

Communication and Network Security.md

Implement secure design principles in network architectures

- Open System Interconnection (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP) models
Layers:
 7. Application - Google chrome
 8. Presentation - JPEG
 9. Sessions - RPC
 10. Transport - TCP/UDP
 11. Network - IP Addressing
 12. Data Link - MAC Address
 13. Physical - Electrical/Optical Current

Think of it like you are trying to send a package of cookies to someone else half way across the world.
- Internet Protocol (IP) networking - DHCP on LAN. Lan connects to WAN. ISPs route traffic
- Implications of multilayer protocols
- Converged protocols - providing industrial controls, storage, voice, etc via Ethernet(tcp/udp)
- Software-defined networks - seperates a router's control plane from data forwarding plane
- Wireless networks - WEP, WPA, WPA2. 802.11 is the wireless standard

Many varieties of EAP

- LEAP : Cisco-proprietary, very bad
- EAP-TLS : requires server/client certificates
- EAP-TTLS : allows passwords for client-side authentication
- PEAP : similar to EAP-TTLS, developed by cisco and microsoft
- Firewalls - network segmentation
 - Packet Filter: no decisions. set list of allow rules
 - Stateful: slower but more secure. compare packets to previous ones.
 - Proxy: acts as middle man on network. does not give anything back if doesn't meet proxy rules
 - application-layer proxy: make decissions on like HTTP, and layers 3 and 4
- VoIP - voice over IP
 - RTP for streaming
 - SRTP for secure communication

Secure network components

- Operation of hardware
- Transmission media - properly encrypt media

- Network Access Control (NAC) devices - 802.1X is port based network access control
- Endpoint security - deep packet inspection. email filtering.
- Content-distribution networks - series of distributed caching servers to improve performance and lower latency. They find closest servers to you and go

Implement secure communication channels according to design

Figure out what type of security mechanisms are best for scenarios you get on the test

- Voice
- Multimedia collaboration
- Remote access
- Data communications
- Virtualized networks

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[To next domain! - D5 - Identity and Access Management](#)