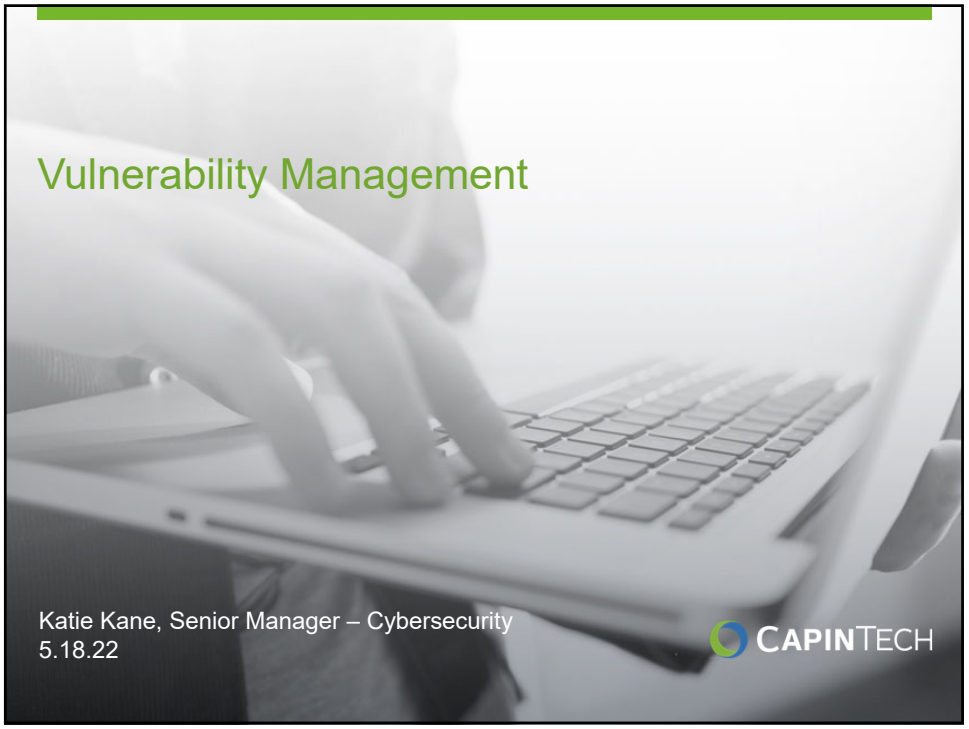
The webcast will start at 1:00 p.m. Eastern

- Visit capincrouse.com/vulnerability-management to access these resources from today's webcast:
  - Handout
  - Recording
- To receive CPE credit you must respond to the polling questions, which are not available on mobile devices. To receive CPE credit you must log in on a computer.
- CPE certificates will be emailed to you within the next few weeks.



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Polling Question 1

Do you want CPE credit?

Objectives

- What is a vulnerability
- Recent vulnerabilities, including zero-day vulnerabilities
- Controls and processes to aid in detection
- Baseline controls for ongoing mitigation

What is a vulnerability?

- Weakness in an information system, system security procedures, internal controls, or implementation that could be exploited or triggered by a threat source
- Hole in code
- Allows cyber criminals to compromise systems
- Discovered daily

Examples of Vulnerabilities

- Software/operating system
- Firewall/network configuration
- Zero-day
- Authentication

Polling Question 2

How prepared do you feel your organization is?

Colonial Pipeline Company — May 2021

- Result of a vulnerability that led to a single compromised VPN password that granted access on April 29, 2021
  - Account was enabled but not active
- Password since discovered inside a batch of leaked passwords on the dark web
  - Colonial employee may have used the same password on another account that was previously hacked

Microsoft Power Apps — August 2021

- Result of a vulnerability in the design of the application
- Approximately 38 million records across 47+ organizations
- Various types of records exposed
  - Employee records; COVID-19 testing, tracing, and vaccinations; names, dates of birth, Social Security numbers, addresses, and demographic details
- Misconfiguration was by third party, not Microsoft directly

Apache Log4j December 2021

- What is Log4j?
- Many don't know how they were affected
- Extensive efforts to pinpoint vulnerable devices
- Thousands of attempts to exploit the vulnerability

Apache Log4j December 2021

- Organizations have a duty to take reasonable steps to mitigate known software vulnerabilities
- FTC threatening action against those failing to mitigate
- Incident response component
- You patched and resolved the issue.
  - But were you already affected?

