DoD-Defense Industrial Base
Collaborative Information Sharing Environment (DCISE)

AN OFFERING IN THE BLUE CYBER SERIES:

Unclassified Threat Briefing for DAF Small Businesses

Version 24 Aug 2021

#9 in the Blue Cyber Education Series

Unclassified Threat Brief (SBIR/STTR)

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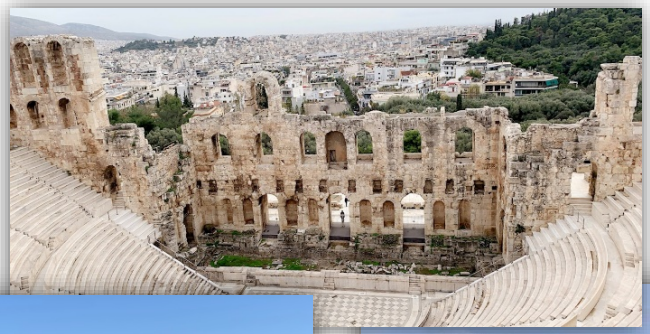
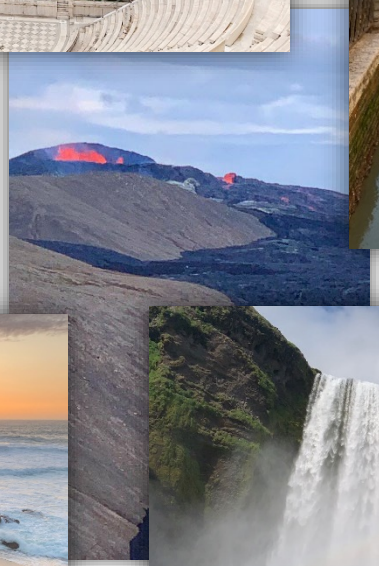
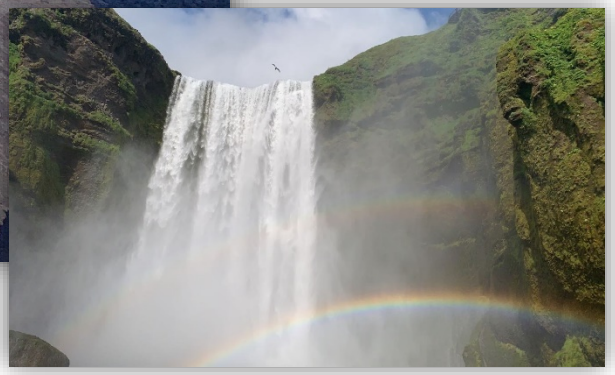
24 Aug 21

Introduction

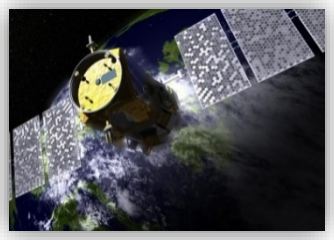



Agenda

- About DCISE…
- BEC
- Ransomware
- MITRE ATT&CK
- Advanced Persistent Threats
- Common Vulnerabilities & Exposures
- Questions?



About DCISE…

DIB/CS Program

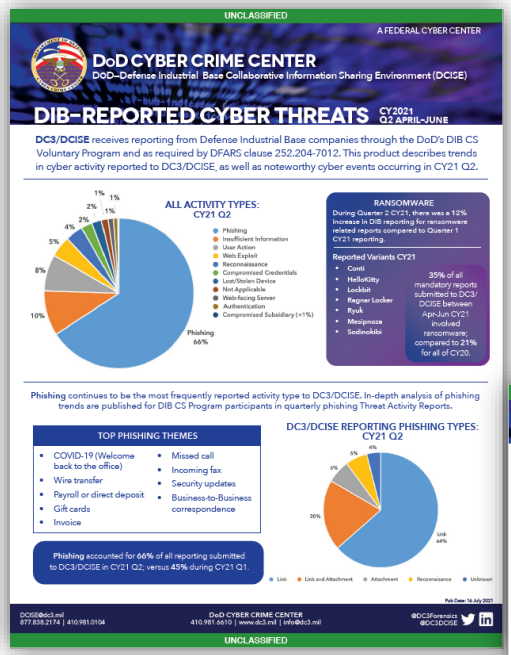
- Large, Mid, & Small CDCs
- University Affiliated Research Centers
- Supply Chain Vendors
- Joint-development Partners
- Commercial Solution and Service Providers
- Federally Funded Research and Development Centers (FFRDCs)

