

SUNY POLYTECHNIC INSTITUTE

NCS 450

NETWORK SECURITY

Lab 1: Basic Networking Configuration

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1 Introduction

In this lab, we will continue getting familiar with the Cisco equipment and working with the configuration files. We will work with the Switch and Router in this lab.

2 Getting Started:

First, we need to look at the diagram and establish our Pod to find what IP addresses are hardware should be assigned. Recently changes were made to the pods and the commands for accessing the serial port have changed. The new command is `sudo picocom -baud 9600 -databits 8 -parity n -flow n /dev/ttyS0`.

3 Network Diagram:

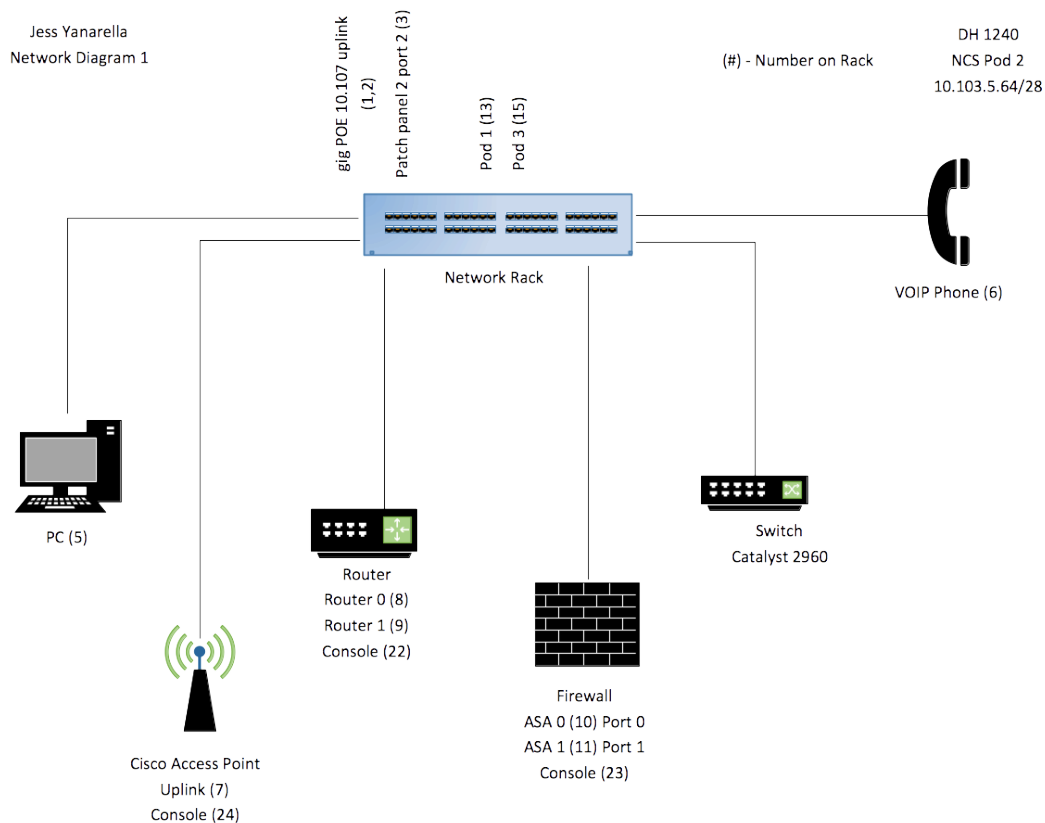


Figure 1: Old Setup

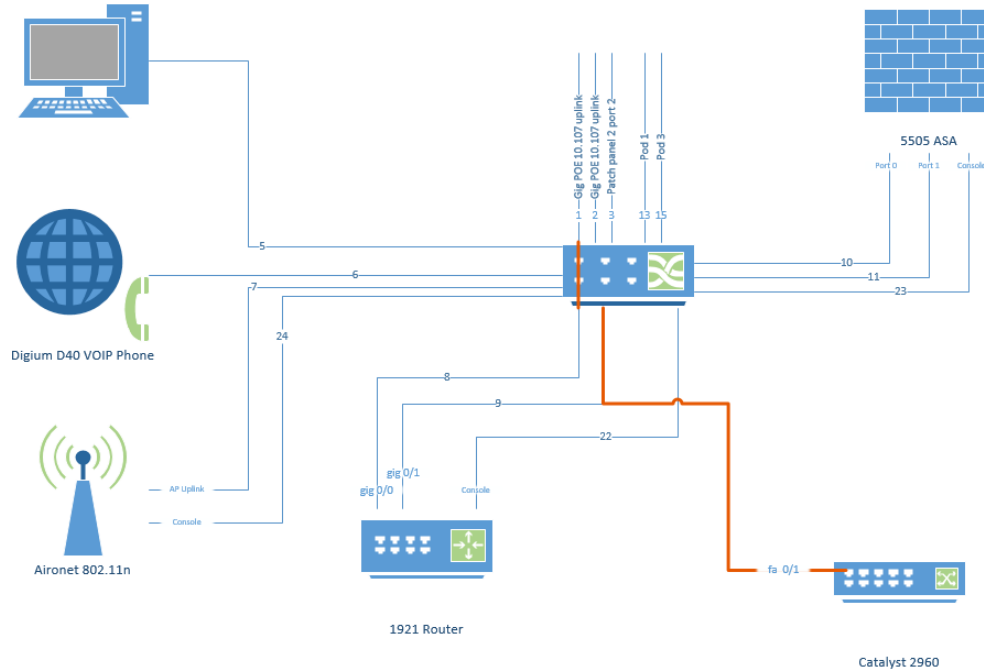


Figure 2: New Setup

4 Network Configuration

Router:

gig 0/0 (to uplink): 10.103.6.65/16

gig 0/1 (to switch): 172.16.2.1/24

Switch:

VLAN 1 (to router): 172.16.2.2/24

5 Configure the Router for Basic Access:

To first step to configuring any cisco equipment is to get into enable mode #. Now we can enter configure terminal and then type interface gig0/0. This brings us into the network interface on the router. To turn on the interface type no shutdown. You will then be prompted that it is now up. For the connection to be up, a cable must be run on the rack between port 2 and 8. Next, we need to enter interface gig0/1. Now, to enter the IP, type ip address 'IP' 'SUBNET'. The IP address for this router is 172.16.2.1/24 on our Pod is which is the LAN. For this to be up, a cable was ran between port 9 and the switch. IP routing must be done so the packets know to be forwarded and this is done by int gig0/1 then ip route 0.0.0.0 0.0.0.0 10.103.0.1. To show all interfaces, a simple command can be run - sh ip int br. It shows information as the IP address, method, status, and protocol.

```
Router#sh ip int br
```

Interface	IP-Address	OK?	Method	Status	Protocol
Embedded-Service-Engine0/0	unassigned	YES	unset	administratively down	down
GigabitEthernet0/0	10.103.5.65	YES	manual	up	up
GigabitEthernet0/1	172.16.2.1	YES	manual	up	up

Figure 3: Router Running Configurations

6 Switch Configuration for Basic Access:

