CROWDSTRIKE

Stranger Threats: Navigating the Upside Down of Higher Ed Cyber Threats

Higher Education Threat Brief - Q3 2023
Matt Singleton, CrowdStrike

CROWDSTRIKE

MATT SINGLETON

Executive Strategist

HIGHER ED GOVERNMENT CONSULTING

- **25+ years:** Innovating at the intersection of security, education & digital transformation
- **State Government:** Former Chief Information Security Officer for the State of Oklahoma; Chief Operations Officer for the state's IT division; State Chief Information Officer for Education
- **Higher Education:** Developed cybersecurity strategy and program for the University of Oklahoma system; Led innovation arm of OU IT; Professor of Cybersecurity
- **Education:** M.PS. – Applied Intelligence, specializing in Cyber Intel, Homeland Security & Counterterrorism from Georgetown University; B.A. – Administrative Leadership from the University Of Oklahoma
- **Thought Leadership:** Momentum, National Association of State Technology Directors; Hunt, Bourne and Ryan are Amateurs, Threatday

AGENDA

The Global Threat Landscape

Higher Ed Specific Threats

The Way Forward

GLOBAL THREAT LANDSCAPE

- Volume/Speed/Sophistication of Attacks
- Adversaries
- Top Current Threats
- Access Brokers

THREE PRIMARY METRICS FOR MEASURING THE ADVERSARY

Volume

Speed

Sophistication

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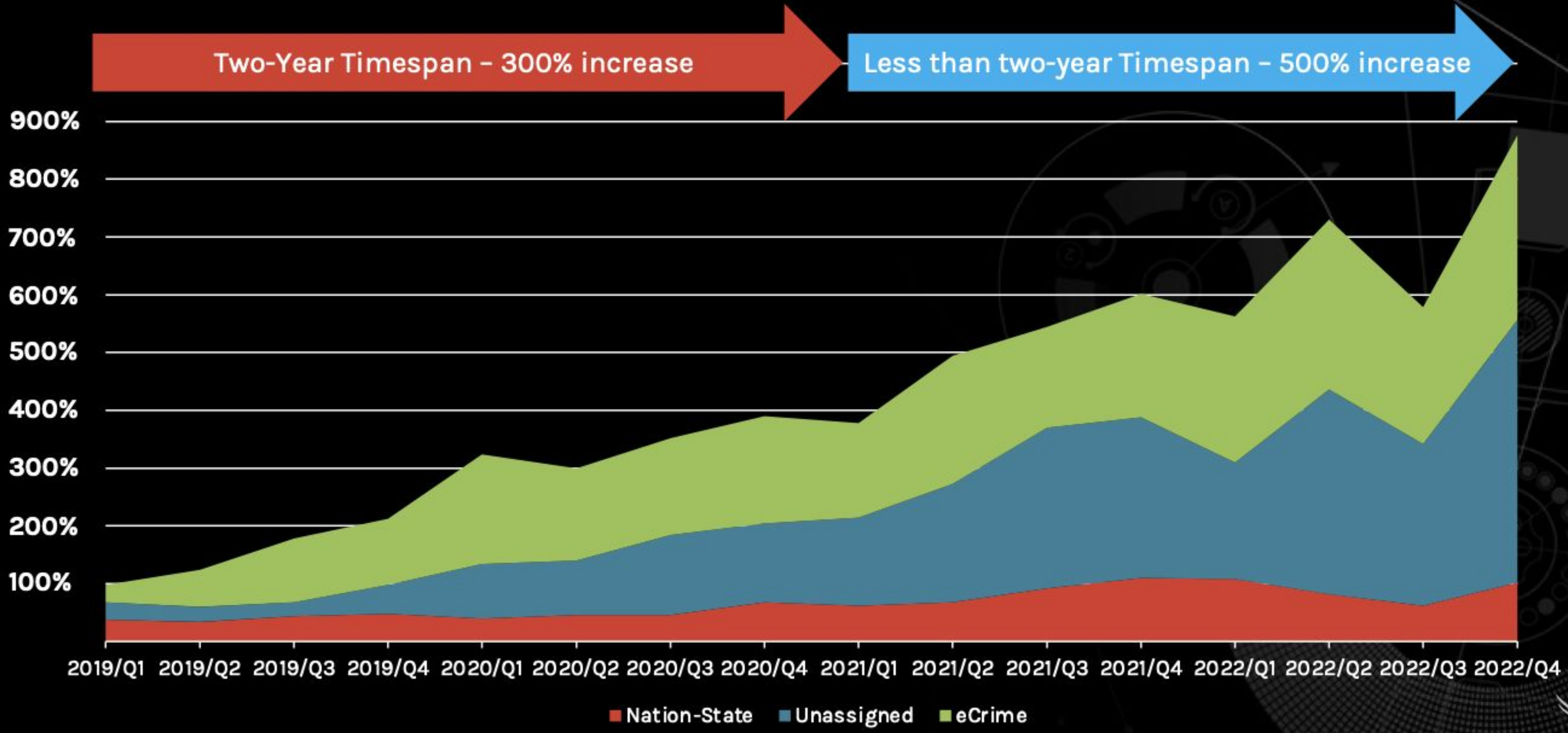
Volume Speed Sophistication

CROWDSTRIKE DISTINCT & SOPHISTICATED INTRUSION TELEMETRY



Volume Speed Sophistication

THE NECESSITY OF SPEED

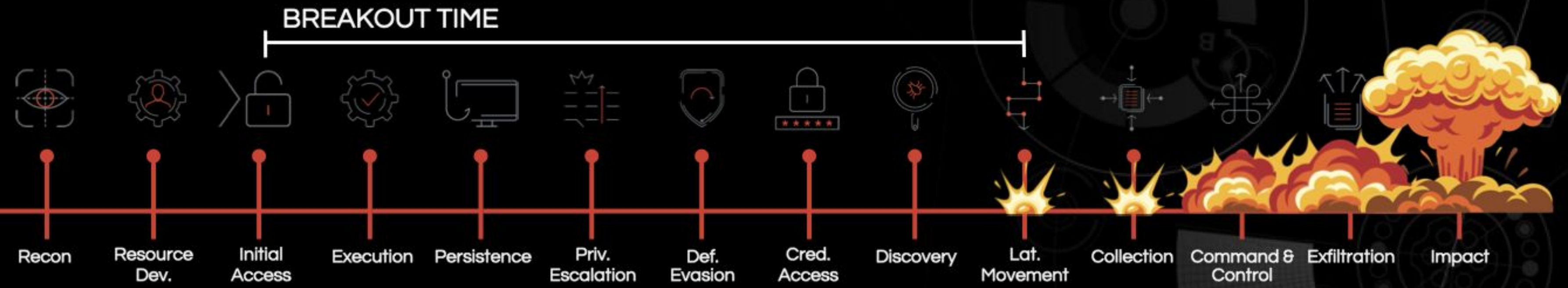
Survival of the Fastest

TO STAY AHEAD YOU MUST:

DETECT IN 1min

INVESTIGATE IN 10min

RESPOND IN 60min



BREAKOUT TIME

Recon, Resource Dev., Initial Access, Execution, Persistence, Priv. Escalation, Def. Evasion, Cred. Access, Discovery, Lat. Movement, Collection, Command & Control, Exfiltration, Impact