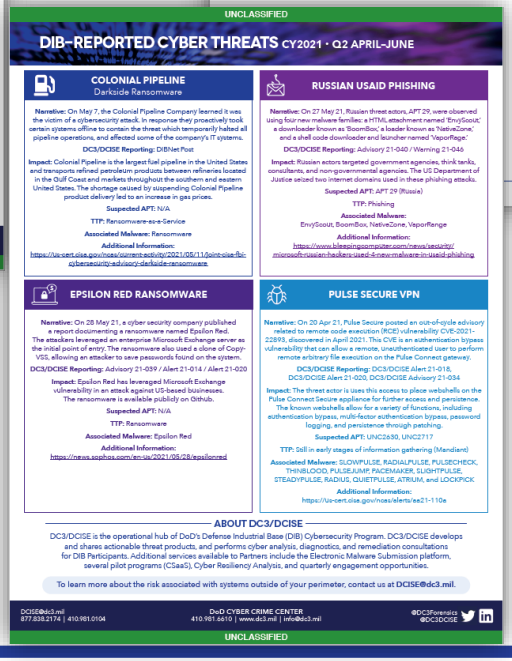
77,700+ hours of no-cost forensics and malware analysis

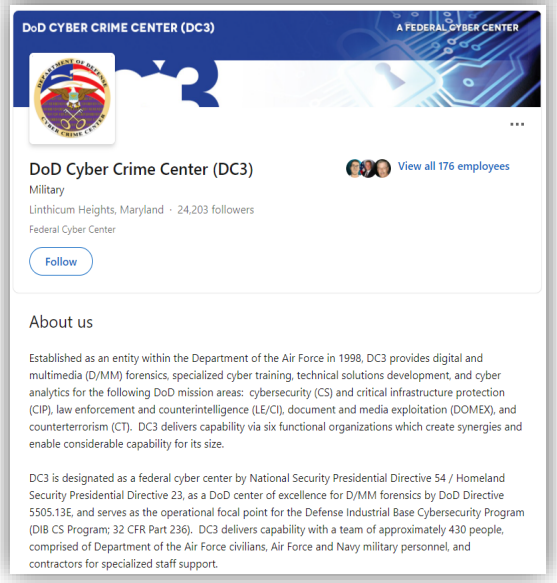
Disseminated 12,300+ cyber reports

518,000+ actionable, non-attributional indicators

Publicly Available Products







Credential Harvesting

- **Microsoft 365 #1**
- **Reported themes**
  - Invoice
  - Missed call
  - Incoming fax
  - Slack
  - Zoom
- **Initial access for BEC**
- **Sandbox detection to evade defenders**

TLP:WHITE

Private Industry Notification

FEDERAL BUREAU OF INVESTIGATION, CYBER DIVISION

Cyber Criminals Exploit Network Access and Privilege Escalation

Summary

Cyber criminals are focusing their operations to target employees of companies worldwide who maintain network access and an ability to escalate network privilege. During COVID-19 shelter-in-place and social distancing orders, many companies had to quickly adapt to changing environments and technology. With these restrictions, network access and privilege escalation may not be fully monitored. As more tools to automate services are implemented on companies' networks, the ability to keep track of who has access to different points on the network, and what type of access they have, will become more difficult to regulate.

Business Email Compromise

- **Post-credential harvesting**
  - Auto-forwarding rules
- **Not "technical"**
  - No link
  - No malware
- **May exploit deference to authority**
- **Reported schemes**
  - Wire transfer
  - Payroll or direct deposit
  - Gift cards

Private Industry Notification

FEDERAL BUREAU OF INVESTIGATION, CYBER DIVISION

25 November 2020

PIN Number
20201125-001

Please contact the FBI with any questions related to this Private Industry Notification at either your local **Cyber Task Force** or **FBI CyWatch**.

Local Field Offices:
www.fbi.gov/contact-us/field

E-mail:
cywatch@fbi.gov

Phone:
1-855-292-3937

The following information is being provided by the FBI, with no guarantees or warranties, for potential use at the sole discretion of recipients to protect against cyber threats. This data is provided to help cyber security professionals and system administrators guard against the persistent malicious actions of cyber actors. This product was coordinated with DHS-CISA.

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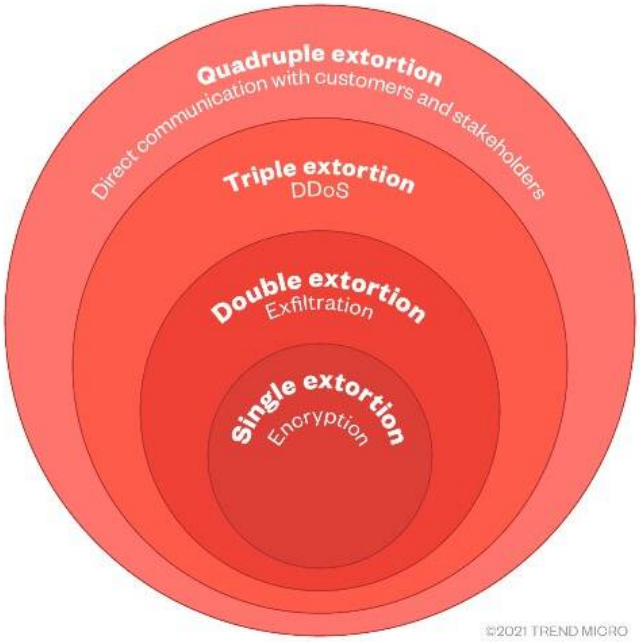
Cyber Criminals Exploit Email Rule Vulnerability to Increase the Likelihood of Successful Business Email Compromise

