

## **Understanding network security principles**

- Security threats classifications
- Controls in security solutions
- Understanding methods of network attacks
- Hacker types
- Attacker types
- IP-spoofing attack and counter-measurements
- Understanding confidentiality attacks
- Understanding Integrity attacks
- Understanding availability attacks
- Creating a Cisco self-defending network

## **Securing Routers**

- IOS Security features
- Cisco Integrated Services Routers (ISR)
- ISR-Enhanced Features
- Creating local users Database
- Overview about AAA
- AAA authentication configuration
- AAA authorization configuration
- AAA Accounting configuration
- Troubleshooting AAA using CLI
- Configuring AAA using SDM
- Configuring AAA using Cisco Secure ACS
- Overview of TACACS+ and its Attributes
- Configuring Cisco routers to use TACACS + using CLI and SDM
- Overview of RADIUS and its attributes
- Comparing TACACS+ and RADIUS
- Managing Router passwords
- Limiting number of failed login attempts
- Telnet connection login enhancements
- Configuring privilege levels
- CLI views
- Protecting router files and Cisco IOS Resilient configurations
- Security Device Manager (SDM)
- Preparing to launch SDM and exploring SDM
- Locking down the router using CLI and SDM
- Using Secure management and reporting

## **Securing Switches**

- Defending against layer 2 attacks
- Basic approaches to protecting layer2 switches
- VLAN hopping

- Switch spoofing
  - Double tagging
  - STP attacks
  - DHCP server spoofing
  - CAM table overflow attack
  - Spoofing MAC addresses
- Additional Cisco catalyst switches security features
- Port Security Configurations
- IEEE 802.1x

### **Firewall(Router based)**

- Introduction to firewall
- How firewall works
- Firewall Types
- Overview of Cisco Adaptive Security Appliances (ASA)
- Configuring ACL
- Implementing Cisco IOS Zone-Based Firewall
- Cisco IOS firewall
- Traffic Filtering and traffic inspection
- SPI and CBAC
- Understanding Security zones
- Zone membership rules, restrictions, and pairs
- Zone firewall policies

### **Intrusion Prevention System (IPS) and Intrusion detection Systems (IDS)**

- Overview about IPS and IDS
- Detection methods
- Network-based Vs Host-based IPS
- IDS and IPS appliances
- Signature types
- Alarms
- Overview of IPsec
- Introduction to cryptography
- Cryptography types
- Cryptanalysis
- Encryption algorithm categorizations
- Symmetric encryption protocols: DES, 3DES, AES,
- Asymmetric encryption protocols: RSA
- Block cipher and stream cipher
- Understanding Security algorithms
- Understanding cryptographic hash

Hash algorithms: MD5, SHA-1  
HMAC  
Applications of cryptographic hash  
Understanding digital signature  
Digital signature scheme  
Digital Signature Algorithm (DSA)  
Key management  
Understanding Diffie-Hellman key exchange  
Understanding Public Key Infrastructure (PKI)  
PKI components  
PKI Standards  
Using Certificates  
SSL VPN  
How IPsec Works  
Internet Key Exchange (IKE) modes and phases  
AH and ESP  
IPsec modes  
Cisco VPN solutions and products  
VPN design consideration and recommendations  
Configuring IPsec Site-to-Site VPN using CLI  
Configuring IPsec Site-to-Site VPN using SDM

CCNA security only include router based firewall but we include dedicated product ASA firewall with concepts, theory with practical.