First, our switch needed to be reset because it had a password on it. This was done by holding the power and mode button down until the boot screen showed up. After that, we had to run `flash init`, then `del flash:config.text`. This deleted any configuration files and reset it back to default. Now we can reboot the switch so we can have full access to it. To configure the settings for this, we need to enter enable mode then configuration. For the interfaces to be up including Fast Ethernet and `vlan1`, they need to be in port 9 and 1. When in this mode, we enter `int vlan1`. The IP address for this is `172.16.2.2 255.255.255.0`. Remember the router was set to 2.1 and the switch is 2.2. To show the configuration, type `sh running-configuration`.

```
interface Vlan1
 ip address 172.16.2.2 255.255.255.0
 no ip route-cache
 !
 ip default-gateway 10.103.0.1
```

Figure 4: Switch Running Configurations

7 Save the Switch and Router Configuration Files to the TFTP Server:

To save the configuration files, a simple command of `wr` must be typed. This will save everything that was entered and changed. The configuration file can be found in the file `nvr`am:. Don't forget the semi colon, that is an important part. You can verify the config is saving there by `cd nvr`am:. In here you will see the file `startup-config`. Now we need to send the configuration files to the TFTP server so we can reload them for future classes since we have to reset the pods after each class. The command to FTP them is:

```
copy running-config tftp://10.103.0.25/opt/tftp/201501/ncs450/p2/router/running-config
```

```
Switch#$g-config tftp://10.103.0.25/201501/ncs450/p2/switch/running-config
Address or name of remote host [10.103.0.25]?
Destination filename [201501/ncs450/p2/switch/running-config]?
!!
794 bytes copied in 0.654 secs (1214 bytes/sec)
Switch#
```

Figure 5: TFTP on Switch

```
Router#copy running-config tftp://10.103.0.25/201501/ncs450/p2/router/running-$
Address or name of remote host [10.103.0.25]?
Destination filename [201501/ncs450/p2/router/running-config]?
!!
1105 bytes copied in 0.176 secs (6278 bytes/sec)
```

Figure 6: TFTP on Router

8 Reset the Pods:

To reset the pods, this is done by a few commands. Once in enable mode, type `erase /all nvram`. Then after that type `reload`. This should work on the router and switch and soon the image will start to reload. Also, on the switch you should delete `flash:vlan.dat`.

References

http://web.cs.sunysit.edu/~bullr/classes/NCS450-NetSec/labs/S14_NCS450-541_Lab1.pdf
[http://web.cs.sunysit.edu/~bullr/classes/NCS450-NetSec/labs/S14_NCS450-541
LabGuide.pdf](http://web.cs.sunysit.edu/~bullr/classes/NCS450-NetSec/labs/S14_NCS450-541_LabGuide.pdf)