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| **Use Case-01** Correcting head office with data center site with multiply routers (primary and backup) using BGP as a routing protocol.  **Components: -** Routers, Serial ports Cables.  **Features:-**   |  |  | | --- | --- | | * Internet to exchange routing information b/w autonomous systems(AS). | * Bandwidth, or the link capacity b/w the source to the destination. |   **Advantages:-**  **Disadvantages:-**   |  |  | | --- | --- | | * AS =100 value is becoming primary /main path, and AS= 200 value is backup path. * Redundance which used multiply links b/w the routers. | * Complex Configuration. | |
| **Uses Case -02** Restricting server access using routing policy.  **Components: -** Routers, Switches, Access point, Servers, Wireless laptops, Cables.  Cisco Packet Tracer - C:\Users\Aishwarya L\Desktop\Aish\Cisco\Uses Scales Report\Use scale -2(Restricting server access using routing policy).pkt  **Features:-**   |  |  | | --- | --- | | * Restrict access to certain routes/components based on whether a user is authenticated or has certain permission. | * By using Routing process as static routing. |   **Advantages:-**  **Disadvantages:-**   |  |  | | --- | --- | | * We can restrict traffic without ACL. | * We are dependent on static routing which is limited. | |
| **Use Case-3** Designing core layer for customer-1 at requirement is core redundance Layer 2.  **Components: -** Routers, Switches, Multi-layer Switches, Desktops, Cables.  **Features: -**   |  |  | | --- | --- | | * Considering sequential equal bandwidth ports for logical binding. * Configuring trunk for the uplink ports. | * Using multiply links b/w the switches. * Using PAgP(Port Aggregation Protocol) for binding process. |   **Advantages:- Disadvantages:-**   |  |  | | --- | --- | | * Link b/w the switches will remain available till the last connection exists. * Achieving load balancing b/w the links. | * Maintenance- Physical Maintenance   Configuration Maintenance | |
| **Use Case-4** Designing core layer for customer-1 at requirement is core redundance layer 3.  **Components: -** Routers, Switches, Multi-layer Switches, Desktops, Cables.  **Cisco Packet Tracer - C:\Users\Aishwarya L\Desktop\Aish\Cisco\Uses Scales Report\Use scale study-5(core layer for customer 2 at  requirement is layer 3 redundence.pkt**  **Features: -**   |  |  | | --- | --- | | * Need multiply physical connection b/w MLS * Need multiply IP address (one per connection) | * Need to upgrade layer 2 MLS ports to layer 3. * Needs to enable routing process. |   **Advantages:- Disadvantages:-**   |  |  | | --- | --- | | * Communication face dis -connectivity until the last link is available b/w the switches. | * Maintenance- Physical Maintenance   Configuration Maintenance | |
| **Use Case-5** Designing core layer for customer-1 at requirement is core Security implement by Both Layers (L2, L3).  **Components: -** Routers, Switches, Multi-layer Switches, Laptops, Cables, Servers, Hub, Desktop.  **Features:-**   |  |  | | --- | --- | | * Use ACLs to control traffic entering or leaving your network at the router level. * Change the native Vlan number is the 3 level of security. | * Layer 2 security allows to restrict the number of mac address by using port security. |   **Advantages:-**  **Disadvantages:-**   |  |  | | --- | --- | | * L3 security allows us to filter a specific traffic using ACL. | * Troubleshooting is complex. | |
| **Use Case-06** Off campus connectivity using Frame relay.  1.Chicago- Ohio 2. Chicago- Washinton  (same Subnet- Multi-point) Texas (Same Subnet Point to point)  **Components: -** Routers, Frame-relay device, Serial ports cables.    **Features:-**   |  |  | | --- | --- | | * It allows communication through shared physical connection or private lines across multiple LANs. | * It used Multiple IP’s subnet for all PVCs by using point to point and point to multi-point. |   **Advantages:-**   **Disadvantages:-**   |  |  | | --- | --- | | * IP address we can share with branch office. * It works like a leased-line connection. | * It depends on n/w, when it goes down connectivity will loss. |   **Use Case-7** Designing core layer for customer-1 at requirement is core security with redundance layer 3.  **Components: -** Routers, Switches, Multi-layer Switches, Desktop, Cables.    **Features:-**   |  |  | | --- | --- | | * Provides redundant layer 3 point to point links b/w the core devices for more predictable and faster convergence. | * Use ACLs to control traffic entering or leaving your network at the router level. |   **Advantages:- Disadvantages:-**   |  |  | | --- | --- | | * Both load balancing and loop back | * Physical Maintenance -More cabling or * Configuration Maintenance- more physical path. | |
| **Use case-8** Web security in accessing with a web server.  **Components:-** Routers, Switches, Servers, Desktop, Cables.  **Features:-**   |  |  | | --- | --- | | * Web servers’ software is accessed through the domain names of websites and ensures the delivery of the site’s content to the requesting user. | * The HTTP server is able to understand HTTP and URLs. |   **Advantages:- Disadvantages:-**   |  |  | | --- | --- | | * Servers can be access by name. | * If DNS server fails, Server will be unreachable. | |
| **Use case-9-** Filtering access to the server’s b/w multiple divisions.  **Components:-** Routers, Switches, Servers, Desktop, Cables.    **Features:-**   |  |  | | --- | --- | | * Organization use DNS blocking to secure their environment against phishing attacks and other cyberthreats. | * By using ACL , The server will   block access. |   **Advantages:- Disadvantages:-**   |  |  | | --- | --- | | * Can be implement easily. | * If routers fail , then the whole policy is removed. | |
| **Use Scale -10** Secured Vlan Environment  **Components:-** Routers, Switches, Access point, Wireless Laptops and Cables.  -  **Features:-**   |  |  | | --- | --- | | * Disable Vlan trunking protocol(VTP), if possible otherwise set the following for VTP as management Domain,password,and pruning. | * Assign a unique native VLan number to trunk ports. |   **Advantages:-**   **Disadvantages:-**   |  |  | | --- | --- | | * Vlan database cannot be changed as we provide security. | * Management is complex as we use all features of vlan like vtp domain, vtp password,device password ect., | |
| **Use Scale -11** Fire wall  **Components: -** Routers, switches, ASA device, Servers, Desktops.    **Features:-**   |  |  | | --- | --- | | * Filtering traffic to allow or block access based on source, destination, protocol, port, ect., | * This prevents unauthorized access and stops malicious traffic. |   **Advantages: -**   **Disadvantages: -**   |  |  | | --- | --- | | * Internal users can access external server through firewall. | * If firewall fails, access will be denied. | |
| **Use Scale -12** VPN by using GRE configuration.  **Components: -** Routers, Switches, Desktops.    **Features:-**   |  |  | | --- | --- | | * GRE tunnels are used to create point-to-point connection b/w two networks. | * Data encapsulation, Simplicity, And Multicast traffic forwarding. |   **Advantages: -** **Disadvantages: -**   |  |  | | --- | --- | | * GRE remains a popular choice for tunneling protocols due to its ease of use and configurability. | * It is not considered a secure protocol bcz,It doesn’t use encryption like the IP Security. | |
| **Use Scale -13** VPN by using IPsec configuration.  **Components: -** Routers, Switches, Desktops.    **Features:-**   |  |  | | --- | --- | | * Enables creating VPN both site-site VPN and remote access VPN. | * Authentication, Confidentiality, Integrity, key management, Tunneling, Flexibility, Interoperability. |   **Advantages: -** **Disadvantages: -**   |  |  | | --- | --- | | * Security, Flexibility, Dispersed teams. | * IPsec encrypts all traffic and applies strict authentication processes. | |