MITRE ATT&CK PHASE

eCrime Breakout Time

79 min

Every Second Counts

Adversaries are getting faster, defenders must accelerate

Breakout time has dropped from **9 hours and 42 min** in 2018 to only **79 min in 2023**

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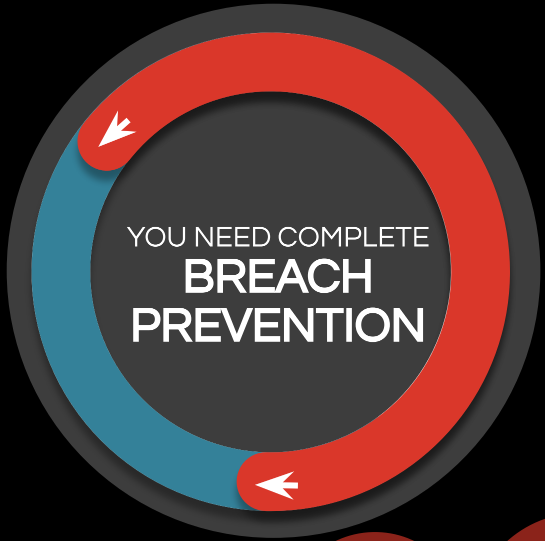
Complexity: Malware versus Malware-Free Attacks

MALWARE

29%

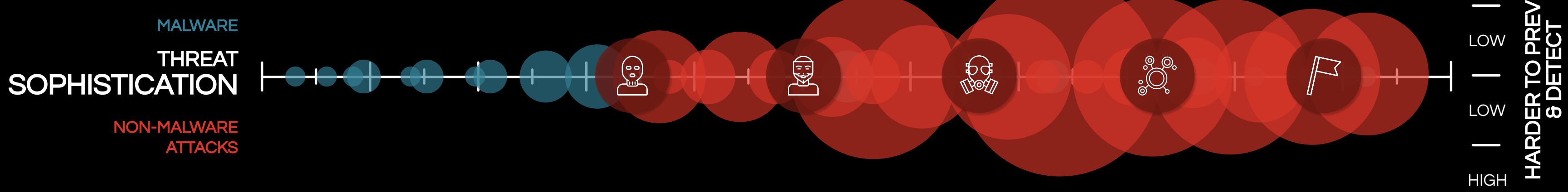


YOU NEED COMPLETE

BREACH PREVENTION

MALWARE-FREE

71%



https://www.crowdstrike.com/resources/reports/overwatch-threat-hunting-report/

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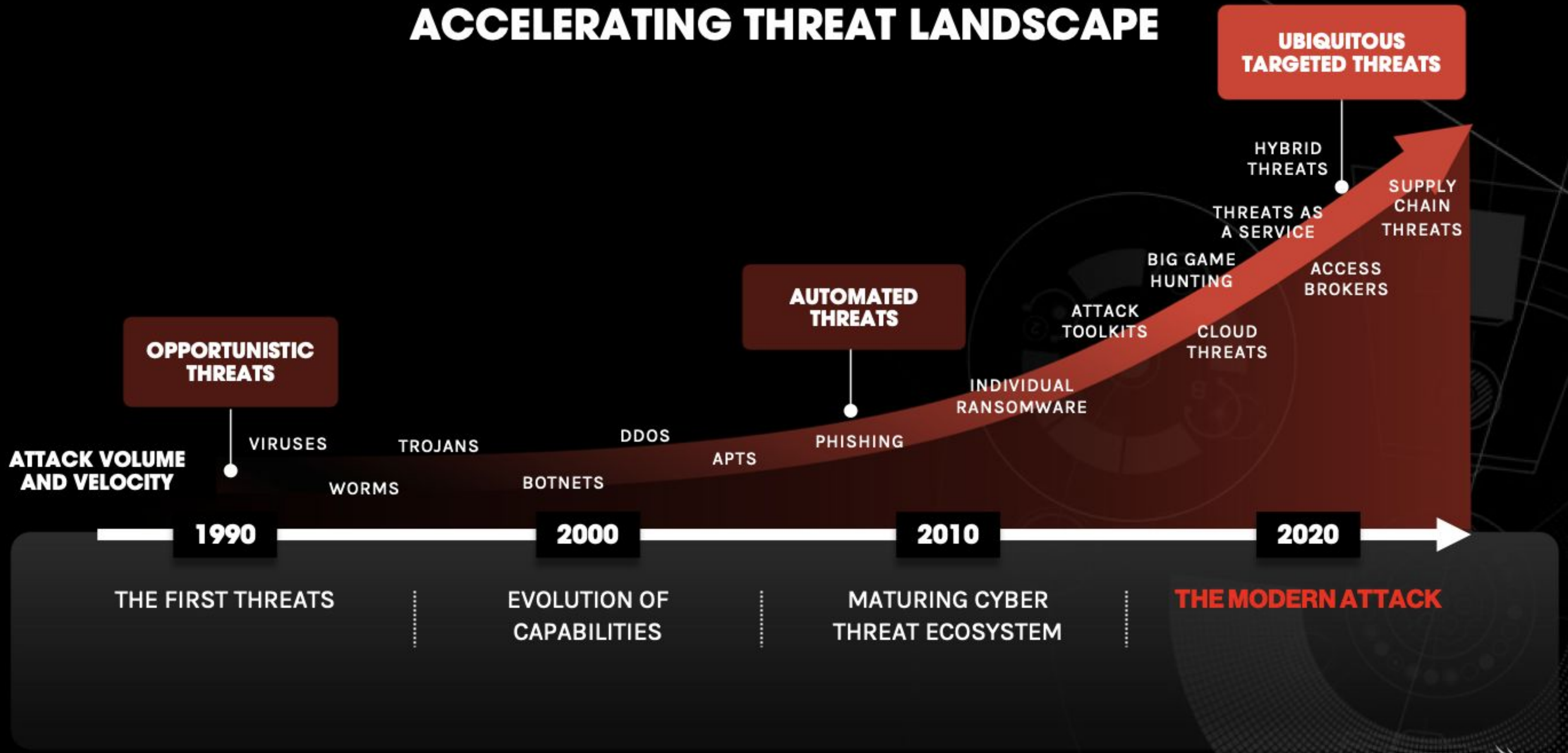
Volume Speed Sophistication

ACCELERATING THREAT LANDSCAPE



ADVERSARIES TRACKED BY CROWDSTRIKE

STATE-SPONSORED

Cryptonym: Panda, Bear, Kitten, Chollima…

Motive: Geopolitical or financial gain
Method: disruption, espionage, or manipulation

CRIMINAL

Cryptonym: Spider

Motive: Financial gain
Method: Fraud, data theft, extortion, etc.

HACKTIVIST / TERRORIST

Cryptonym: Jackal

Motive: Attention
Method: disruption or disclosure

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The Adversary Operations Lifecycle

Access operations

How Adversaries gain access

- VALID CREDENTIALS
- SUPPLY CHAIN COMPROMISE
- 0-DAY EXPLOITATION
- MFA BYPASS

Post Exploitation

How Adversaries remain stealthy

- RECONNAISSANCE
- LATERAL MOVEMENT
- PRIVILEGE ESCALATION

Impact

How the Adversary achieves their objective

- RANSOMWARE
- DATA LEAK
- DATA EXTORTION
- DATA EXFILTRATION

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China-nexus adversaries significantly increased 2022 operational scale

Exploits to gain initial access

China-Nexus Adversaries continued shifting toward exploitation of web-facing services

Increase in use of zero-day exploits

Enterprise software continued to be a high-priority target. Additional zero-day exploits include weaponized MSFT Office documents.