Summary

The COVID-19 pandemic prompted a mass shift to telework among many US businesses, resulting in increased use of web-based email applications. According to recent FBI reporting, cyber criminals are implementing auto-forwarding rules on victims' web-based email clients to conceal their activities. The web-based client's forwarding rules often do not sync with the desktop client, limiting the rules' visibility to cyber security administrators. Cyber criminals then capitalize on this reduced visibility to increase the likelihood of a successful business email compromise (BEC). BEC schemes resulted in more than $1.7 billion in worldwide losses[a] reported to the Internet Crime Complaint Center (IC3) in 2019. The FBI is sharing this information to inform companies of this email rule forwarding vulnerability, which may leave businesses more susceptible to BEC.

Ransomware

- **RaaS**
  - Toolkits, affiliates, share proceeds
- **Double Extortion**
  - Exfil data before encryption to leverage against victim
- **Triple Extortion**
  - Threats to conduct DDoS attack against victim, followed by ransomware payload
- **Quadruple Extortion**
  - Notify victim's customers, patients, or other affiliates so they pressure victim to pay



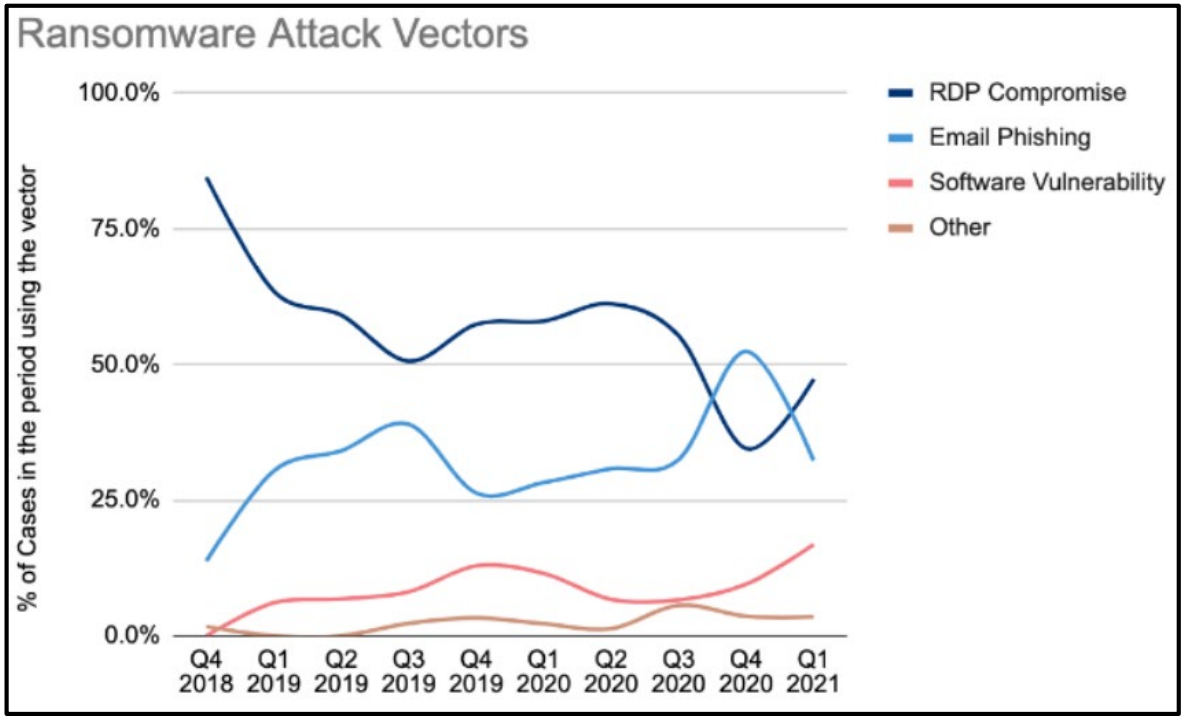
"USG strongly discourages payment and encourages all to report any ransomware activity to appropriate agencies and law enforcement."

