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Connect to Protect

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# Building an Effective Supply Chain Security Program

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# Supply Chain Security: What It Means



- Supply chain security is a program that focuses on the potential risks associated with an organization's suppliers of goods and services
  - Attackers are focusing on this!
- There are many ways that a supply chain breach could occur
  - Software compromise, credential theft, and more are becoming common scenarios

# Supply Chain Breach Example: Target



- Target experienced a significant breach of roughly 110 million customers' data, with at least 40 million payment cards stolen.
- During the course of the investigation, it was found that Target was initially breached through a connection established by one of their vendors, HVAC vendor Fazio Mechanical Services

# Supply Chain Breach Example: Home Depot

- Home Depot, another large retailer, also claims that its credit card breach in 2014 was initially due to stolen credentials from a third-party vendor.
- In many of the most public cases we have seen, the attackers have targeted personal data, health care information and financial data, such as debit and credit card details.

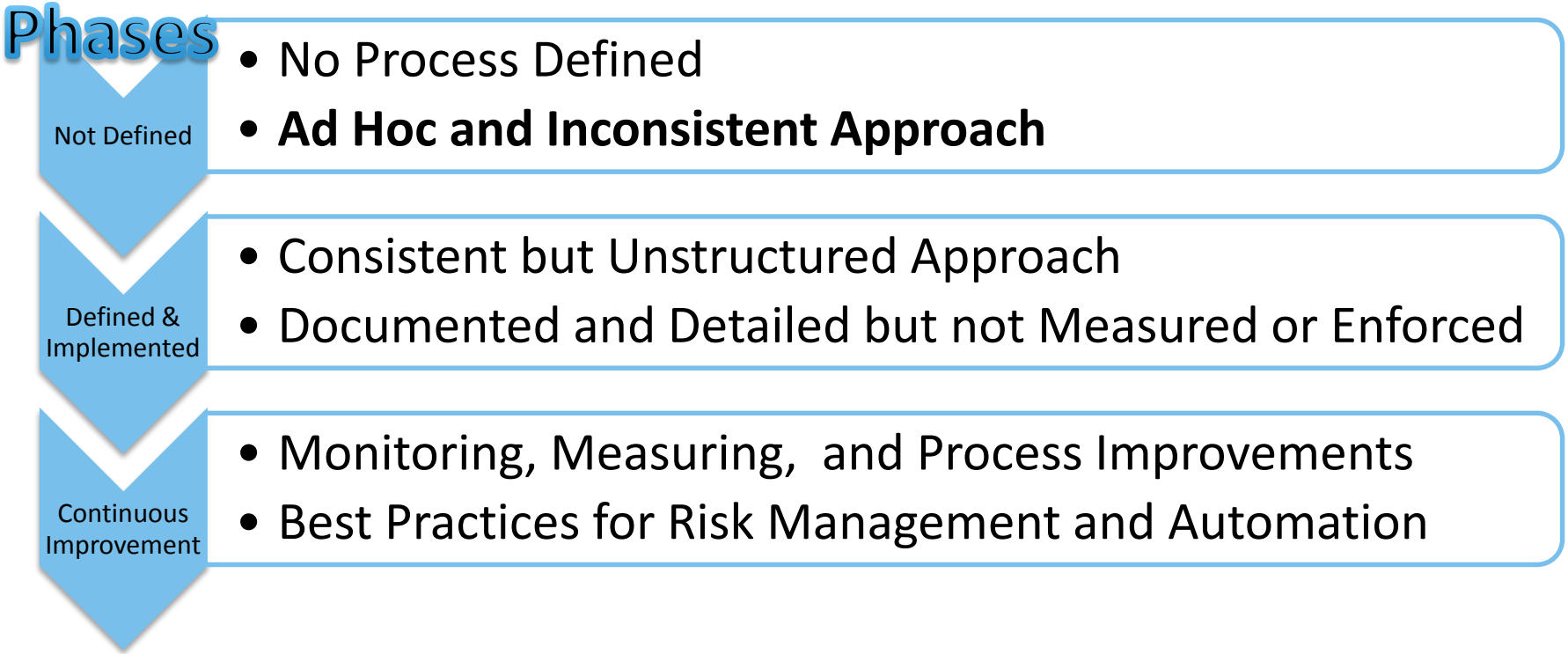
# Supply Chain Breach Example: OPM



- In 2015, the U.S. Office of Personnel Management (OPM) revealed a significant breach of 22 million records including sensitive data tied to numerous federal employees, contractors and military personnel.
- This breach, like many others, seems to have originated with stolen credentials from a background check provider that worked with OPM, KeyPoint Government Solutions

