

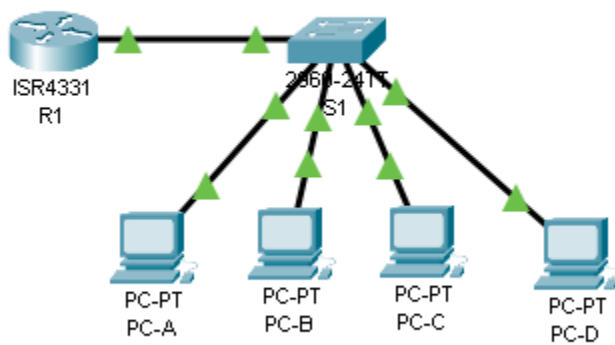
CMIT 351 Project 2

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Part 1: Design the Local Area Network



Part 2: Create the basic switch configurations

2.1 Cable the network

Source Device: S1

Source Port: Ethernet Interface 1

Destination Device: R1

Destination Port: Ethernet Interface 1

Cable Type: Ethernet

Description: Connecting S1 to R1 using a ethernet cable to create connectivity.

Source Device: PC-A

Source Port: PC-A'S Fast ethernet port 1

Destination Device: S1

Destination Port: Ethernet Interface 4

Cable Type: Ethernet

Description: Creates a connection from PC-A to S1

Source Device: PC-B

Source Port: PC-B'S Fast Ethernet port 1

Destination Device: S1

Destination Port: Ethernet Interface 6

Cable Type: Ethernet

Description: Creates connectivity between PC-B and S1

Source Device: PC-C

Source Port: PC-C's Ethernet port 1

Destination Device: S1

Destination Port: Ethernet Interface 11

Source Device: PC-D

Source Port: PC-D's Fast Ethernet port

Destination Device: S1

Destination Port: Ethernet Interface 13

Cable Type: Ethernet

Description: Creates connectivity from PC-D to S1 using an ethernet cable.

2.2. Configure the basic switch functions

Device Name	Cisco IOS Command	Describe what the command does
S1	.en .conf t .hostname S1 .enable secret class .line con 0 .line vty 0 15 .password cisco .exit .banner motd "Unauthorized access is strictly prohibited." .line con 0 .logging synchronous	.Enables user to go to privileged mode .Enables user to go to configuration mode .Changes hostname to S1 instead of "Switch" .enables a password named "class" Allows user to go to console port interface .Allows user to enter interface 0-15 .Sets password for the following interface .exits config line .Creates message of the day to user trying to enter the command line interface .Switch back to console port .Set logging to synchronous between S1 and R1
R1	.en .conf t .hostname R1 .enable secret class .line con 0 .line vty 0 15 .password cisco .exit .banner motd "Unauthorized access is strictly prohibited." .line con 0 .logging synchronous	.Enables user to go to privileged mode .Enables user to go to config mode .Changes the hostname from "Router" to "R1" .sets the password to "class" .Allows user to go to console port interface .Allows user to enter interface 0-15 .Sets password for the following interface .exits config line .Creates message of the day to user trying to enter the command line interface .Switch back to console port .Set logging to synchronous between R1 and S1

2.3 Configure the computers

Device Name: PC-A

Interface type: Ethernet Interface 4

IP Address: 192.168.10.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.10.1

Description: I added an ip address of 192.168.10.3 with a subnet mask of 255.255.255.0 and a gateway of 192.168.10.1 to the wired Ethernet interface on computer A.

Device Name: PC-B

Interface type: Ethernet Interface 6

IP Address: 192.168.20.4

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.20.1

Description: I added an Ip address of 192.168.20.4 to PC-B along with a subnet mask of 255.255.255.0 and a default gateway: 192.168.20.1

Device Name: PC-C

Interface type: Ethernet Interface 11

IP Address: 192.168.30.5

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.30.1

Description: I added an IP address of 192.168.30.5 to PC-C along with a subnet mask of 255.255.255.0 and a default gateway: 192.168.30.1

Device Name: PC-D

Interface type: Ethernet Interface 13

IP Address: 192.168.40.6

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.40.1

Description: I added an Ip address of 192.168.40.6 with a subnet mask 255.255.255.0 with the default gateway: 192.168.40.1

2.4 Test and Validate Connectivity

Source device: PC-A

Destination device: PC-B

Test command: ping 192.168.20.4

Expected results: Request timeout

Describe what this test means and how it validates connectivity: This test means that PC-A and PC-B have no connectivity between eachother in this topology.