Zero-day exploits were most commonly observed in intrusions targeting North American organizations in 2022; China-nexus adversaries used zero-day exploits to compromise entities in the aerospace, legal and academic sectors.

> "China-nexus adversaries were observed targeting nearly all 39 global industry sectors and 20 geographic regions CrowdStrike Intelligence tracks."

TOP CURRENT TRENDS

3rd PARTY SOFTWARE VULNERABILITIES

CLOUD-BASED ATTACKS

IDENTITY-BASED BYPASS

CrowdStrike 2023 Cloud Risk Report

Cloud exploitation is on the rise

95%

increase in cloud exploitation

3x

increase in cases involving cloud-conscious adversaries

Adversaries sharpening cloud TTPs

COZY BEAR:
uses malicious tools to modify cloud services

SCATTERED SPIDER:
deployed ransomware from a cloud staging env.

LABYRINTH CHOLLIMA:
uses cloud resources to deliver documents with malicious macros

COSMIC WOLF:
Targets victim data stored within cloud environments

Identity is a key cloud access point

Valid accounts are used to gain initial access in **43%** of cloud-based intrusions

In **67%** of cloud security instances. roles have elevated privileges beyond what was required

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A Growing Threat: Insecure Configurations

Human error drives cloud risk

99%

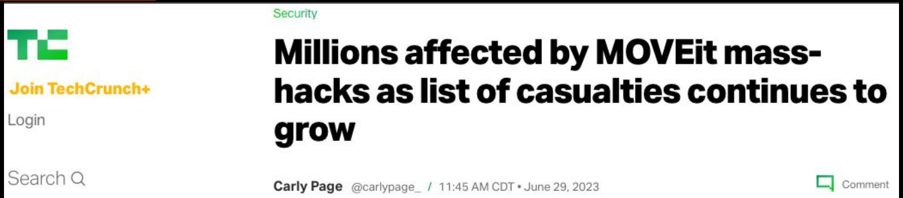
Of cloud security failures are the customer's fault
- Gartner

60%
of workloads lack properly configured security protections

28%
of workloads run as root or allow escalating to root

26%
of workloads have Kubernetes Service Account Token automounted

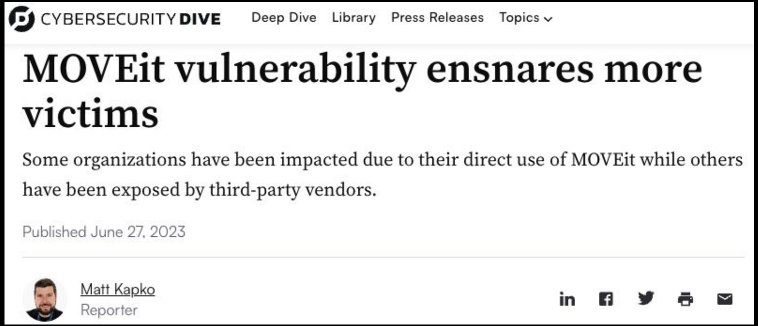
24%
of workloads have root-like capabilities



Security

Millions affected by MOVEit mass-hacks as list of casualties continues to grow

Carly Page @carlypage_ / 11:45 AM CDT • June 29, 2023

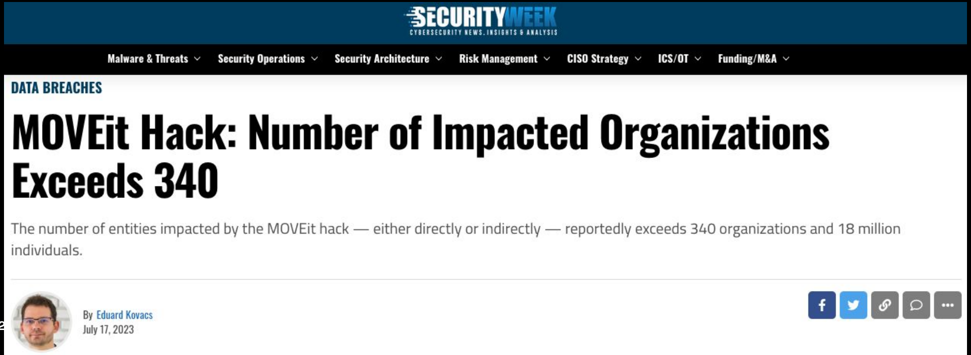


MOVEit vulnerability ensnares more victims

Some organizations have been impacted due to their direct use of MOVEit while others have been exposed by third-party vendors.

Published June 27, 2023

Matt Kapko
Reporter

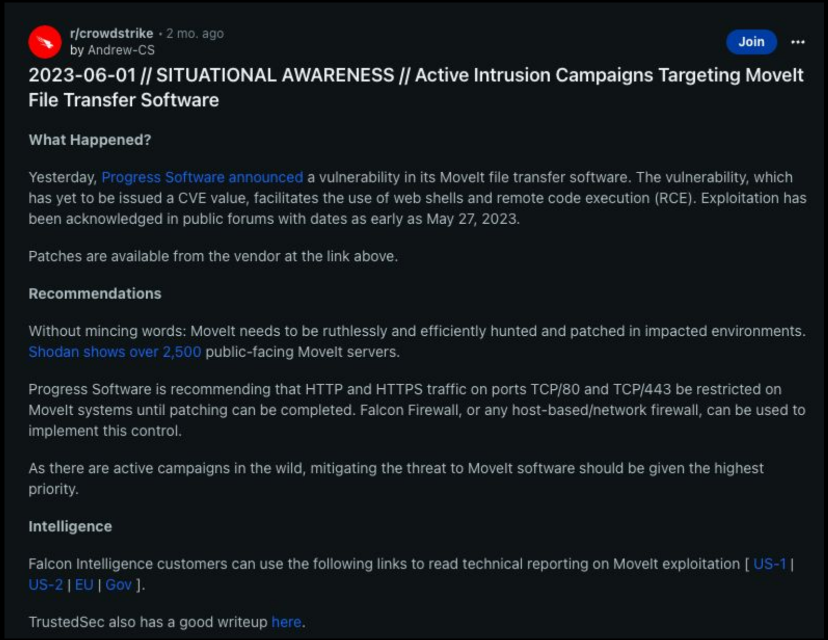


DATA BREACHES

MOVEit Hack: Number of Impacted Organizations Exceeds 340

The number of entities impacted by the MOVEit hack — either directly or indirectly — reportedly exceeds 340 organizations and 18 million individuals.

By Eduard Kovacs
July 17, 2023



2023-06-01 // SITUATIONAL AWARENESS // Active Intrusion Campaigns Targeting MoveIt File Transfer Software

What Happened?

Yesterday, Progress Software announced a vulnerability in its MoveIt file transfer software. The vulnerability, which has yet to be issued a CVE value, facilitates the use of web shells and remote code execution (RCE). Exploitation has been acknowledged in public forums with dates as early as May 27, 2023.

Patches are available from the vendor at the link above.