Ransomware

- **Most common cyber attack methods for gaining initial foothold in corporate networks:**
  - Phishing email
  - Brute force attacks against exposed remote desktop protocol (RDP) services
  - Software vulnerabilities
- **Most common ransomware over the last year**
  - Sodinokibi – also known as REvil
  - Conti
  - Avaddon
  - Mespinoza
  - HelloKitty

Ransomware

- **RDP regains top spot**
- **Small to medium-sized organizations preferred**
  - 73% - ≤1000 employees
  - 33% - Phishing
- **2020 Q4 payments**
  - Average - $220K
  - Median - $78K
- **Reported variants**
  - Sodinokibi
  - Conti V2
  - Lockbit
  - Clop



Source: Coveware

DoD-Defense Industrial Base
Collaborative Information Sharing Environment (DCISE)

MITRE ATT&CK

ATT&CK Matrix for Enterprise

layout: side | show sub-techniques | hide sub-techniques

Reconnaissance (10 techniques)	Resource Development (7 techniques)	Initial Access (9 techniques)	Execution (12 techniques)	Persistence (19 techniques)	Privilege Escalation (13 techniques)	Defense Evasion (39 techniques)	Credential Access (15 techniques)	Discovery (27 techniques)	Lateral Movement (9 techniques)	Collection (17 techniques)	Command and Control (16 techniques)	Exfiltration (9 techniques)	Impact (13 techniques)
Active Scanning (2)	Acquire Infrastructure (6)	Drive-by Compromise	Command and Scripting Interpreter (8)	Account Manipulation (4)	Abuse Elevation Control Mechanism (4)	Abuse Elevation Control Mechanism (4)	Brute Force (4)	Account Discovery (4)	Exploitation of Remote Services	Archive Collected Data (3)	Application Layer Protocol (4)	Automated Exfiltration (1)	Account Access Removal
Gather Victim Host Information (4)	Compromise Accounts (2)	Exploit Public-Facing Application	Container Administration Command	BITS Jobs	Access Token Manipulation (5)	Access Token Manipulation (5)	Credentials from Password Stores (5)	Application Window Discovery	Internal Spearphishing	Audio Capture	Communication Through Removable Media	Data Transfer Size Limits	Data Destruction
Gather Victim Identity Information (3)	Compromise Infrastructure (6)	External Remote Services	Deploy Container	Boot or Logon Autostart Execution (14)	Boot or Logon Autostart Execution (14)	BITS Jobs	Exploitation for Credential Access	Browser Bookmark Discovery	Lateral Tool Transfer	Automated Collection	Data Encoding (2)	Exfiltration Over Alternative Protocol (3)	Data Encrypted for Impact
Gather Victim Network Information (6)	Develop Capabilities (4)	Hardware Additions	Exploitation for Client Execution	Boot or Logon Initialization Scripts (5)	Boot or Logon Initialization Scripts (5)	Build Image on Host	Forced Authentication	Cloud Infrastructure Discovery	Remote Service Session Hijacking (2)	Clipboard Data	Data Obfuscation (3)	Exfiltration Over C2 Channel	Data Manipulation (3)
Gather Victim Org Information (4)	Establish Accounts (2)	Phishing (3)	Inter-Process Communication (2)	Browser Extensions	Create or Modify System Process (4)	Deobfuscate/Decode Files or Information	Forge Web Credentials (2)	Cloud Service Dashboard	Remote Services (6)	Data from Cloud Storage Object	Dynamic Resolution (3)	Exfiltration Over Other Network Medium (1)	Defacement (2)
Phishing for Information (3)	Obtain Capabilities (6)	Replication Through Removable Media	Native API	Compromise Client Software Binary	Domain Policy Modification (2)	Deploy Container	Input Capture (4)	Cloud Service Discovery	Replication Through Removable Media	Data from Configuration Repository (2)	Encrypted Channel (2)	Exfiltration Over Physical Medium (1)	Disk Wipe (2)
Search Closed Sources (2)	Stage Capabilities (5)	Supply Chain Compromise (3)	Scheduled Task/Job (7)	Create Account (3)	Escape to Host	Direct Volume Access	Man-in-the-Middle (2)	Container and Resource Discovery	Software Deployment Tools	Data from Information Repositories (2)	Fallback Channels	Exfiltration Over Web Service (2)	Endpoint Denial of Service (4)
Search Open Technical Databases (5)		Trusted Relationship	Shared Modules	Create or Modify System Process (4)	Event Triggered Execution (15)	Domain Policy Modification (2)	Modify Authentication Process (4)	Domain Trust Discovery	Taint Shared Content	Data from Local System	Ingress Tool Transfer	Scheduled Transfer	Firmware Corruption
Search Open Websites/Domains (2)		Valid Accounts (4)	Software Deployment Tools	Event Triggered Execution (15)	Exploitation for Privilege Escalation	Execution Guardrails (1)	Network Sniffing	File and Directory Discovery	Use Alternate Authentication Material (4)	Data from Network Shared Drive	Multi-Stage Channels	Transfer Data to Cloud Account	Inhibit System Recovery
Search Victim-Owned Websites			System Services (2)	External Remote Services	Hijack Execution Flow (11)	Exploitation for Defense Evasion	OS Credential Dumping (8)	Network Service Scanning		Data from Removable Media	Non-Application Layer Protocol		Network Denial of Service (2)
			User Execution (3)	Hijack Execution Flow (11)	Process Injection (11)	File and Directory Permissions Modification (2)	Steal Application Access Token	Network Share Discovery		Data Staged (2)	Non-Standard Port		Resource Hijacking
			Windows Management Instrumentation	Implant Internal Image	Scheduled Task/Job (7)	Hide Artifacts (7)	Steal or Forge Kerberos Tickets (4)	Network Sniffing		Email Collection (3)	Protocol Tunneling		Service Stop
				Modify Authentication Process (4)	Valid Accounts (4)	Hijack Execution Flow (11)	Steal Web Session Cookie	Password Policy Discovery		Input Capture (4)	Proxy (4)		System Shutdown/Reboot
				Office Application Startup (6)		Impair Defenses (7)	Two-Factor Authentication Interception	Peripheral Device Discovery		Man in the Browser	Remote Access Software		
						Indicator Removal on Host (6)		Permission Groups Discovery (3)		Man-in-the-Middle (2)	Traffic Signaling (1)		
						Indirect Command Execution		Process Discovery					
						Masquerading (6)		Query Registry					
						Modify Authentication Process (4)							

