Justin Sterlacci  
Internetworking  
Professor Cannistra  
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**Lab 3 Lab Report**

**Lab Description:**   
Set up a router within a Network to allow PCs on separate VLANS to communicate with each other.   
  
**Topography:**  
Diagram

Description automatically generated  
  
Syntax:

CLI Command Description Mode of Cisco OIS

|  |  |  |
| --- | --- | --- |
| ping | Used to ping ip addresses from a PC. You can ping other PC’s or switches with this. | Windows CMD |
| Logging synchronous | Forces error messages to be on its own line, rather than interrupt a line that you’re typing on. | Console Line |
| Enable | Enter Privileged Mode | User Mode |
| Conf t | Enter Global Configurator Mode | Privileged Mode |
| Line con 0 | Enter the Console Line | Global Configurator Mode |
| Hostname | Used to name a switch or PC | Privileged Mode |
| Password | Used to set a password | Privileged Mode |
| Login | Used to require the password to utilize User Mode | Global Configurator Mode |
| Enable password | Used to set an unencrypted Privileged Password | Global Configurator Mode |
| Show ip interface brief (sh ip int brief) | Displays a brief list of all interfaces | Privileged Mode |
| vtp domain INETLAB | Renames the VTP domain from NULL to INETLAB | Global Configurator Mode |
| Vtp password cisco | Set a password within the VTP Domain | Global Configurator Mode |
| Vtp mode server/client | Sets the vtp mode between server or client, in the case of this lab. | Global Configurator Mode |
| Switchport mode access | Changes the mode of a switchport to access mode | Line configuration Mode (within a vlan) |
| Switchport trunk encapsulation dot1q | Sets up the switch to switch connect to use IEEE 802.1Q encapsulation | Within a vlan with a multi-Connection switch |
| Switchport mode trunk | Sets the mode for the switchport to trunk | Within a vlan |
| Spanning-tree vlan xx root primary | Setting up a spanning tree within a vlan, and setting it to root primary | Privileged mode |
| Encapsulation dot1q xx | Sets up a VLAN in IEEE 802.1Q within a router | ROUTER Line Configuration Mode(within a sub interface) |

**Verification:**

B) NY-Switch1 vlans  
Table

Description automatically generated with medium confidence

C)  
NY-Switch2 vlans  
Table

Description automatically generated with low confidence

NY-Switch2 Trunks Interfaces  
Text, letter

Description automatically generated

NY-Switch2 EtherChannel Summary  
Text

Description automatically generated

D)   
NY-Switch3 vlans  
A picture containing text

Description automatically generated

NY-Switch3 Trunk Interfaces  
Text, letter

Description automatically generated

NY-Switch3 Ether Summary  
Text

Description automatically generated  
  
E) NY-PC11 to NY-PC21/31  
  
**Text

Description automatically generated**NY-PC11 -> NY-PC21

**Text

Description automatically generated** NY-PC11 -> NY-PC31

F) NY-PC12 to NY-PC22/32  
**Text

Description automatically generated**NY-PC12->NY-PC22

**Text

Description automatically generated** NY-PC12->NY-PC32

G)  
Interfaces in an abbreviated format

Text

Description automatically generated with medium confidence  
 NY-Router Routing table  
Text, letter

Description automatically generated

NY-Switch1 Trunk Interfaces  
Table

Description automatically generated

H)  
Ping from NY-PC11 to Default Gateway, however this worked on all PC’s  
Text

Description automatically generated

I)NY-PC11 to NY-PC12/22/32  
Text

Description automatically generatedNY-PC11 -> NY-PC12

Text

Description automatically generated NY-PC11 -> NY-PC22

Text

Description automatically generated NY-PC11 -> NY-PC32

J) NY-PC12 to NY-PC11/21/31  
Text

Description automatically generatedNY-PC12 -> NY-PC11

Text

Description automatically generated NY-PC12 -> NY-PC21

Text

Description automatically generated NY-PC12 -> NY-PC31

K)  
While all the PC’s can reach all of the other PC’s, all of the PC’s cannot reach all of the switches. This is due to the PC’s not being linked directly to the switches, which results in the ping command being unable to reach the other switches.

L) Rapid Spanning-Tree Protocol on all 3 Switches

NY-Switch1  
Table

Description automatically generated  
Table

Description automatically generated with medium confidence

NY-Switch2  
A picture containing text

Description automatically generated  
Text, table

Description automatically generated with medium confidence

NY-Switch3  
Text

Description automatically generated with medium confidence  
Text

Description automatically generated

**Conclusion:**This Lab was not significantly harder than the last lab, however I ran into some headaches when setting up the Router, mainly due to it being the first time setting up a router by myself. These headaches were quickly resolved as soon as I looked at my notes from last class, and from there on it was smooth sailing.