Recommendations

Without mincing words: MoveIt needs to be ruthlessly and efficiently hunted and patched in impacted environments. Shodan shows over 2,500 public-facing MoveIt servers.

Progress Software is recommending that HTTP and HTTPS traffic on ports TCP/80 and TCP/443 be restricted on MoveIt systems until patching can be completed. Falcon Firewall, or any host-based/network firewall, can be used to implement this control.

As there are active campaigns in the wild, mitigating the threat to MoveIt software should be given the highest priority.

Intelligence

Falcon Intelligence customers can use the following links to read technical reporting on MoveIt exploitation [US-1 | US-2 | EU | Gov].

TrustedSec also has a good writeup here.

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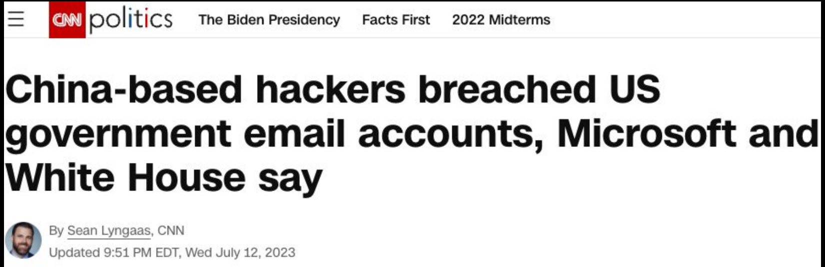
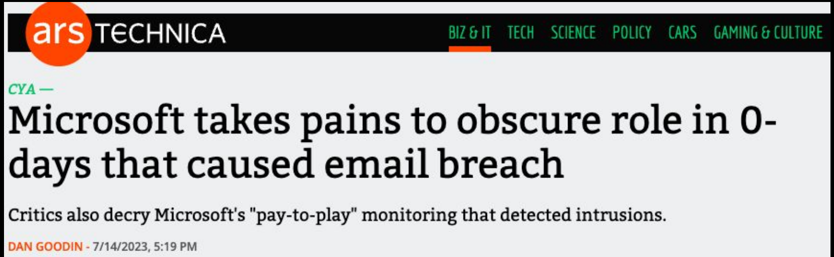


☰ CNN politics The Biden Presidency Facts First 2022 Midterms

China-based hackers breached US government email accounts, Microsoft and White House say

By Sean Lyngaas, CNN
Updated 9:51 PM EDT, Wed July 12, 2023



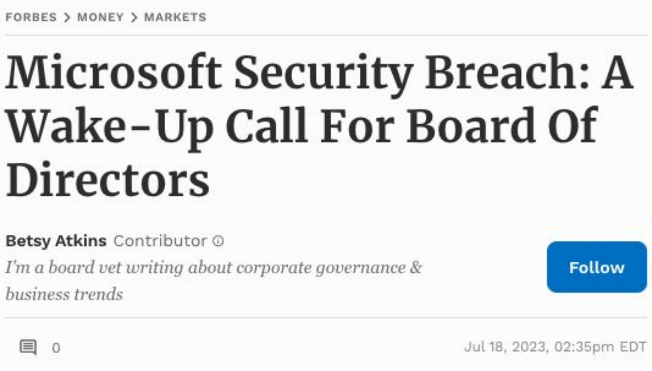
ars TECHNICA BIZ & IT TECH SCIENCE POLICY CARS GAMING & CULTURE

CYA —

Microsoft takes pains to obscure role in 0-days that caused email breach

Critics also decry Microsoft's "pay-to-play" monitoring that detected intrusions.

DAN GOODIN - 7/14/2023, 5:19 PM



FORBES > MONEY > MARKETS

Microsoft Security Breach: A Wake-Up Call For Board Of Directors

Betsy Atkins Contributor ⓘ

I'm a board vet writing about corporate governance & business trends

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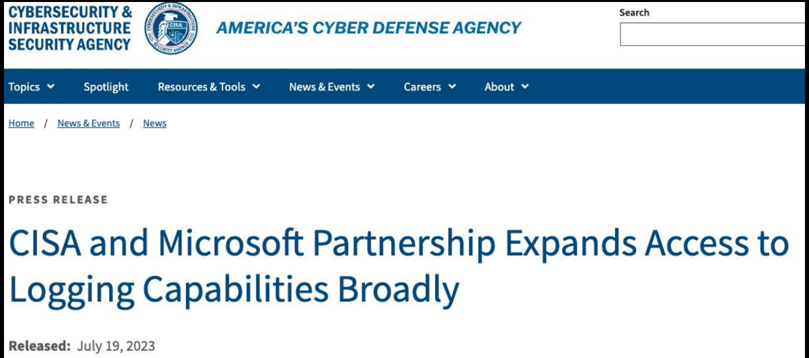
0 Jul 18, 2023, 02:35pm EDT



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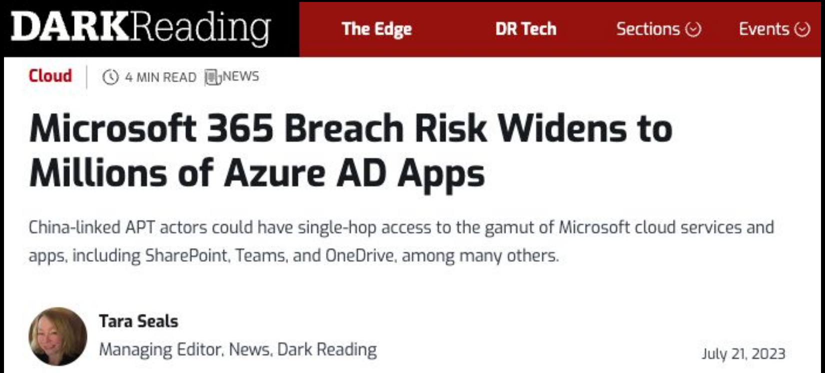
PRESS RELEASE

CISA and Microsoft Partnership Expands Access to Logging Capabilities Broadly

Released: July 19, 2023



DARKReading The Edge DR Tech Sections Events

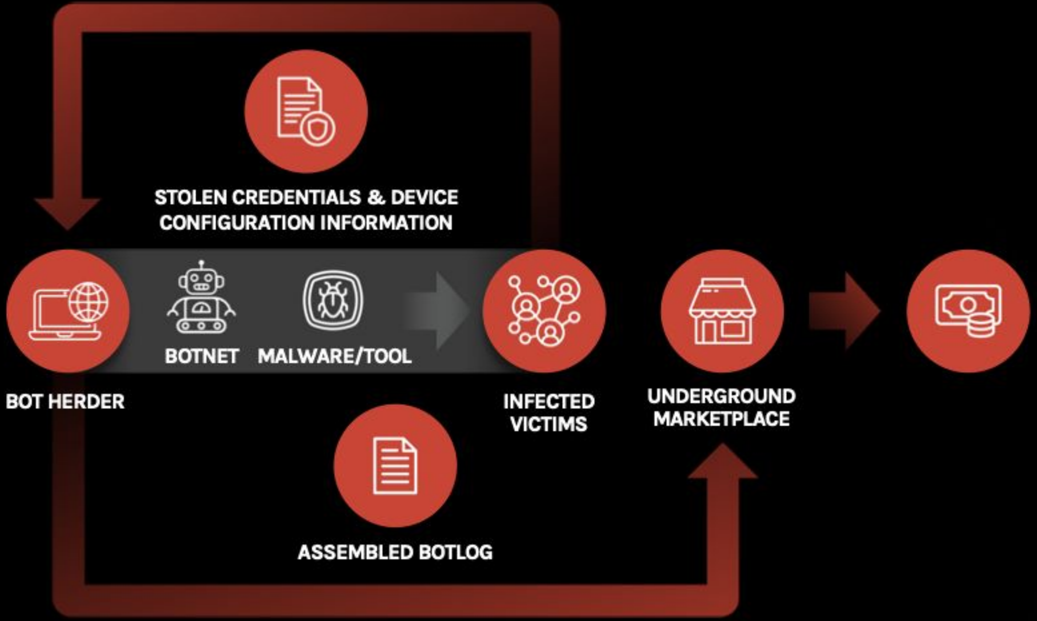
Cloud 4 MIN READ NEWS

Microsoft 365 Breach Risk Widens to Millions of Azure AD Apps

China-linked APT actors could have single-hop access to the gamut of Microsoft cloud services and apps, including SharePoint, Teams, and OneDrive, among many others.

