Servers require more bandwidth than workstations

* They connect multiple devices
* Low latency is not relevant for servers vs. workstations
* Servers cannot be powered through PoE
* Servers are deployed in secure environments where network Access Control is not needed

Directly connected routes have the lowest AD (0) in a routing table

* Statically configured routes have an AD of 1
* Dynamic protocols are above 1 (varies)

Cipher block Chaining Message Authentication Code Protocol (CCMP) is responsible for Access COntrol, Authentication, Data Confidentiality

802.1x is responsible for secure connection of a device to a network

Max Stratum is 15

Software-Defined network architecture separates the control plane from network devices

* It moves the control plane to the network controllers
* Traditional networks are more difficult to manage and scale than software-defined

SSL VPN goes between a client and firewall

An IPSec Tunnel VPN goes between a router and firewall

Full mesh topology provides best redundancy and easy communication

* Hub and spoke has a central node so bad redundancy
* Ring topology does not have as much redundancy as full mesh

Rollover and USB cables connect the console port of a cisco router

* Crossover, straight-through and serial cables are used to interconnect devices

Multimode fiber is the best for high speed, low cost in the same area

The three fields included in a TCP header are destination port, frame check sequence and window size

Commands to view type of trunking encapsulation on an interface are “show interface <interface> switchport” and “show interfaces trunk”

Commands to view ports configured as trunks are “show interfaces status” and “show interfaces trunk”

The purpose of a layer 3 switch is to route traffic between company VLANs

* Routers route traffic to the internet and different networks
* Multiprotocol routers provide routing between different networks with different protocols

When two hosts are trying to send messages to each other for the first time, a broadcast ARP request looking for the MAC of the router and the router adds and IPv4 to the MAC address’ mapping for the other host to the ARP table

Switches only support uo tp 15.4 W of power… PoE plus standard is needed for up to 30 W

DHCP timeout is eliminated when using PortFast

Syslog logging messages are found in the Console Line

In HSRP, the virtual address is used for the gateway on hosts

FHRP hello messages the communicate between each device are called keepalive

DR/BDR are elected for each multi-access segment

Cisco IOS software image reloaded and started, lods from NVRAM, SCP Server, TFTP server

Two fields in the IPv4 header field and IPv6 header field that contain differentiated Services Code Point markings are traffic class and Type of Service (ToS)

When configuring a default gateway on a host a default route will be added to the host’s routing table and the size of the ARP table of the host is reduced

* The host forwards all traffic destined to remote networks to the default gateway
* Host does not add entries for remote IP addresses to ARp table anymore
* DHCP with automatically assign host IP address and provide default gateway addresses to the host
* Host can communicate with other hosts on same network without default gateway config

When configuring a pre-shared key for a Wireless network, it is done in the WLANs menu

The three most reliable network practices in networking are automated system testing, using programmability tools to automate network config and using version controls for all config changes

Two valid IPv6 address scopes for a unique LOCAL IPv6 address are organisation-local and site-local

The interface ID of the IPv6 Address 2001:db8::a:a9cd:47ff:fe57:fe94/64 is a9cd:47ff:fe57:fe94

* An ipv6 address starting with the hexadecimal digits 2 or 3 is a global unicast address
* The first 48 bits represent the global routing prefix
* This is followed by a 16 but subnet ID
* The remaining 64 bits represent the interface ID (the host portion of an IPv4 address)

To calculate the interface ID:

* Remove colons from mac address
* Flip seventh bit
* Insert the modified first byte back into MAC address
* Combine the modified first bye with the remaining bytes

The three characteristics that apply to the 802.1Q protocol are it carries untagged frames, modifies the 802.3 frame and it uses an internal tagging mechanism

Several SSIDs can be created on the same access point

* SSIDs are not configured by default
* SSIDs can be hidden

When an access point 9AP) is operating in local mode, the WLC (Wireless Access Controller) is the wireless client in which traffic is switched

* The network switch would switch the traffic between two stand-alone APs
* Egress and ingress points

When multiple paths are given to a dest. Network, dynamic routing protocol uses METRICS to determine which route to use

Two characteristics of a pre-shared key wireless implementation are AES and TKIP

SLAAC generates link-local addresses, generates global unicast ipv6 addresses, and relies on ICMPv6 router advertisements

A default VLAN will be assigned to a port when the administrator sets the interface back to defaults with “default interface” and the administrator does not assign any VLAN to the interface

End hosts are connected to access switches

Spine leaf architecture solves the problem of oversubscription of links and the topology is easier to scale

* Due to full mesh between spines and leaves, there is no bottleneck
* If oversubscription occurs, a new spine is added
* These topologies are harder to configure and troubleshoot, though

Command to verify a default gateway config on a switch are “show running-config” and “show interface description”

After receiving an eth frame, a switch forwards it out of all ports except the incoming port… this happens with broadcast, multicast and unicast communication

To enabled IPv6 on a router use command “ipv6 unicast-routing”

Subnet for a host route is 255.255.255.255

One host will reply to another’s ping IF both ports are operationally in access mode and the same VLAN

RADIUS combines authentication and authorisation and is UDP based

TACACS+ implements two separate processes and is TCP based

In 802.1x implementation, an end device is called a supplicant, a switch is called an authenticator and a server is an authentication server

Full hypervisors are type-1 and typ-2

Docker and Kubernetes are container software packages

When creating a MAC table, a switch adds source MAC address and incoming port number and resets ageing time of MAC table entry

To prevent the number of compromised frames, use store-and forward frame forwarding

Management access and network access benefit from centralised authentication

Per VLAN stp instance is NOT available in RSTP

***Lab commands:***