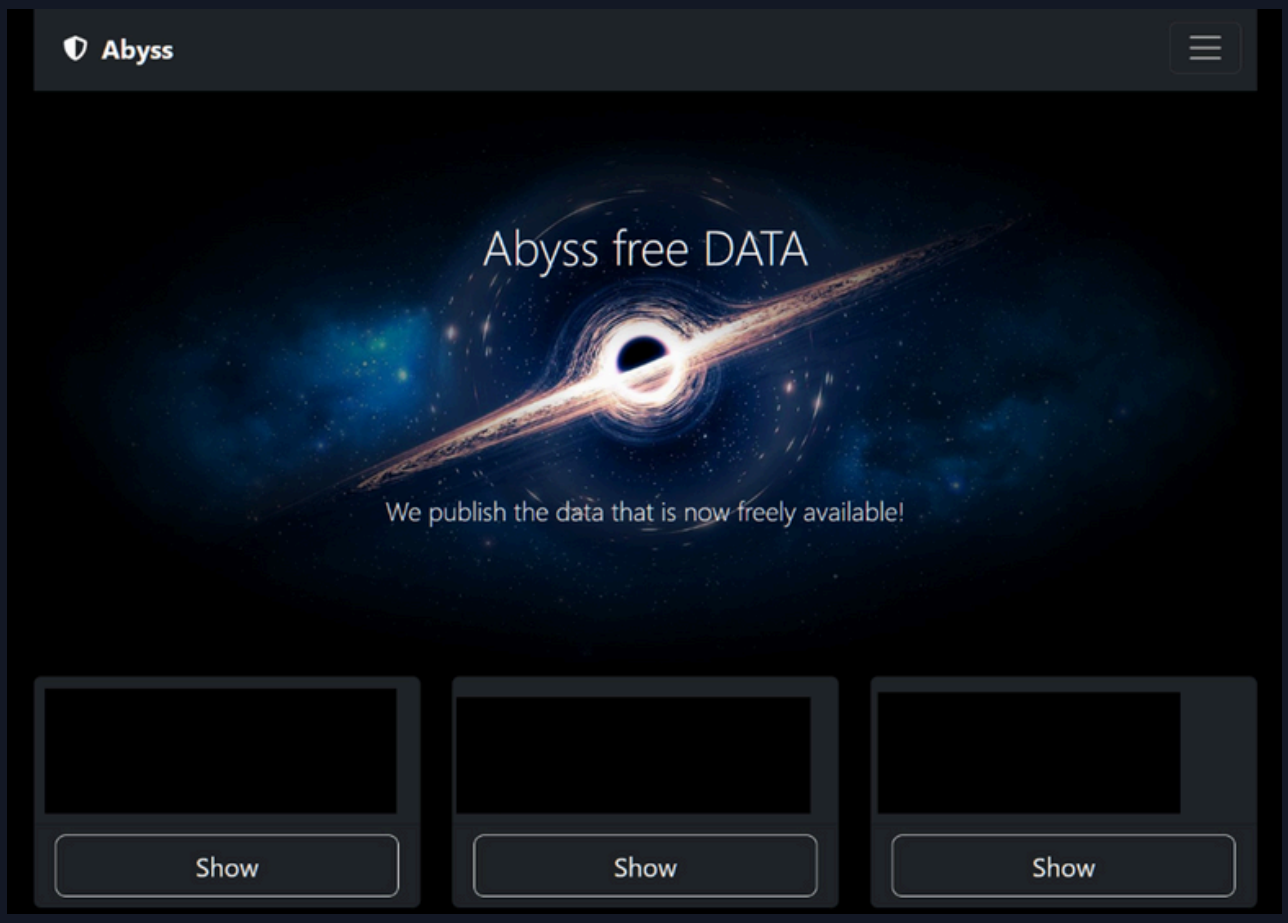


Previous Targets: Abyss

Previous Victim HQ Regions from 01 Oct 2023 to 30 Sep 2024



Data Leak Site: Abyss



hxxp://3ev4metjirohtdpshsqlkrqcmxq6zu3d7obrdhglpy5jpbr7whmlfgqd[.]onion/

Associations: Abyss

Abyss Locker

Alternate name for Abyss Ransomware variant.

Babuk Ransomware

Abyss ransomware for Linux was derived from the Babuk source code and functions in a similar fashion. .

HelloKitty Ransomware

Abyss ransomware's encryption features are similar to those in HelloKitty ransomware operations.

Infoleak222

A user on the former Breached Forums that was observed posting leaks that aligned with the victims listed on the Abyss data leak site indicating that the user is connected to the Abyss ransomware operation.