Tara Seals
Managing Editor, News, Dark Reading
July 21, 2023

ACCESS BROKERS: VITAL ROLE IN THE E-CRIME ECOSYSTEM



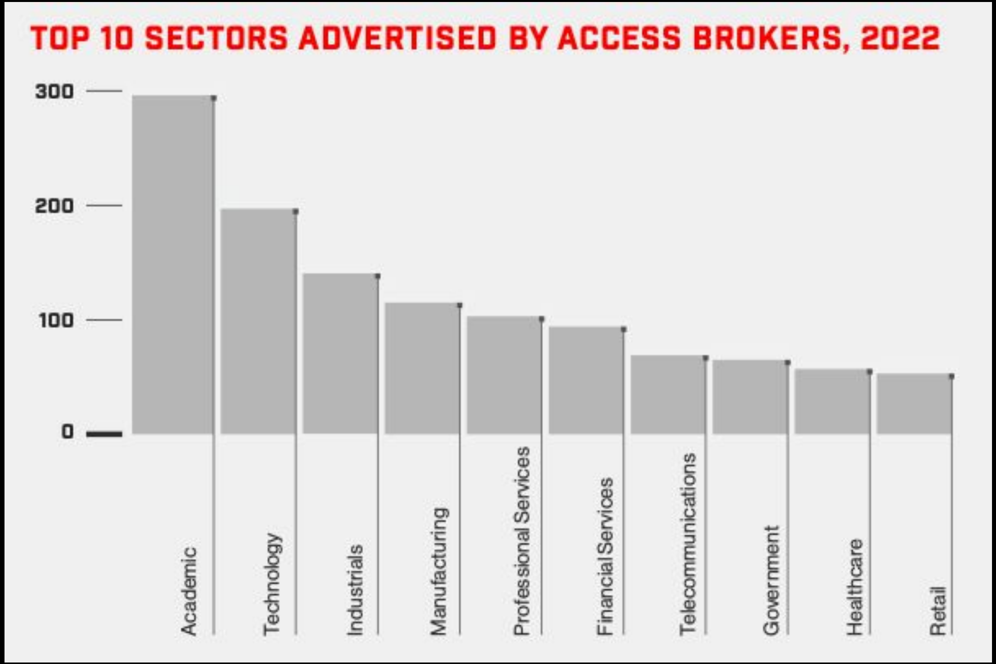
ACCESS BROKERS ARE THREAT ACTORS WITH A SIGNIFICANT HISTORY OF PROVIDING INITIAL ACCESS TO MULTIPLE ENTITIES

ACCESS BROKERS OFTEN PERFORM ADDITIONAL ROLES IN THE ECRIME ECOSYSTEM

LOGIN CREDENTIALS

DEVICE CONFIGURATION DATA

Access Broker Boom



Acceleration of demand

Popularity of services increasing with more than 2,500 advertisements – a 112% increase from 2021

Buy a la carte or in bulk

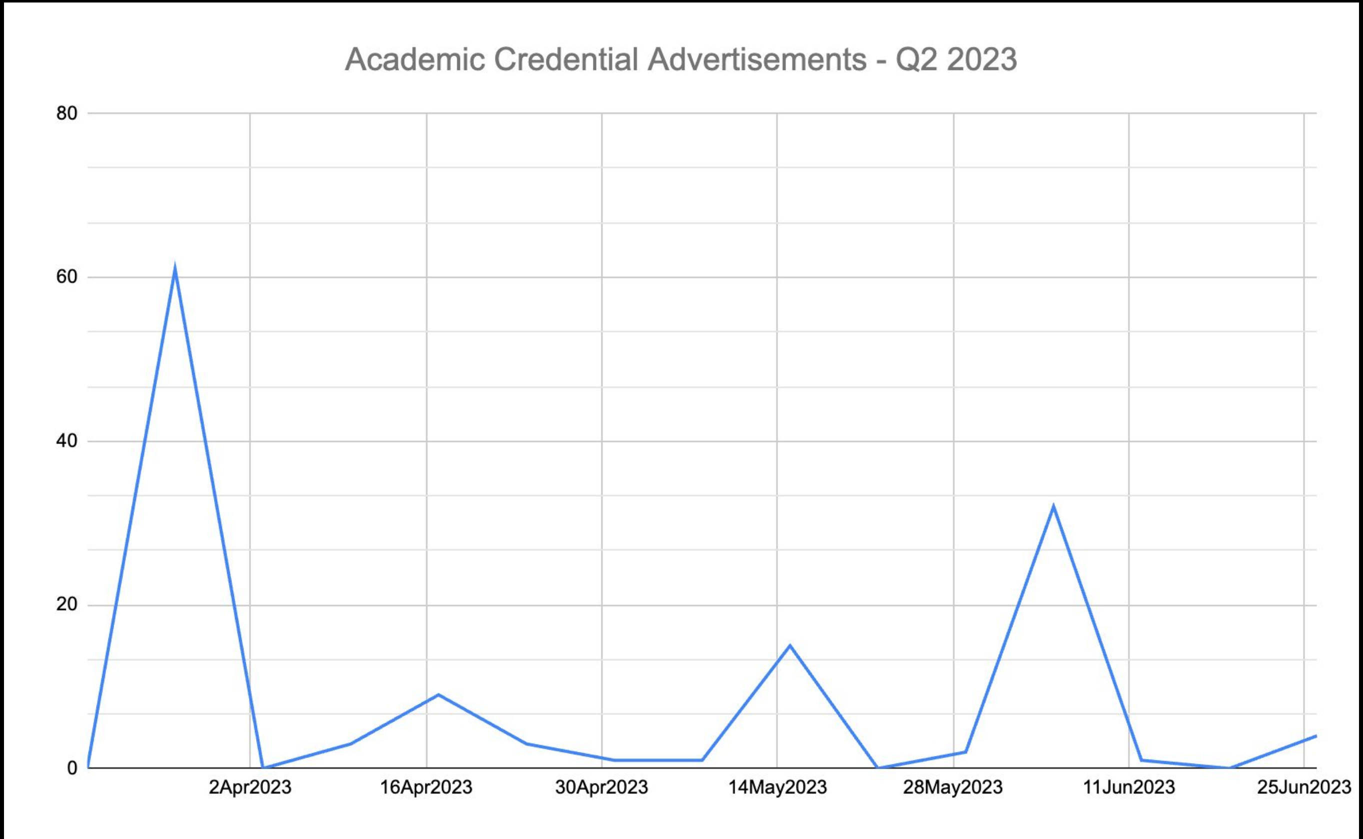
Several brokers will sell in bulk as others will use a "one-access, one-auction" technique.

