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Learning Style: Virtual Classroom

Technology:

Difficulty: Beginner

Course Duration:

Implementing Cisco IOS Network Security (IINS)



Course Outline:

Module 1: Security Concepts

Lesson 1: Threatscape

- Threatscape Overview
- DoS and DDoS
- Spoofing
- Reflection and Amplification Attacks
- Social Engineering
- Evolution of Phishing
- Password Attacks
- Reconnaissance Attacks
- Buffer Overflow Attacks
- Man-in-the-Middle Attacks
- Malware
- Vectors of Data Loss and Exfiltration
- Hacking Tools
- Other Considerations
- Summary

Lesson 2: Threat Defense Technologies

- Firewalls
- Intrusion Prevention Systems
- Content Security
- VPNs
- Endpoint Security
- Logging
- Summary

Lesson 3: Security Policy and Basic Security Architectures

- Information Security Overview
- Classifying Assets, Vulnerabilities, and Countermeasures
- Managing Risk
- Regulatory Compliance
- Principles of Secure Network Design
- Security Policy
- Security Zones
- The Functional Planes of the Network
- Summary

Lesson 4: Cryptographic Technologies

- Cryptography Overview
- Hash Algorithms
- Encryption Overview
- Cryptanalysis
- Symmetric Encryption Algorithms
- Asymmetric Encryption Algorithms
- Use Case: SSH
- Digital Signatures

- PKI Overview
- PKI Operations
- Use Case: SSL/TLS
- Key Management
- Discovery 1: Exploring Cryptographic Technologies
- Summary

Lesson 5: Module Summary

- References

Lesson 6: Module Self-Check

Module 2: Secure Network Devices

Lesson 1: Implementing AAA

- Introduction to AAA
- AAA Databases
- AAA Protocols
- AAA Servers
- SSH Configuration and Operation on IOS
- IOS Authorization with Privilege Levels
- Implementing Local AAA Authentication and Authorization
- Authorization with Role-Based CLI
- TACACS+ on IOS
- Discovery 2: Configure and Verify AAA
- Summary

Lesson 2: Management Protocols and Systems

- IOS File System
- Copying Files to and from Network Devices
- Validating IOS Images Using MD5
- Digitally Signed Images
- IOS Resilient Configuration
- NTP
- Syslog
- Memory and CPU Threshold Notifications
- Netflow
- Configuration Management Protocol Options
- HTTPS Configuration and Operation
- SNMPv3 Configuration and Operation
- Locking Down Management Access with ACLs
- Other Password Considerations
- Discovery 3: Configuration Management Protocols
- Summary

Lesson 3: Securing the Control Plane

- The Control Plane
- Control Plane Policing
- Control Plane Protection
- Authenticating Routing Protocols
- OSPF Route Authentication
- EIGRP Route Authentication
- Discovery 4: Securing Routing Protocols

Lesson 4: Module Summary

- References

Lesson 5: Module Self-Check

Module 3: Layer 2 Security

Lesson 1: Securing Layer 2 Infrastructure

- Introduction to Layer 2 Security
- Ethernet Switching Overview
- VLAN Overview
- VLAN Configuration
- 802.1Q Trunking
- Trunk Attacks
- Trunk Configuration and Attack Mitigation
- CDP
- ACL Primer
- ACLs on Switches
- MAC Address Abuse
- Port Security
- Private VLANs
- Private VLAN Edge
- Private VLAN Proxy Attack and Mitigation
- Discovery 5: VLAN Security and ACLs on Switches
- Discovery 6: Port Security and Private VLAN Edge
- Summary

Lesson 2: Securing Layer 2 Protocols

- STP Overview
- STP Attacks
- STP Attack Mitigation
- DHCP Overview
- DHCP Attacks
- DHCP Snooping
- ARP Overview
- ARP Cache Poisoning Attack
- Dynamic ARP Inspection
- Discovery 7: Securing DHCP, ARP, and STP
- Summary

Lesson 3: Module Summary

- References

Lesson 4: Module Self-Check

Module 4: Firewall

Lesson 1: Firewall Technologies

- Firewall Overview
- Packet Filters
- Stateful Firewalls
- Proxy Servers
- Next Generation Firewalls
- Logging
- Discovery 8: Explore Firewall Technologies
- Summary

Lesson 2: Introducing the Cisco ASA v9.2

- Introducing the Cisco ASA Family of Security Appliances
- Cisco ASA Firewall Features
- Modes of Deployment
- Security Contexts
- High-Availability and Failover
- Configuring Management Access on the Cisco ASA
- Configuring Cisco ASA Interfaces
- NAT Fundamentals
- Configure NAT on Cisco ASA
- Configure Static NAT on Cisco ASA
- Configure Dynamic NAT on Cisco ASA
- Configure PAT on Cisco ASA
- Configure Policy NAT on Cisco ASA
- Verify NAT Operations
- Discovery 9: Cisco ASA Interfaces and NAT
- Summary

Lesson 3: Cisco ASA Access Control and Service Policies

- Overview of Interface Access Rules
- Configure Interface Access Rules
- Configure Object Groups
- Introducing Cisco ASA Modular Policy Framework
- Configuring Cisco MPF Service Policy Rules
- Discovery 10: Access Control Using the Cisco ASA
- Summary