MITRE ATT&CK

Phishing

Sub-techniques (3)

ID	Name
T1566.001	Spearphishing Attachment
T1566.002	Spearphishing Link
T1566.003	Spearphishing via Service

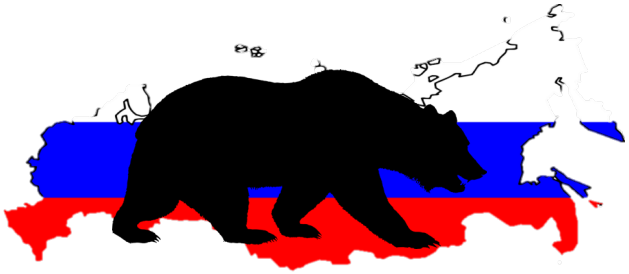
Phishing: Spearphishing Attachment

Other sub-techniques of Phishing (3)

Adversaries may send spearphishing emails with a malicious attachment in an attempt to gain access to victim systems. Spearphishing attachment is a specific variant of spearphishing. Spearphishing attachment is different from other forms of spearphishing in that it employs the use of malware attached to an email. All forms of spearphishing are electronically delivered social engineering targeted at a specific individual, company, or industry. In this scenario, adversaries attach a file to the spearphishing email and usually rely upon User Execution to gain execution. Spearphishing may also involve social engineering techniques, such as posing as a trusted source.

Advanced Persistent Threat (APT)

- **A sophisticated, sustained cyberattack conducted by experienced, well-funded, nation-state sponsored actors for the purpose of espionage, financial gain, hacktivism, or destruction**
- **Targeting:**
  - Healthcare
  - Telecommunications
  - Manufacturing
  - Maritime
  - Aviation
  - Financial services
  - Universities
  - Research & Development (R&D)

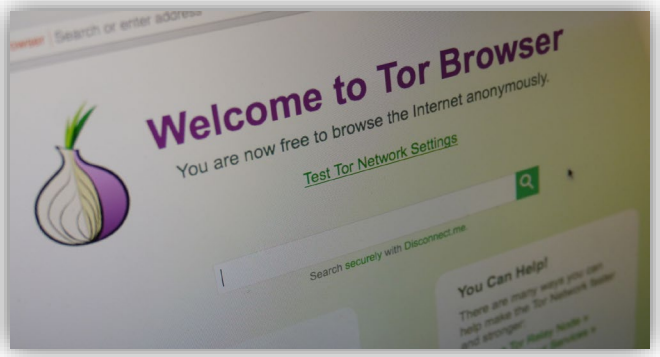


APT40

- **July 2021, four Chinese nationals indicted for global computer intrusion campaign**
- **2011-2018, Hainan State Security Department (HSSD) threat actors sought to obfuscate the Chinese Ministry of State Security (MSS) role in intellectual theft**
  - Front company Hainan Xiandun Technology Development Co. Ltd.
  - Trade secrets
  - Confidential business information
  - Sensitive technologies
  - Infectious-disease research