Bernalillo County — January 2022

- Result of a vulnerability that led to a ransomware attack, resulting in a data breach
- Ramifications
  - Closing government buildings
  - Blocking of jail camera feeds and entrapment of inmates due to failure of automatic door mechanisms
  - Some public services unavailable
- Fire and rescue operations continued due to backup contingencies

Puma — January 2022

- Sports manufacturer notified of data breach following a ransomware attack against a third party (Kronos) in December 2021
- Personal information of over 6,632 employees, including Social Security numbers, compromised
- No customer data was affected
- Did not regain access to data until end of January

Bridgestone — February 2022

- Ransomware attack that led to the disconnection of manufacturing from the network (production halted for a week)
- Announced in March that they would leak the stolen data if ransom not paid
- Able to do a comprehensive security check and reconnect network

GiveSendGo — February 2022

- Result of a vulnerability that led to a compromise of donor data
- Data included names, donation amounts, and limited credit card information of over 92,000 donors
- Website redirected to a rogue domain that offered a downloadable file
- Just three days after, the company was alerted to serious security issues


SECURITY
GAP


Reputation
Risk

Establish Baseline Controls

- Monitor different sites that give vulnerability information
- Monitor vendor alerts
- Establish an inventory of hardware and software so you know what could be vulnerable
- Perform vulnerability scanning
  - Penetration testing

Security Concerns

- Third-party vendors
  - New relationships
  - Existing vendors
- Organization responsibilities
- End-user assistance

New Third-Party Vendor Relationships

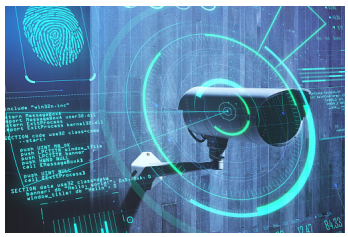
- General inquiry
- Workforce
- Information security
  - Cloud storage
- Policy documentation

Existing Vendor Relationships

- Periodic oversight procedures
  - Review of audit reports
  - Backup or disaster recovery testing
  - Financial condition
  - Existing contracts
  - Vendor oversight

Organizational Responsibilities

- Ongoing monitoring of critical infrastructure and vendor services
  - Patch management reporting
  - Malware management reporting
  - Backup process
  - Vulnerability scanning
  - Network penetration testing



Inventory

- Hardware inventory
  - Servers, workstations, laptops
  - Mobile devices
  - Networking equipment
- Software
  - Installed applications
  - Web applications

Vulnerability Testing

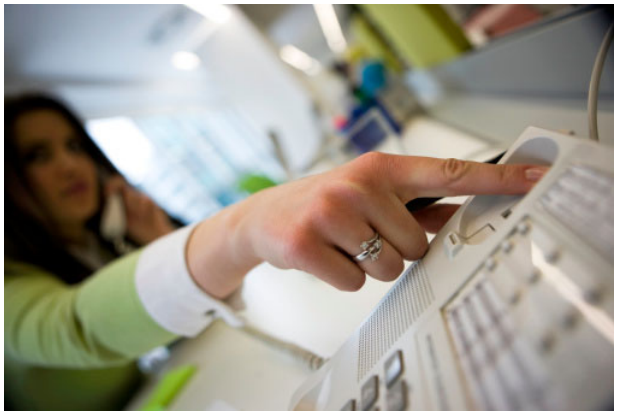
- Identification of potential vulnerabilities that may be exploited
- Assurance of system state (updates and upgrades implemented)
- Identification of security control weaknesses along with related risk ratings according to industry classification

Network Penetration Testing

- Vulnerability verification to prove existence of vulnerabilities
- Benefits
  - Reveals vulnerabilities that can be exploited successfully
  - Reveals ways hackers could actually gain access to your resources
  - Tests ability to respond to a real threat

End-User Assistance

If you see something, say something!

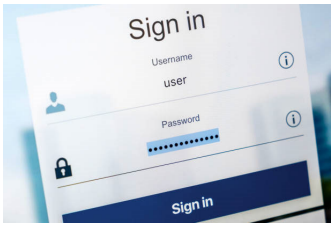


Polling Question 3

Has your organization experienced any major vulnerabilities within your environment?

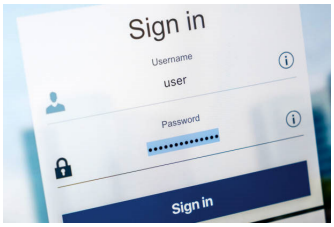
System Provisioning

- Establish system-hardening process
  - Remove unnecessary applications
  - Disable built-in administrator account
  - Install anti-malware solution
  - Apply system restrictions (USB access, local administrative rights, etc.)
- Implement review procedures (never set and forget)



User Provisioning and Access

- Minimum rights for users
- Review regularly
  - Job transfers
  - No longer needed



Password Security

- Numbers, characters, symbols
- Avoid common words
- Change often and when compromised
- Length – 8…12…??