Lesson 4: Cisco IOS Zone Based Firewall

- Zone-Based Policy Firewall Overview
- Zones and Zone Pairs
- Introduction to Cisco Common Classification Policy Language
- Default Policies, Traffic Flows, and Zone Interaction
- Cisco Common Classification Policy Language (C3PL) Configuration Overview
- Configuring Zone-Based Policy Firewall Class-Maps
- Configuring Zone-Based Policy Firewall Policy-Maps
- Discovery 11: Exploring Cisco IOS Zone-Based Firewall
- Summary

Lesson 5: Module Summary

- References

Lesson 6: Module Self-Check

Module 5: VPN

Lesson 1: IPsec Technologies

- IPsec VPNs
- IPsec Security Services
- IPsec Framework
- Internet Key Exchange
- IKE Phase 1
- ISAKMP Configuration
- IPsec Protocols
- IKE Phase 2
- IPsec Configuration
- Suite B Cryptographic Standard
- IKE Version 2
- IPsec with IPv6
- Discovery 12: Explore IPsec Technologies
- Summary

Lesson 2: Site-to-Site VPN

- Site-to-Site Tunnel Negotiation Process
- Configuring Site-to-Site IPsec VPN
- Step 1: Ensure That ACLs Are Compatible with IPsec
- Step 2: Create ISAKMP IKE Phase 1 Policies
- Step 3: Configure Transform Sets
- Step 4: Create Crypto ACLs Using Extended ACLs
- Step 5: Configure IPsec Crypto Maps
- Verifying the IPsec Configuration
- Configuring Site-to-Site VPN on Cisco ASA
- Monitoring Site-to-Site VPN Configuration in ASDM
- Discovery 13: IOS-Based Site-to-Site VPN
- Discovery 14: ASA-Based Site-to-Site VPN

- Summary

Lesson 3: Client Based Remote Access VPN

- Secure Sockets Layer and Transport Layer Security
- Basic Cisco AnyConnect SSL VPN
- Cisco AnyConnect SSL VPN Solution Components
- SSL VPN Server Authentication
- SSL VPN Client Authentication
- SSL VPN Client IP Address Assignment
- Basic AnyConnect SSL VPN Configuration Tasks
- Discovery 15: Remote Access VPN: ASA and AnyConnect
- Summary

Lesson 4: Clientless Remote Access VPN

- Cisco Clientless SSL VPN
- Cisco Clientless SSL VPN Use Cases
- Cisco Clientless SSL VPN Resource Access Methods
- Basic Clientless SSL VPN Solution
- Server Authentication in Basic Clientless SSL VPN
- Client-Side Authentication in Basic Clientless SSL VPN
- Clientless SSL VPN URL Entry and Bookmarks
- Basic Access Control for Clientless SSL VPN
- Basic Clientless SSL VPN Configuration Tasks
- Discovery 16: Clientless Remote Access VPN
- Summary

Lesson 5: Module Summary

- References

Lesson 6: Module Self-Check

Module 6: Advanced Topics

Lesson 1: Intrusion Detection and Protection

- Introduction to IPS
- IPS Terminology
- Evasion Techniques and Countermeasures
- Protecting the Network with FireSIGHT
- FireSIGHT Protection Before an Attack
- FireSIGHT Protection During an Attack
- FireSIGHT Protection After an Attack
- FireSIGHT Deployment Options
- Inline and Passive Mode Deployment Options
- Summary

Lesson 2: Endpoint Protection

- Endpoint Security Overview
- Personal Firewalls
- Antivirus and Antispyware
- Centralized Endpoint Policy Enforcement
- Cisco AMP for Endpoints
- Summary

Lesson 3: Content Security

- Cisco ESA Deployment
- Cisco ESA Overview
- Cisco ESA Features and Benefits
- Cisco ESA GUI Management
- Cisco ESA Mail Processing
- Cisco WSA Deployment
- Cisco WSA Overview
- Cisco WSA Features and Benefits
- Cisco WSA GUI Management
- Cisco CWS Deployment
- Cisco CWS Overview
- Cisco CWS Features and Benefits
- Summary

Lesson 4: Advanced Network Security Architectures

- Modular Network Architectures
- Security Issues in Modern Networks
- Identity Management
- BYOD Challenge
- Cisco TrustSec
- Summary

Lesson 5: Module Summary

- References

Lesson 6: Module Self-Check

Lab Outline

Challenge 1: Configure AAA and Secure Remote Administration

- Configure AAA and Secure Remote Administration

Challenge 2: Configure Secure Network Management Protocols

- Configure Secure Network Management Protocols

Challenge 3: Configure Secure EIGRP Routing

- Configure EIGRP route authentication

Challenge 4: Configure Secure Layer 2 Infrastructure

- Configure Secure Layer 2 Infrastructure

Challenge 5: Configure DHCP Snooping and STP Protection

- Configure DHCP Snooping and STP Protection

Challenge 6: Configure Interfaces and NAT on the Cisco ASA

- Configure Interfaces and NAT on Cisco ASA

Challenge 7: Configure Network Access Control with the Cisco ASA

- Configure Network Access Control with the Cisco ASA

Challenge 8: Configure Site-to-Site VPN on IOS

- Configure Site-to-Site VPN on IOS

Challenge 9: Configure AnyConnect Remote Access VPN on ASA

- Configure AnyConnect Remote Access VPN on ASA

Challenge 10: Configure Clientless SSL VPN on the ASA

- Configure Clientless SSL VPN on the ASA