Known Tools: Abyss

bcdedit	A command line tool for managing Configuration Data; it can be used to create new stores, modify existing stores, and add boot menu options.
cmd	A program used to execute commands on a Windows computer.
OpenSSL	A commercial grade open-source toolkit for the TLS protocol and is based on a full-strength general purpose cryptographic library.
VssAdmin	A Windows service that allows taking manual or automatic backup copies of computer files or volumes.
WMIC	A utility that provides a command-line interface for Windows Management Instrumentation.

Observed Abyss Behaviors: Windows

Execution	ControlService ShellExecuteW CreateThread SetVolumeMountPointW
Persistence	bcdedit /set {default} recoveryenabled No bcdedit /set {default} bootstatuspolicy IgnoreAllFailures CreateFileW OpenSCManagerA OpenServiceA
Defense Evasion	vssadmin.exe delete shadows /all /quiet wmic SHADOWCOPY DELETE GetTickCount TerminateProcess OpenProcess
Discovery	QueryServiceStatusEx Buffer.dwCurrentState -1 CreateToolhelp32Snapshot Process32FirstW Process32NextW GetSystemInfo NetShareEnum GetDriveTypeW GetDriveTypeW FindFirstFileW FindNextFileW GetTempPathW
Impact	CreateFileW WriteFile HKEY_CURRENT_USER\Control Panel\Desktop RegOpenKeyExW WallpaperStyle TileWallpaper RegSetValueExW WhatHappened.txt - Ransom Note

Observed Abyss Behaviors: Linux

Execution	Usage:%s [-m (5-10-20-25-33-50) -v -d] Start Path m for mode or encryption percentage v for verbose mode
Persistence	d for daemon
Defense Evasion	esxcli vm process kill -t=force -w=%d esxcli vm process kill -t=hard -w=%d esxcli vm process kill -t=soft -w=%d k for getting all VM instances and kill VMs using ESXi CLI
Discovery	esxcli vm process list GetSharedLock stat64
Impact	e for encrypting VM Disks pthread_create RAND_bytes EVP_EncryptInit_ex EVP_EncryptUpdate EC_KEY_new EC_GROUP_new_curve_GFp

MITRE ATT&CK® Mappings: Abyss

Initial Access	
T1078: Valid Accounts	
T1190: Exploit Public-Facing Application	
T1195: Supply Chain Compromise	
T1566: Phishing	.001: Spearphishing Attachment .002: Spearphishing Link
Execution	
T1059: Command and Scripting Interpreter	.001: PowerShell .003: Windows Command Shell .004: Unix Shell
T1569: System Services	.002: Service Execution
Persistence	
T1078: Valid Accounts	
T1543: Create or Modify System Process	
T1547: Boot or Logon Autostart Execution	.001: Registry Run Keys / Startup Folder .009: Shortcut Modification
Privilege Escalation	
T1068: Exploitation for Privilege Escalation	
T1078: Valid Accounts	

MITRE ATT&CK® Mappings: Abyss

Privilege Escalation	
T1547: Boot or Logon Autostart Execution	.001: Registry Run Keys / Startup Folder .009: Shortcut Modification
Defense Evasion	
T1027: Obfuscated Files or Information	.001: Binary Padding
T1036: Masquerading	.005: Match Legitimate Name or Location
T1070: Indicator Removal	
T1078: Valid Accounts	
T1112: Modify Registry	
T1497: Virtualization/Sandbox Evasion	
T1562: Impair Defenses	.001: Disable or Modify Tools
Credential Access	
T1110: Brute Force	
Discovery	
T1007: System Service Discovery	
T1016: System Network Configuration Discovery	.001: Internet Connection Discovery
T1018: Remote System Discovery	
T1057: Process Discovery	

MITRE ATT&CK® Mappings: Abyss

Discovery	
T1082: System Information Discovery	
T1083: File and Directory Discovery	
T1120: Peripheral Device Discovery	
T1135: Network Share Discovery	
T1518: Software Discovery	.001: Security Software Discovery
Lateral Movement	
T1021: Remote Services	.002: SMB/Windows Admin Shares
Collection	
T1005: Data from Local System	
T1114: Email Collection	.001: Local Email Collection
Exfiltration	
T1020: Automated Exfiltration	
T1029: Scheduled Transfer	
T1041: Exfiltration Over C2 Channel	
T1537: Transfer Data to Cloud Account	

MITRE ATT&CK® Mappings: Abyss

Exfiltration
T1567: Exfiltration Over Web Service
Impact
T1486: Data Encrypted for Impact
T1489: Service Stop
T1490: Inhibit System Recovery
T1491: Defacement
T1657: Financial Theft

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