Network Implementation

CompTIA Network+ certification exam, N10-009

20% of the exam · 4 exam objectives · N10-009

Network Implementation is how a network is built: how routers choose and translate routes, how switches are configured with VLANs, trunks and spanning tree, how wireless networks are planned and secured, and how the physical installation is housed, powered and kept in a safe environment.

You should be able to: A router has a static route and an OSPF route for the same /24, and a Layer 2 switch needs one router interface to route between VLANs 10 and 20. Which route is installed, and what lets one interface serve both VLANs?

Every exam objective: the key point and the trap

2.1 Explain characteristics of routing technologies.

Static routing means routes entered by hand: simple, predictable and with no protocol overhead, but it does not adapt when a link fails. A static default route suits a site with one way out.

Trap: Choosing the route with the lowest administrative distance or metric when a different route has a longer matching prefix. The most specific match always wins first.

2.2 Given a scenario, configure switching technologies and features.

A VLAN splits one switch into separate broadcast domains. VLANs are created in the switch's VLAN database, and a switch forwards only VLANs that exist there.

Trap: Treating the native VLAN as the VLAN that carries everything, or making a VLAN native to get it across a trunk. Tagged VLANs cross a trunk when allowed; the native VLAN only decides which one is untagged.

2.3 Given a scenario, select and configure wireless devices and technologies.

Frequency options: 2.4 GHz reaches further and suits older devices, but it is crowded and has few non-overlapping 20 MHz channels: 1, 6 and 11 where channels 1 to 11 are allowed (for example North America), and 1, 5, 9 and 13 can also be used where 1 to 13 are allowed. 5 GHz has many more channels and less interference, with shorter range. 6 GHz adds a large block of clean spectrum for newer devices. Band steering moves dual-band clients to the less crowded band.

Trap: Thinking a hidden SSID or a captive portal encrypts a network. A hidden SSID is still found by any scanner, and a captive portal only controls access through a web page, sometimes with each user's own sign-in, on a network that may be open; WPA2 or WPA3 does the encryption.

2.4 Explain important factors of physical installations.

Locations: the main distribution frame (MDF) is the central equipment room where outside lines enter and core equipment sits; intermediate distribution frames (IDFs) are closets that serve floors or areas and link back to the MDF.

Trap: Mixing up the MDF and the IDF, or the PDU and the UPS. The MDF is the central room and IDFs serve areas; a PDU only distributes power, while a UPS keeps it running during an outage.

Key terms

BGP: Border Gateway Protocol

OSPF: Open Shortest Path First

EIGRP: Enhanced Interior Gateway Routing Protocol

FHRP: First Hop Redundancy Protocol

PAT: Port Address Translation

SVI: Switch Virtual Interface

MTU: Maximum Transmission Unit

BSSID: Basic Service Set Identifier

IDF: Intermediate Distribution Frame

UPS: Uninterruptible Power Supply

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