Access methods remain consistent

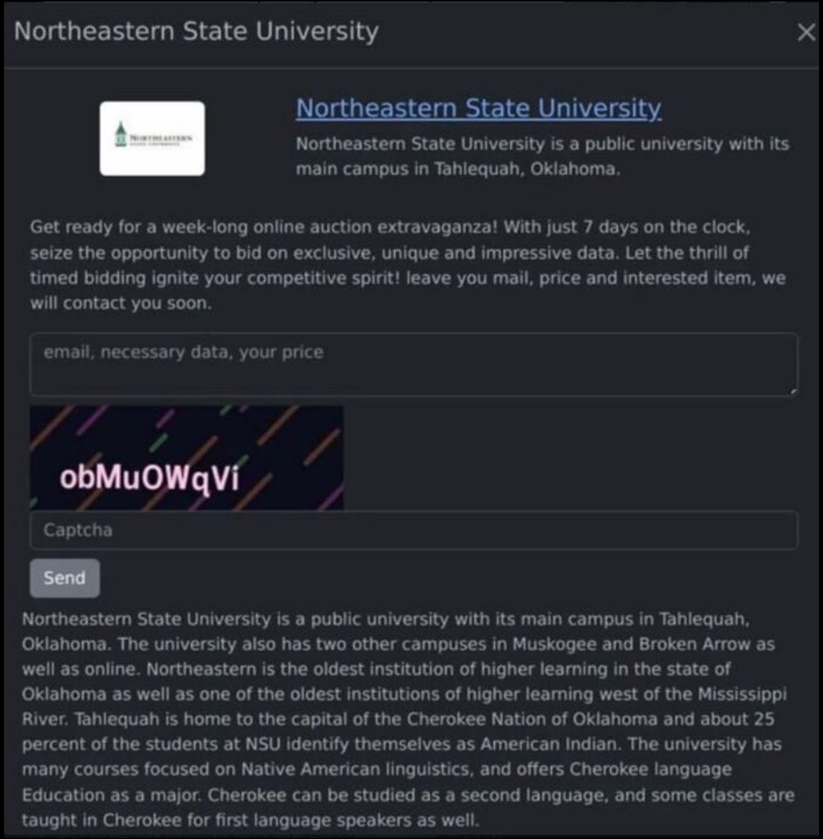
Abuse of compromised credentials obtained by information stealers or purchased in log shops on the dark web

> "80% of all breaches use compromised identities and 50% of organizations have experienced an Active Directory (AD) attack in the last two years."

ACADEMIC CREDENTIAL ADVERTISEMENTS - Q2 2023



DARK WEB ADVERTISEMENT


Northeastern State University
×
NORTHEASTERN STATE UNIVERSITY
email, necessary data, your price
obMuOWqVi
Captcha
Send

Northeastern State University

Northeastern State University is a public university with its main campus in Tahlequah, Oklahoma.

Get ready for a week-long online auction extravaganza! With just 7 days on the clock, seize the opportunity to bid on exclusive, unique and impressive data. Let the thrill of timed bidding ignite your competitive spirit! leave you mail, price and interested item, we will contact you soon.

Northeastern State University is a public university with its main campus in Tahlequah, Oklahoma. The university also has two other campuses in Muskogee and Broken Arrow as well as online. Northeastern is the oldest institution of higher learning in the state of Oklahoma as well as one of the oldest institutions of higher learning west of the Mississippi River. Tahlequah is home to the capital of the Cherokee Nation of Oklahoma and about 25 percent of the students at NSU identify themselves as American Indian. The university has many courses focused on Native American linguistics, and offers Cherokee language Education as a major. Cherokee can be studied as a second language, and some classes are taught in Cherokee for first language speakers as well.

IDENTITY IS A PRIMARY ACCESS MECHANISM FOR THE ADVERSARY

80%

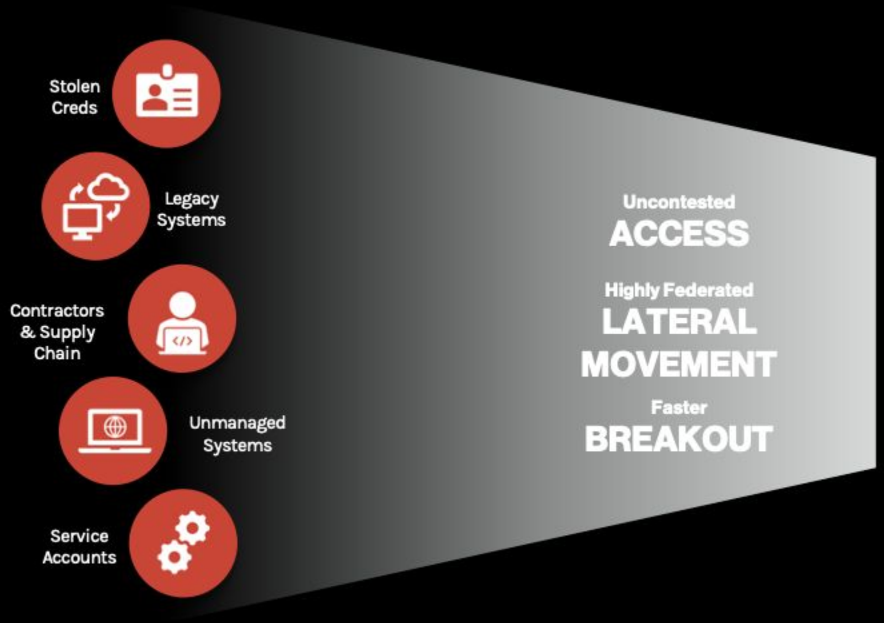
of data breaches have a connection to compromised privileged credentials

- Forrester Research

Breaches from stolen/compromised credentials took the longest to detect:

250 days

- Cost of a Breach Report, 2021



Stolen Creds

Legacy Systems

Contractors & Supply Chain

Unmanaged Systems

Service Accounts

Uncontested **ACCESS**

Highly Federated **LATERAL MOVEMENT**

Faster **BREAKOUT**

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HIGHER ED SPECIFIC THREATS

- Why Higher Ed?
- Adversary Trends
- Denial of Service
- Ransomware & Data Extortion
- Third-Party Tools
- Potential future C2

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WHY HIGHER ED?