# Getting a Handle on Vendor Management

# Current State



# Vendor Management: Define Important Vendors



- **Define Important Vendors**
  - "Important" vendors can mean many things
- **These are vendors that:**
  - Are critical to business operations
  - Maintain unique or legacy components of importance
  - Provide critical services

# Vendor Management: Specify Primary Contacts



- **Specify primary contacts**
  - Coordinate due diligence on vendors and report to senior leadership using a risk-based approach
  - Maintain knowledge of, and compliance with, policies and reporting requirements.
  - File documentation and paperwork with the legal and contracting teams to ensure there is a central repository and audit trail.
  - Coordinate broad communication with those who can add value in vendor oversight

# Vendor Management: Establish Guidelines and Controls

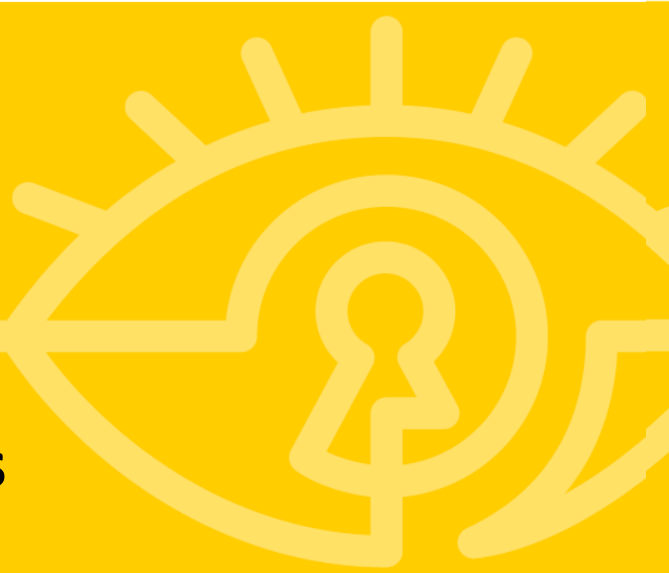


- **Policies should include:**
  - Requiring the right to audit and test the security controls of vendors and service providers annually, upon significant changes to the relationship and in response to audit requests or events
  - Requiring vendors to adhere to security monitoring requirements
  - Requiring periodic reports from the vendors and service providers demonstrating service level attainment and performance management
  - Requiring vendors and service providers to provide timely notification pursuant to any security breaches or incidents that may cause impact to the organization

# Vendor Management: Integrate with Organization's Practices



- With the pieces in place, a vendor management program can now start to integrate with the organization's assessment and audit practices
- Depending on the industry, organization, and culture, these practices will vary widely



# Supply Chain Security Best Practices

# People, Process and Technology

# Best Practices: People



- **These should be in place at supply chain companies**
- **HR Teams: Background checks should be performed on a regular basis for both new and existing employees and contractors**
  - Every 6-12 months is ideal
- **Monitor all staff that work with your organization's data and systems for changes to job status and requirements**
  - Access to critical systems should be monitored, and all third-party access should be revoked after a defined period of inactivity

# Best Practices: Employment Agreements

- HR and security teams should verify that security requirements are clearly spelled out in contracts for supply chain personnel
- Acceptable use provisions should be in place for supply chain organization employees through their employment agreements

# Best Practices: Process



- **Create a supply chain assessment questionnaire and checklists:**
  - Application security
  - Audit and compliance
  - Business continuity and disaster recovery capabilities
  - Change and configuration management
  - Data security and data life cycle management
  - Physical (data center) security
  - Encryption and key management
  - Governance and risk management
  - Identity and access management (IAM)
  - Infrastructure and IT operations security
  - Threat and vulnerability management

# Best Practices: Process


- **Supply chain review should follow these guidelines:**
  - Decide on a list of controls with which supply chain organizations need to demonstrate compliance
  - Determine the frequency of security reviews for internal and regulatory compliance needs
  - Define a remediation and arbitration process for handling supply chain organizations that are not currently meeting security requirements

# Process Best Practices: Code Review



- **Code analysis of software should ideally be done for supply chain partners**
- **Having the code reviewed should ideally be the responsibility of the vendors, and they should attest to software security via a report issued prior to installation or updates**
  - Contracts should require this!
- **Pen testing of software should also be allowed in contracts**

# Process Best Practices: Vulnerability Mgmt



- **Supply chain vendors should have to provide patches to their products in a timely fashion**
  - Heartbleed, Shellshock, and others have affected us significantly
  - SLAs should be in place for patch creation
- **Supply chain partners should be required to notify you of data breaches that may materially impact you**
  - Incidents should be communicated, too…could you be the next target?

