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CCIE SECURITY

SYLLABUS

Prepared For :
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Course Outline

PERIMETER SECURITY AND INTRUSION PREVENTION (20%)

Deployment modes on Cisco ASA and Cisco FTD

- Routed
- Transparent
- Single
- Multi-Context
- Multi-Instance

Firewall features on Cisco ASA and Cisco FTD

- NAT
- Application inspection
- Traffic zones
- Policy-based routing
- Traffic redirection to service modules
- Identity firewall

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Security features on Cisco IOS/IOS-XE

- Application awareness
- Zone-Based Firewall (ZBFW)
- NAT

Cisco Firepower Management Center (FMC) features

- Alerting
- Logging
- Reporting

NGIPS deployment modes

- In-Line
- Passive
- TAP

Next Generation Firewall (NGFW) features

- SSL inspection
- user identity
- geolocation
- AVC

Detect, and mitigate common types of attacks

- DoS/DDoS
- Evasion Techniques
- Spoofing
- Man-In-The-Middle
- Botnet

Clustering/HA features on Cisco ASA and Cisco FTD

Policies and rules for traffic control on Cisco ASA and Cisco FTD

Routing protocols security on Cisco IOS, Cisco ASA and Cisco FTD

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Network connectivity through Cisco ASA and Cisco FTD
Correlation and remediation rules on Cisco FMC

SECURE CONNECTIVITY AND SEGMENTATION (20%)

- AnyConnect client-based remote access VPN technologies on Cisco ASA, Cisco FTD, and Cisco Routers.
- Cisco IOS CA for VPN authentication
- FlexVPN, DMVPN, and IPsec L2L Tunnels
- Uplink and downlink MACsec (802.1AE)
- VPN high availability using

1. Cisco ASA VPN clustering
2. Dual-Hub DMVPN deployments

- Infrastructure segmentation methods

3. VLAN
4. PVLAN
5. GRE
6. VRF-Lite

Micro-segmentation with Cisco TrustSec using SGT and SXP

MICRO-SEGMENTATION WITH CISCO TRUSTSEC USING SGT AND SXP

Device hardening techniques and control plane protection methods

- CoPP
- IP Source routing
- iACLs

Management plane protection techniques

- CPU
- Memory thresholding
- Securing device access

Data plane protection techniques

- uRPF
- QoS
- RTBH

Layer 2 security techniques

- DAI
- IPDT
- STP security
- Port security
- DHCP snooping
- RA Guard
- VACL

Wireless security technologies

- WPA
- WPA2
- WPA3
- TKIP
- AES

Monitoring protocols

- NetFlow/IPFIX/NSEL
- SNMP
- SYSLOG
- RMON
- eStreamer

Security features to comply with organizational security policies, procedures, and standards BCP 38

- ISO 27001
- RFC 2827
- PCI-DSS

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Cisco SAFE model to validate network security design and to identify threats to different Places in the Network (PINs)
Interaction with network devices through APIs using basic Python scripts

- REST API requests and responses

1. HTTP action verbs, error codes, cookies, headers
2. JSON or XML payload
3. Authentication

- Data encoding formats

4. JSON
5. XML
6. YAML

- Cisco DNAC Northbound APIs use cases

7. Authentication/Authorization
8. Network Discovery
9. Network Device
10. Network Host

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IDENTITY MANAGEMENT, INFORMATION EXCHANGE, AND ACCESS CONTROL (25%)

- ISE scalability using multiple nodes and personas
- Cisco switches and Cisco Wireless LAN Controllers for network access AAA with ISE.
- Cisco devices for administrative access with ISE
- AAA for network access with 802.1X and MAB using ISE
- Guest lifecycle management using ISE and Cisco Wireless LAN controllers
- BYOD on-boarding and network access flows
- ISE integration with external identity sources

1. LDAP
2. AD
3. External RADIUS

- Provisioning of AnyConnect with ISE and ASA
- Posture assessment with ISE
- Endpoint profiling using ISE and Cisco network infrastructure including device sensor
- Integration of MDM with ISE
- Certificate-based authentication using ISE
- Authentication methods

4. EAP Chaining
5. Machine Access Restriction (MAR)

- Identity mapping on ASA, ISE, WSA, and FTD
- pxGrid integration between security devices WSA, ISE, and Cisco FMC
- Integration of ISE with multi-factor authentication
- Access control and single sign-on using Cisco DUO security technology

ADVANCED THREAT PROTECTION AND CONTENT SECURITY (20%)

- AMP for networks, AMP for endpoints, and AMP for content security (ESA, and WSA)
- Detect, analyze, and mitigate malware incidents
- Perform packet capture and analysis using Wireshark, tcpdump, SPAN, ERSPAN, and RSPAN
- DNS layer security, intelligent proxy, and user identification using Cisco Umbrella
- Web filtering, user identification, and Application Visibility and Control (AVC) on Cisco FTD and WSA.
- WCCP redirection on Cisco devices
- Email security features

1. Mail policies
2. DLP
3. Quarantine
4. Authentication
5. Encryption

- HTTPS decryption and inspection on Cisco FTD, WSA and Umbrella
- SMA for centralized content security management
- Cisco advanced threat solutions and their integration: Stealthwatch, FMC, AMP, Cognitive Threat Analytics (CTA), Threat Grid, Encrypted Traffic Analytics (ETA), WSA, SMA, CTR, and Umbrella