APT40 TTPs

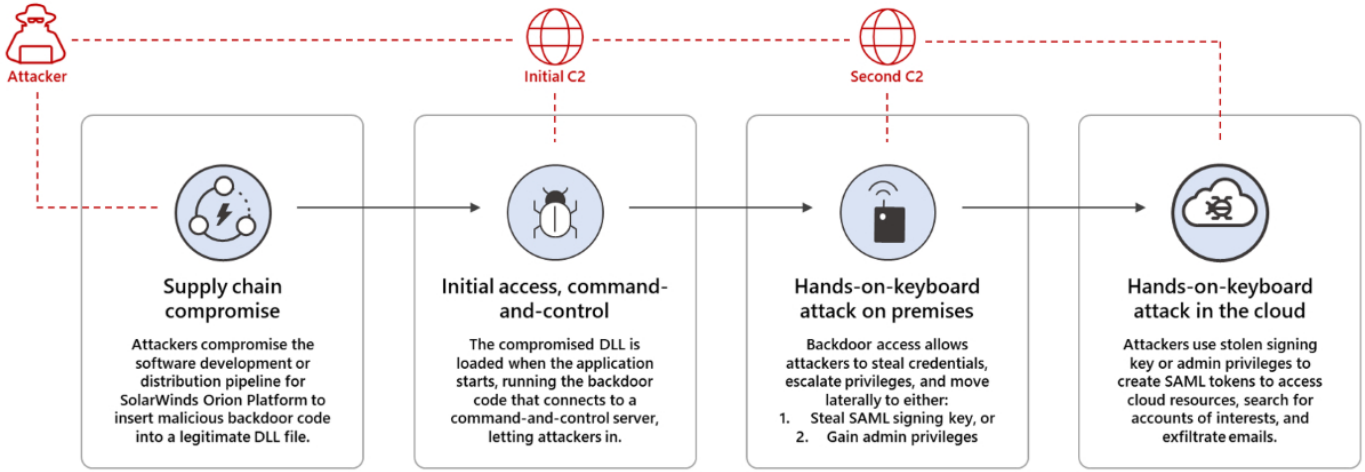
- Spear-phishing email messages
- Fictitious online profiles linked to doppelganger domain names
- Compromised credentials
- Sophisticated malware
- Anonymizing services e.g., The Onion Router (TOR), Darkweb
- Steganography on GitHub
- Threat actor provisioned Dropbox accounts



SolarWinds

SolarWinds

- **December 2020, sophisticated cyber actors "trojanized" a legitimate SolarWinds Orion DLL resulting in a supply chain attack**
- **SUNBURST and SUPERNOVA malware**
  - SUNBURST follows the TTPs discussed, SUPERNOVA allows adversaries another method of access and is believed to have originated from another APT
  - SUPERNOVA leverages a different trojanized .NET DLL that is not digitally signed and was built to run in-memory



solarwinds

APT29

- **15 Apr 21, White House publicly attributes Russian Foreign Intelligence Service (SVR) as perpetrator for exploiting the SolarWinds Orion platform**
- **Beginning 2018 shift to targeting cloud resources**
  - Exploitation of Microsoft Office 365 environments following network access gained through modified SolarWinds software
  - Zero-day vulnerabilities to expose user credentials
  - “low and slow” password spraying
  - Consistent modification of permissions
- **WellMess malware**
  - Targeted vaccine research repositories and Active Directory severs of victims

Remote Services CVEs On The Rise

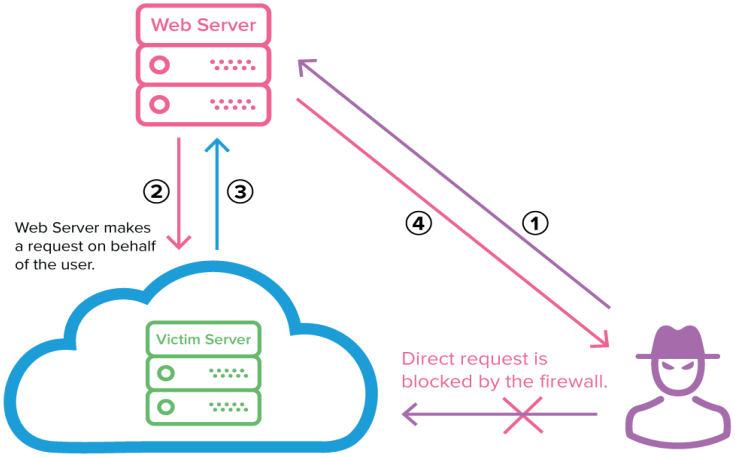
- **Malicious cyber actors increasingly targeting unpatched Virtual Private Network (VPN) vulnerabilities**
  - Citrix VPN appliances and Pulse Secure VPN servers are “attractive targets”
- **March 2020 brought an abrupt shift to work-from-home**
  - Microsoft Office 365 collaborative cloud services
- **Cybersecurity weaknesses**
  - Disregard for patches
  - Susceptible to rising ransomware attacks