- Large user base
- Diverse end-points
- Powerful resources
- Intellectual property
- High-profile
- Federated IT/Cybersecurity models
- “Deep Pockets”
- Trusted access to other sectors:
  - Government (Civilian and Defense)
  - Manufacturing (Engineering, Chemical, Pharmaceutical, Telecom, etc.)
  - Technology
  - Healthcare

Education Sector - Adversary Motivations

Nation State	eCrime	Hacktivist
7	13	2

EDUCATION SECTOR - NATION STATE TRENDS

CHINA	DPRK (North Korea)	RUSSIA	IRAN
1	4	2	0

POTENTIAL DISRUPTIVE IMPACTS TO HIGHER ED

TARGET: INSTRUCTIONAL TECHNOLOGY AND TEACHING TOOLS

TARGET: INTELLECTUAL PROPERTY/RESEARCH INFORMATION

TARGET: STUDENT LIFE/FOOD & DINING SYSTEMS

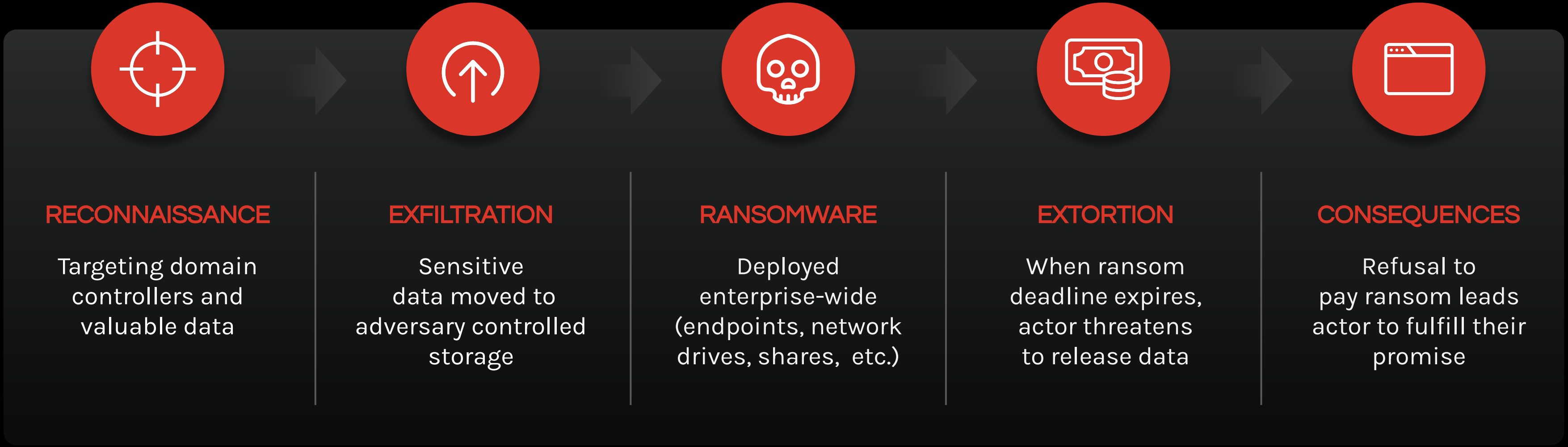
TARGET: SAFETY SECURITY SYSTEMS, INCLUDING VIDEO AND DOOR ACCESS

TARGET: PROFESSOR AND STUDENT DATA AND PII

TARGET: ACADEMIC RECORDS AND GRADES

CURRENT TREND: RANSOMWARE + DATA EXTORTION

Data extortion forces you to choose between the consequences of data leaks or the consequences of ransomware.



RECONNAISSANCE

Targeting domain controllers and valuable data

EXFILTRATION

Sensitive data moved to adversary controlled storage

RANSOMWARE

Deployed enterprise-wide (endpoints, network drives, shares, etc.)

EXTORTION

When ransom deadline expires, actor threatens to release data

CONSEQUENCES

Refusal to pay ransom leads actor to fulfill their promise

RECENT RANSOMWARE INCIDENTS

- Mount Saint Mary College Reports Data Breach Affecting 17,924 Students and Employees, February 7, 2023

- Possible cyber-security breach at five Louisiana schools, March 26, 2023

- Ransomware Forces Shoreline Community College to Go Remote, March 27, 2023

THE UNIVERSITY of NEW ORLEANS
The Dr. Robert A. Savoie College of Engineering
The Boysie Bollinger School of Naval Architecture & Marine Engineering
Civil & Environmental Engineering
Electrical & Computer Engineering
Engineering Management
Mechanical Engineering

REMOTE LEARNING IMPLICATIONS ON HIGHER ED STUDENT DATA SECURITY

- Remote learning expanded data at rest/in transit exponentially.
- While dissipating, ongoing evolution of the pandemic variants poses threat to in-person learning.
- 3rd party productivity and collaboration tool use exploded.
  - Zoom
  - Dropbox
  - Google Cloud
  - Etc.

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THE WAY FORWARD

- CISA Recommendations
- CrowdStrike Recommendations
- 5 Steps to be Prepared

Recent CISA Report on Strengthening K-12 Cybersecurity May Help Institutes of Higher Ed

High Ed Institutions may find the key findings & recommendations useful:

- Develop Cyber IR plan leveraging the NIST CSF
- Build a relationship w/ CISA & FBI regional cybersecurity personnel
- Implement MFA
- Minimize the burden of security
- Training and awareness campaign
- Consider applying for cyber grants

CrowdStrike Recommendations

- Join the MS-ISAC.
- Leverage free MS-ISAC services.*
- Engage in regional ISACs/ISAOs.
- Work with state organizations on the SLCGP.
- Participate in Whole-of-State strategies.
- Engage CrowdStrike RSM.
  - Conduct a free AD Risk Assessment.
  - Conduct a free Cloud Risk Assessment.

CROWDSTRIKE

*https://www.cisecurity.org/ms-isac/services

5 Steps To Be Prepared

1. Gain visibility into your security gaps
2. Prioritize identity protection
3. Prioritize cloud protection
4. Know your adversary
5. Practice makes perfect

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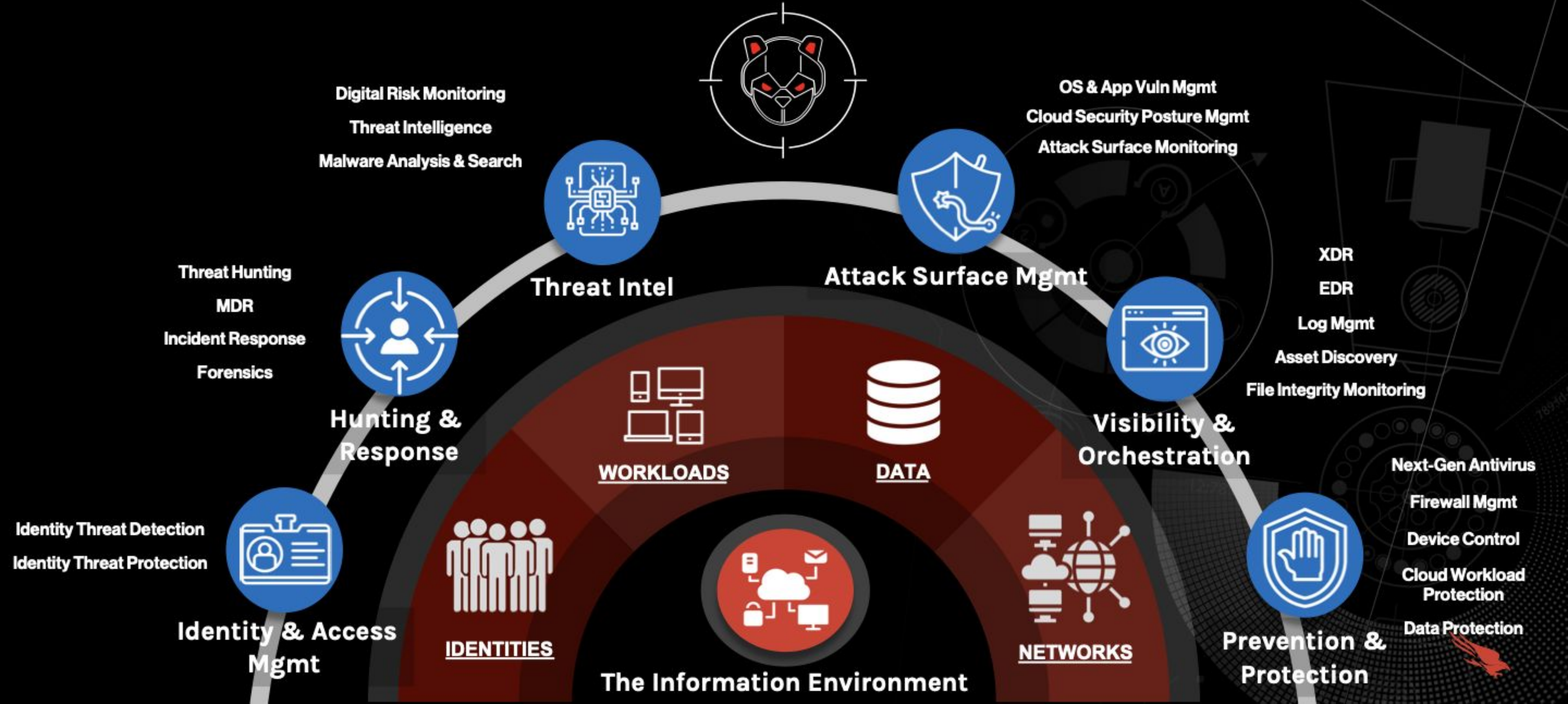
CALL TO ACTION: PROTECT THE INFORMATION ENVIRONMENT FROM THE ADVERSARY THROUGH A COMPREHENSIVE CYBERSECURITY STRATEGY



