LAB-B00K=1

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**Description:**

This assignment is about configuring 2 buildings named engineering and test department and Business headquarters department of one organization which relate to fiber-optic network. Inside these 2 buildings there are some departments. The network to ISP according to my condor ID so I placed 87 instead of xx. Both the buildings have guest Wi-Fi and staff departments. This lab is also about inter vlan connection and channel bonding within same path so that it will increase redundancy of data flow. I also did the configuration for spanning tree and made the root bridge to the multilayer switches which connect other edge switches. ISP router is the main network provider where one more router is directly connected to the Business headquarters.

**TASK-1 Topology Building**

This task is about creating a proper topology in packet trace. I used 2960 switches for Edge and named them according to the building. For the buildings I had taken 3650 switches and connected them with fiber optic cable (engineering and test= ENT and Business headquarters as Business). The router I had taken is 2911. I connected edge switches with buildings to make sure that I can make channel bonding for that.

Here I provided the screenshot of my topology I have created A screenshot of a computer

Description automatically generated

**TASK-2 VLANs**

This task is about creating the VLANs and tracking them according to the instruction. I have created further VLANS in both buildings.

|  |  |
| --- | --- |
| Business headquarters | Engineering and test |
| 10- Finance  20-HR  30-operations  40-customer service  50 Business datacenter  60 staff  70- Guest Wi-Fi | 10- Engineering  20- Test  30- Engineering datacenter  40- staff  60- Guest Wi-Fi |

After assigning the VLANs I have trunked all of them on both multilayer switches and shown the created VLANs and trunked VLANs in the screenshot

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**TASK-3 Spanning-tree protocols**

This task is about making the distribution switch a root bridge for both the networks and that will increase redundancy and connection between all the designated switches. For that I have decreased the priority of each VLAN to 4096 and on both VLANs and the priority of staff and guest Wi-Fi to 0 for the business headquarters as per the instructions. I showed both the switches in the screenshot which I made the root bridges.

I enters the command “Spanning-tree vlan (VLAN\_ID) priority 4096” in config mode for each VLAN to make that a root bridge.

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In this screenshot all the ports are in forwarding state and that shows both the switches are the root bridge. Further screenshots of each vlans are attached.

A screenshot of a computer

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated with medium confidence

In this screenshots it is shown that priority of staff and Guest wifi is lower on the business headquaters and that shows it is the root bridge for the designated vlans.

A screenshot of a computer

Description automatically generated

**TASK-4 Channel bonding.**

This task is about creating the channel bonding within the building network. Where each edge switches relate to the multilayer switch with channel bonding. That will be used for network flow backup or to manage data flow. For this task I have made 3 channel groups for 3 edge switches and connected them to the multilayer switch. For this I have used “channel-group (group number) mode active” command for every port.

In this screen shot I have shown that all the port channels are created and in LCAP protocol.

All the ports are (P= in port channel) mode that shows the connection is made correctly.

This screenshot shows channel bonding on Business headquaters building

A screenshot of a computer

Description automatically generated with medium confidence

this screenshot shows channel bonding on engineering and test building.

A screenshot of a computer

Description automatically generated with medium confidence

This screenshot shows both multilayer switches with channel bonding.

Screens screenshot of a computer

Description automatically generated with medium confidence

**TASK-5**

This task is about inter VLAN routing on the distribution switches which are the root bridge for the network. For that distribution switch should be the class c address and contain the last 2 digits of condor ID in the second octet. This activity will allow direct connection between VLANs and improve the data flow. This will also provide security for the network. This will make it possible that only the devices which are on the same VLANs can connect to each other.

**TASK-6**

This part is about configuring the OSPF router on the headquarters building router. For that we need to use the Ip address with condor id. This task will increase the efficiency of the data flow and support the network with fault tolerance. This will be providing redundancies to the routing table and ensuring that the packet will be delivered to the proper address.

**Reflection:**

In this assignment I provided screenshots I had taken and attached the packet tracer file with the submission. It was the task about how the big organization provides networks within the organization and how it will work. The ISP is the network and how the other devices in the organization connect to each other.