HAFNIUM


CVE-2021-26855
CVE-2021-26857
Hf
CVE-2021-26858
CVE-2021-27065
2021
Exchange
HAFNIUM

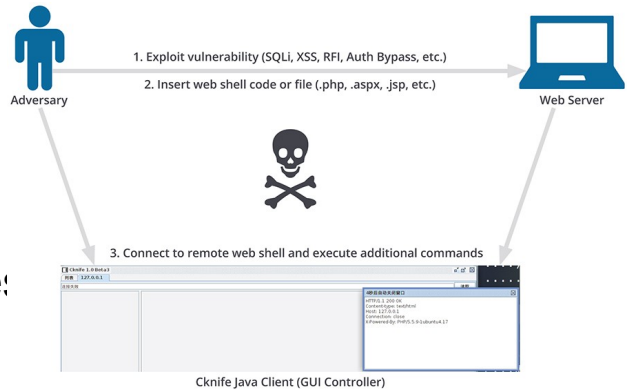
Microsoft Exchange Server CVEs

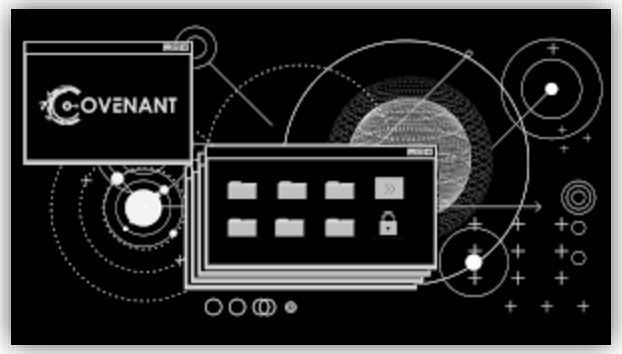
- **CVE-2021-26855** - server-side request forgery (SSRF) vulnerability [Critical]
- **CVE-2021-26857** - insecure deserialization vulnerability in the Unified Messaging service [Medium]
  - Insecure deserialization: untrusted user-controllable data is deserialized by a program
- **CVE-2021-26858** - post-authentication arbitrary file write vulnerability in Exchange allows attacker to write a file to any path on the server [Medium]