Identity & Access Mgmt

- Identity Threat Detection
- Identity Threat Protection

Hunting & Response

- Threat Hunting
- MDR
- Incident Response
- Forensics

Threat Intel

- Digital Risk Monitoring
- Threat Intelligence
- Malware Analysis & Search

Attack Surface Mgmt

- OS & App Vuln Mgmt
- Cloud Security Posture Mgmt
- Attack Surface Monitoring

Visibility & Orchestration

- XDR
- EDR
- Log Mgmt
- Asset Discovery
- File Integrity Monitoring

Prevention & Protection

- Next-Gen Antivirus
- Firewall Mgmt
- Device Control
- Cloud Workload Protection
- Data Protection

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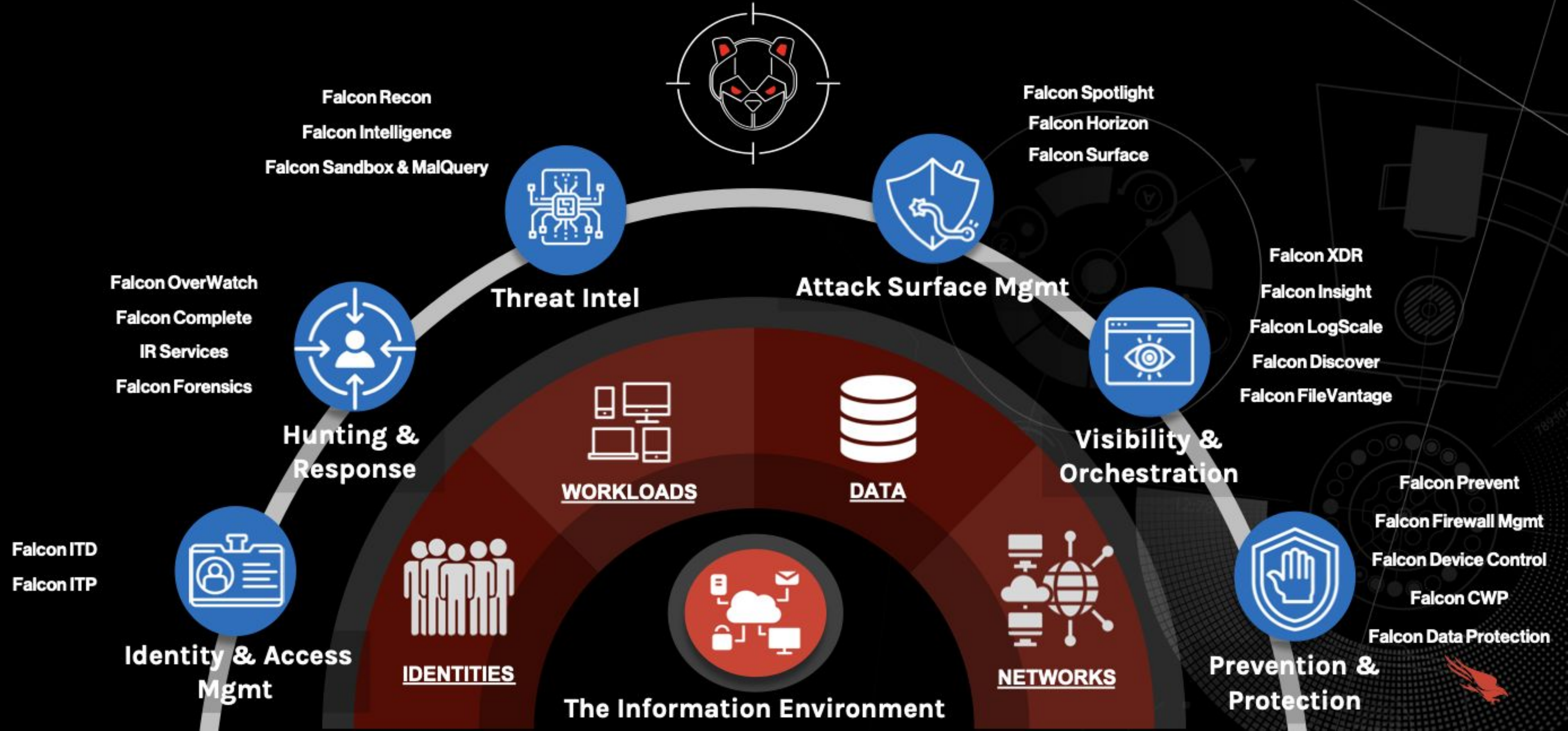
CALL TO ACTION: PROTECT THE INFORMATION ENVIRONMENT FROM THE ADVERSARY THROUGH A COMPREHENSIVE CYBERSECURITY STRATEGY



Falcon ITD

Falcon ITP

Identity & Access Mgmt

Falcon OverWatch

Falcon Complete

IR Services

Falcon Forensics

Hunting & Response

Falcon Recon

Falcon Intelligence

Falcon Sandbox & MalQuery

Threat Intel

Falcon Spotlight

Falcon Horizon

Falcon Surface

Attack Surface Mgmt

Falcon XDR

Falcon Insight

Falcon LogScale

Falcon Discover

Falcon FileVantage

Visibility & Orchestration

Falcon Prevent

Falcon Firewall Mgmt

Falcon Device Control

Falcon CWP

Falcon Data Protection

Prevention & Protection

IDENTITIES

WORKLOADS

DATA

NETWORKS

The Information Environment

CROWDSTRIKE

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