Source device: PC-B

Destination device: PC-C

Test command: ping 192.168.30.5

Expected results: Request timeout

Describe what this test means and how it validates connectivity: This test means that PC-B and PC-C have no connectivity between eachother in this topology.

Source device: PC-C

Destination device: PC-D

Test command: ping 192.168.40.6

Expected results: Request timed out

Describe what this test means and how it validates connectivity: This test means that PC-C and PC-D have no connectivity between eachother in this topology

Source device: PC-D

Destination device: PC-A

Test command: ping 192.168.10.3

Expected results: Request timeout

Describe what this test means and how it validates connectivity: This test means that PC-D and PC-A have no connectivity between eachother in this topology.

Part 3: Define the VLANs

In the table below, describe how you configure VLANs switches. Be sure to explain how you test and validate the VLAN implementation.

Note: Add as many table rows as you need to complete the configuration.

Device Name	Cisco IOS Command	Describe what the command does
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S1	<pre>.en .conf t .vlan 10 .name Students .exit .vlan 20 .name Faculty .exit .vlan 30 .name Management .exit .vlan 99 .name Containment .configure terminal .interface FastEthernet0/4 .switchport access vlan 10 .exit .interface FastEthernet0/6 .switchport access vlan 20 .exit .interface FastEthernet 0/11 .switchport access vlan 30 For Interfaces 2,3,5,7-10, 12-24 the same commands were applied for Vlan 99 “Containment”</pre>	<pre>.Enter privileged mode .Enter configuration mode .Creates vlan 10 .Names the vlan students .exits vlan 10 interface .Creates vlan 20 .names vlan 20 “Faculty” .exits vlan 20 interface .Creates vlan 30 .names the vlan “Management” Exits vlan 30 interface .creates vlan 99 .names vlan 99 to “Containment” .configure terminal to assign ethernet interfaces. .Switches to the 0/4 FastEthernet interface. .Creates port access to vlan 10. .exit current interface .Switches to specific ethernet interface .Creates port access to vlan 20 over FastEthernet 0/6 .exit current interface .Enters FastEthernet 11 interface .Creates port access to vlan 30 over FastEthernet 0/11</pre>

Part3b: Define the Router Sub-interfaces

In the table below, describe the router sub-interface configurations. Be sure to explain how you test and validate the sub-interface implementations.

Note: Add as many table rows as you need to complete the configuration.

Device Name	Cisco IOS Command	Describe what the command does
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S1	<pre>.conf t .interface gi0/0.10 . encapsulation dot1q 10 .ip address 192.168.10.1 255.255.255.0 .exit .interface gi0/0.20 . encapsulation dot1q 20 .ip address 192.168.20.3 255.255.255.0 .exit .interface gi0/0.30 . encapsulation dot1q 30 .ip address 192.168.30.1 255.255.255.0 .exit</pre>	<pre>.configuration mode terminal .enter interface to configure PC-A . set encapsulation to sub interface 10 .assign IP address and subnet mask .exits current interface .enter interface to configure PC-B .set encapsulation to sub interface 20 .assign IP address and subnet mask .exits current interface .enter interface to configure PC-C .set encapsulation to sub interface 30</pre>

Part 4: Implement VLAN Trunking

In the table below, describe the VLAN trunking switch configurations. Be sure to explain how you test and validate the VLAN trunking implementation.

Note: Add as many table rows as you need to complete the configuration.

Device Name	Cisco IOS Command	Describe what the command does
S1	.conf t	.goes into configuration terminal
S1	.interface FastEthernet 0/1	.goes into 0/1 FastEthernet interface
S1	.switchport mode trunk	.allows interface to perform VLAN trunking
S1	.exit	.exits the configuration terminal

To verify the configuration and the connectivity of the network. I first used ping. When testing for connectivity, all end devices except PC-D were able to communicate with S1 and R1. I also used the following commands to check proper implementation: show ip interface, show vlan, show running-config, and show startup-config.