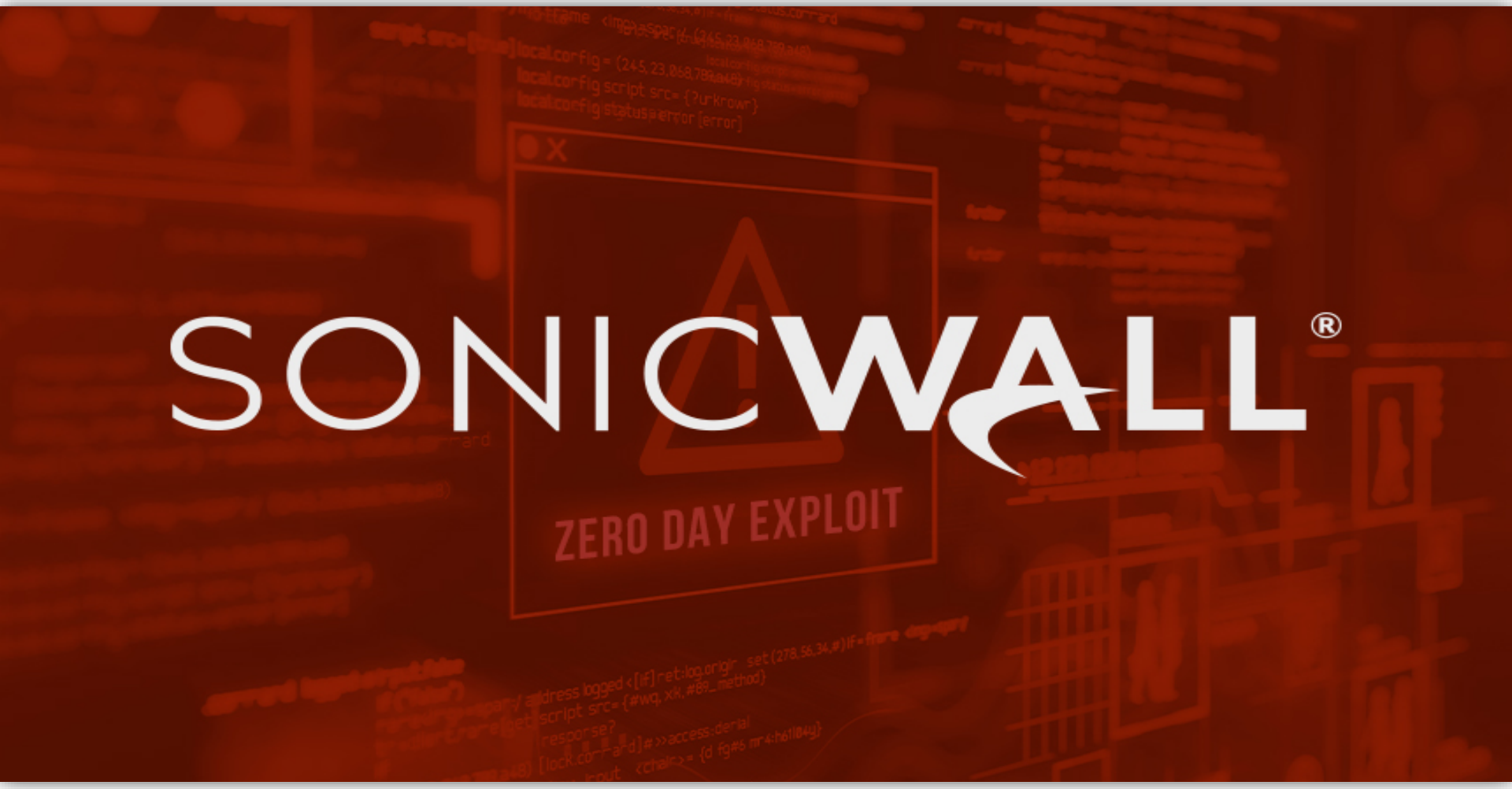
HAFNIUM

- **HAFNIUM exploits internet-facing Exchange servers using the following TTPs:**
  - Combination of zero-day exploits and unpatched CVEs
  - Open-source frameworks like Covenant for C2
  - China Chopper web shells allowing remote services
  - PowerCat from GitHub
  - Procdump to dump LSASS process memory for credential harvesting
  - 7-Zip to compress stolen data for exfiltration
  - Exchange PowerShell snap-ins to export mailbox data to file sharing sites



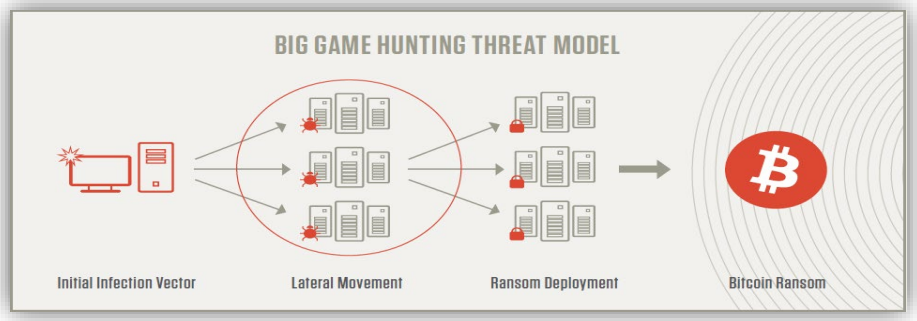


SonicWall



SonicWall

- **March 2021, Mandiant Managed Defense identified three zero-day vulnerabilities being exploited in the wild**
  - **CVE-2021-20021** – Unauthorized administrative account creation [Critical]
  - **CVE-2021-20022** – Post-authentication arbitrary file upload [High]
  - **CVE-2021-20023** – Post-authentication arbitrary file read [Low]
- 10 Jun 21, Binary Defense article identified SonicWall devices still vulnerable to attack for **CVE-2019-7481**, Structured Query Language (SQL) injection
  - Big Game Hunting (BGH) ransomware actors identified by CrowdStrike



SonicWall

- 22 Jun 21, SonicWall acknowledged the patch issued for **CVE-2020-5135** was unsuccessful and recommends immediately downloading the newest patch
- 14 Jul 21, SonicWall issued an urgent security notice to warn of imminent ransomware attacks targeting known “already patched” firmware vulnerabilities
  - Security defects in SMA 100 series and SRA products running unpatched and end-of-life 8.x firmware

Kaseya

Kaseya

- **2 Jul 21, Kaseya urged its customers to immediately shut down versions of Virtual System Administrator (VSA) and suspend service**
- **4 Jul 21, Kaseya released detection tool for VSA Software as a Service (SaaS) to assist with REvil indicators of compromise**
- **6 Jul 21, threat actors conduct phishing campaign against Kaseya clients**
- **21 Jul 21, Kaseya obtains universal decryptor for REvil ransomware victims**

- **CVE-2021-30116** – Credential leak and business logic flaw
- **CVE-2021-30119** – Cross Site Scripting vulnerability
- **CVE-2021-30120** – 2FA bypass

Summary

- DCISE!
- Credential Harvesting
- BEC
- Ransomware
- Advanced Persistence Threats
- Common Vulnerabilities and Exposures

Don’t forget to check out our publicly available products on DIBNet-U

Questions?

Thank you for Attending!!!

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DCISE@dc3.mil