TIME IT TAKES A HACKER TO BRUTE FORCE YOUR PASSWORD IN 2022

Number of Characters	Numbers Only	Lowercase Letters	Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters, Symbols
4	Instantly	Instantly	Instantly	Instantly	Instantly
5	Instantly	Instantly	Instantly	Instantly	Instantly
6	Instantly	Instantly	Instantly	Instantly	Instantly
7	Instantly	Instantly	2 secs	7 secs	31 secs
8	Instantly	Instantly	2 mins	7 mins	39 mins
9	Instantly	10 secs	1 hour	7 hours	2 days
10	Instantly	4 mins	3 days	3 weeks	5 months
11	Instantly	2 hours	5 months	3 years	34 years
12	2 secs	2 days	24 years	200 years	3k years
13	19 secs	2 months	1k years	12k years	202k years
14	3 mins	4 years	64k years	750k years	16m years
15	32 mins	100 years	3m years	46m years	1bn years
16	5 hours	3k years	173m years	3bn years	92bn years
17	2 days	69k years	9bn years	179bn years	7tn years
18	3 weeks	2m years	467bn years	11tn years	438tn years

HIVE SYSTEMS

› Learn about our methodology at hivesystems.io/password

Password Security

- Unique and private passwords
  - Password manager?
- Business ≠ personal
- Account lockout and inactivity threshold
- Biometrics
- Layered security

Multi-Factor Authentication

- Critical for all cloud applications
  - Remote access, email, AWS/Azure
- Mobile devices, email message, tokens
- Consider IP address, time, and day restrictions

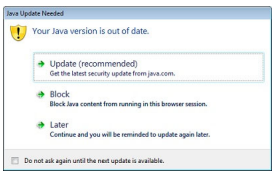
Email

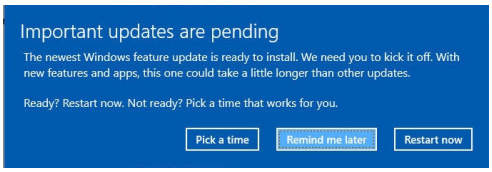
- Easily spoofed or hacked
- Not all services are encrypted
- Confidential email MUST be secured
  - Sending and receiving
- If not needed, limit or restrict web mail

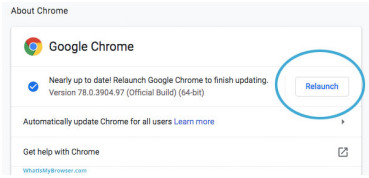
Wi-Fi Networks

- Ensure properly secured Wi-Fi, including those at home offices (WPA2 encryption or better)
  - Avoid use of public Wi-Fi; if necessary, use a VPN!
- Secure password for access
- Guest network for non-business systems (segregate)
- Keep personal and business devices up to date
- Consider the use of mobile hotspots

Malware and Patch Management







Device Management

- Centralized system
  - All devices present
  - Receive latest updates or definition files
  - Remediate issues
- Limited user rights
  - Downloaded apps from Internet
  - Browser add-ons

Web Surfing

- Avoid questionable websites
- Be cautious when downloading
- Use updated browsers
- Inspect URLs
- Be wary of malvertising

Social Networking

- Impersonation
  - Phishing and vishing
- Identity theft
- Pretexting
- Security questions and answers
- Data not always private

Data Storage

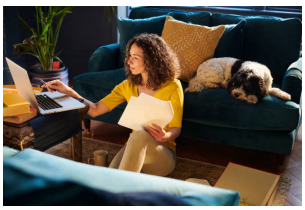
- Cloud applications typically can be accessed from any location on any device
- Risk of applications being accessible on unauthorized devices, resulting in data management concerns

Internet of Things (IoT) Devices

- Inventory devices in use
- Layered security controls
  - Strong passwords
  - Evaluate data and analytics sharing
  - Patching procedures
  - Disable features
  - Segmented network
- Consider listening capability

Remote Access Tools

- VPNs, LogMeIn, GoToMyPC, Remote Desktop Protocol (RDP)
- Increase in end users
- Require proper security measures
  - Quick fixes vs. long-term solution
- Does this affect strategic planning?



Shadow IT

- Apps or devices that are utilized without IT knowledge
  - Personal or mobile devices
- Rogue cloud services
  - Personal email, document scanning, cloud storage
- Appropriate authorization procedures

Incident Response

- Determine cause of the incident
- Determine the impact and how to resolve
- Notify appropriate parties
- Contact vendors, if applicable

Polling Question 4

Do you feel that this presentation was helpful?

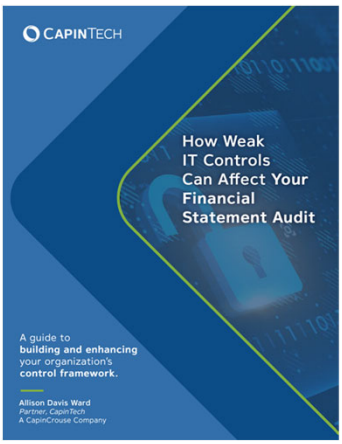
Key Takeaways

- New threats happening every day — no one is immune!
- Loss of reputation can be significant
- Manage vendor relationships appropriately
- Establish ways to identify vulnerabilities within your own environment

Key Takeaways

- Maintain adequate security controls
  - Provide necessary tools for users
  - Doesn’t have to be expensive!
  - Train to build culture of awareness

New E-book Now Available!



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Questions?

Thanks!

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