# Best Practices: Technology



- **The first, and perhaps simplest, change is to begin using technology services that offer supplier risk ratings or rankings compared to other industry organizations.**
  - Monitoring the overall risk ratings of supply chain participants from other organizations working with them provides information on industry perceptions of security posture

| Priority | |
|---|---|
| 1 | Urgent action – (Risk no 15 – 25) |
| 2 | High Priority – (Risk no 10 – 12) |
| 3 | Medium Priority – (Risk no 5 – 9) |
| 4 | Low Priority – Risk no (2 – 4) |
| 5 | Very Low Priority– No Action reqd (Risk no 1) |

# Technology Best Practices: Privileges



- **Vendors and partners with privileges should be controlled:**
  - Enforce separation of duties and least privilege for accounts
  - Implement strict password and account-management policies and practices
  - Log, monitor, and audit all vendor/partner online actions
  - Consider a “sandboxed” approach for remote access
- **Most importantly, all organizations need a policy and approach to managing and monitoring privileged users**

# Technology Best Practices: Network Isolation



- **Network isolation and segmentation changes can help with improving supply chain security**
- **Remote attacks through supply chain access should be limited**
  - Careful zoning and network isolation with strategic access controls can help prevent this
  - Multiple authentication points (while annoying) can be useful
- **Logs and events from remote access systems (VPNs, etc.) should be carefully monitored**
- **Jump boxes and "thin client" approaches are also valuable**

# Technology Best Practices: Analytics+Threat Intelligence

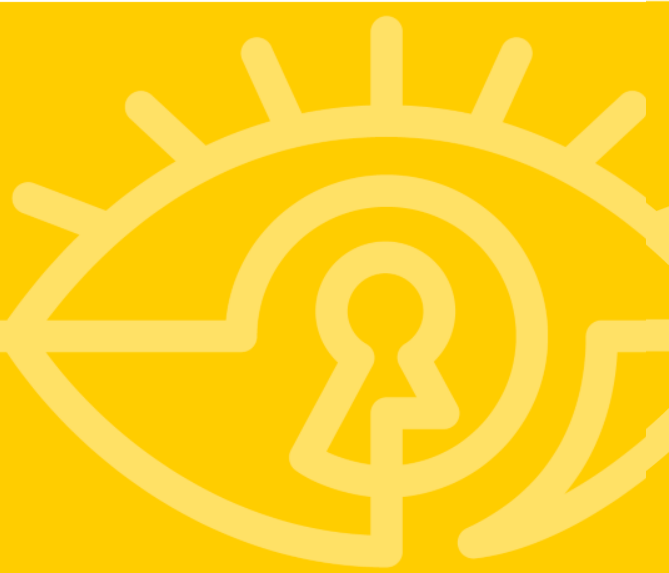


- **Many organizations use or plan to use security analytics tools and threat intelligence to help identify and combat advanced attacks**
- **Analytics platforms provide:**
  - Deep data sets
  - Pattern recognition
  - Machine learning
- **Threat intelligence can help to correlate information gleaned from internal sources with indicators of compromise spotted by other organizations**

# Technology Best Practices: Exfiltration Monitoring



- Monitoring egress points from the internal network is another way to improve security within the supply chain today
- Some of the most common protocols and standards used for data exfiltration or command and control include HTTP/HTTPS, FTP/FTPS/SFTP, SSH, IRC, Email, P2P, and DNS or ICMP for covert channels
- Monitor at NGFW, IDS/IPS, Proxy, and in DNS



# Wrapping Up

# Applying What We've Discussed



- Next week you should:
  - Review your existing vendor management/procurement capabilities
- In the first three months following this presentation you should:
  - Update product and vendor inventories
  - Define appropriate controls for different vendor types (check best practices discussed earlier)
- Within six months you should:
  - Update risk assessment processes for vendor review
  - Ensure all **critical** vendors have complete reviews & documentation