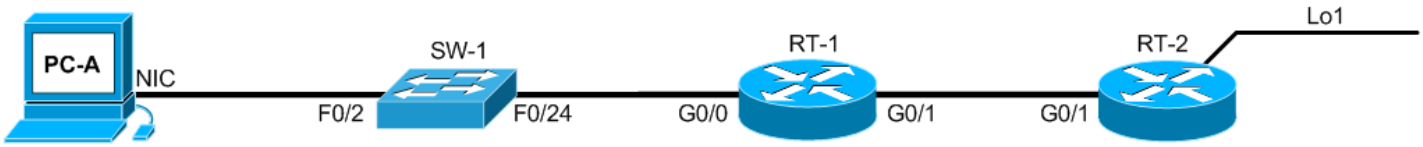
INFO-6047: Lab 05 – Routing

Topology



Note:

1) The routers in the topology above are **2901**s and the switch is a **2960** Layer 2
2) For the In-House students, you will be working on your own this week. (You can talk, help and work with each other, BUT you must build your own topology.)
3) For the On-Line students, you will have to build the lab in Packet Tracer.
4) You will find in the Lab section of FOL for this week a PowerPoint file. Please download this file, I have placed markers in the lab where you should do each capture. Make the screen captures and save them in the PowerPoint file according to the questions asked.
5) For in-class/house students, todays Lab, we will not be configuring the switch, BUT this also means if the last person that used the switch did not clean it out it could mess with your Lab! **PLEASE make sure your switch and routers have been cleaned out before you begin.**
6) For the in-class/house students there are only 6 routers per row/pod. **Therefor you will only be able to have 3 students per row/pod.**
7) For todays lab please do not setup ssh, or a local username and password database, all we need is telnet for today

IPV4 Addressing Table

Device	interface	IPv4 Address IPv6 Address	Subnet Mask	Default Gateway	Static Routs
RT-1	G0/0	192.168.1.254	/24		
		2001:db8:acad:1::254	/64		::/0 2001:db8:acad:2::11
	G0/1	172.16.0.1	/30		0.0.0.0 0.0.0.0 172.16.0.2
		2001:db8:acad:2::10	/64		
RT-2	G0/1	172.16.0.2	/30		
		2001:db8:acad:2::11	/64		::/0 2001:db8:acad:2::10
	Lo1	10.10.10.10	/32		0.0.0.0 0.0.0.0 172.16.0.1
		2001:db8:acad:3:10:10:10:10	/64		
SW-1					
PC-A	NIC	192.168.1.10	/24	192.168.1.254	
		2001:db8:acad:1::10	/64	2001:db8:acad:1::254	

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Initial Setup

I would like to see each router with the following:

Basic system config:

a) The time set on your devices (both the clock and the time zone).
b) Set the hostname
c) Set the enable password to "class".
d) Encrypt all passwords.
e) Disable domain name lookup.
f) Setup a banner.
g) Set the console and vty password to "cisco".
h) Setup synchronous logging on the console port.
i) Enable telnet and ssh on the vty ports

This is the same as we did last week **Basic System Config** a) through i).

By now you can see we are doing the above over and over again….. I hope you have figured out you should have a file with this stuff all ready in it, call it something like "my-startup-config.txt", and instead of finding the information each week all you need to do is open your file and copy the information and paste it into the text file you are building for your devices.

Setup the Network

a) Once you have decided which switches and routers you will be using,
   PLEASE check that they are clean before you start
b) A new command that you will need for IPv6
   i. This will enable IPv6 routing on your routers
      i. **Rt-1(config)# ipv6 unicast-routing**

This will enable IPv6 in your router, or layer 3 switch (if you are using a L3 switch you will need to use the SDM command on the switch to get it ready for IPv6)

c) Making a change to an "Interface" on a router is basically the same as making a change on an interface on a switch, I will review this a bit here for the G0/0 interface on router RT-1
   i. From the global config mode on the router
      i. **Rt-1(config)# inter g0/0**
      ii. **Rt-1(config-if)# ip add 192.168.1.254 255.255.255.0**
   ii. We will be adding an IPv6 address hear on the same interfaces as well
      i. **Rt-1(config-if)# ipv6 add 2001:db8:acad:1::254/64**
      ii. **Rt-1(config-if)# no shut**
   iii. Following the information in the addressing table, complete the above for the remaining interfaces
   RT-1 G0/1,
   RT-2 G0/1,
   and RT-2 Lo1

d) We will talk about routing and routing protocols in upcoming weeks, for to day we need to add a static route to each of the routers for both IPv4 and IPv6.
   i. Static routing for IPv4
      i. Router Rt-1
         1. **Rt-1(config)# ip route 0.0.0.0 0.0.0.0 172.16.0.2**
      ii. Router Rt-2
         1. **Rt-2(config)# ip route 0.0.0.0 0.0.0.0 172.16.0.1**
   ii. Static routing for IPv6
      i. Router RT-1
         1. **Rt-1(config)# ipv6 route ::/0 2001:db8:acad:2::11**
      ii. Router R-t-2
         1. **Rt-2(config)# ipv6 route ::/0 2001:db8:acad:2::10**

e) Please setup the appropriate addresses on your PC for both IPv4 and IPv6

f) Make the cable connections from your laptop/PC to the switch (sw-1) remember we are not configuring the switch today, I want you to see that a switch just works out of the box, it will pass data with out any configuration at all.

g) Make the cable connection from the switch to the router Rt-1 G0/0

h) Make the connection between the two routers…. These are both host devices, try putting a cross-over cable between the G0/1 ports on the two routers RT-1 and RT-2

(PowerPoint – Capture 1)

NOTE:

The first time you ping something on a network, if the arp table has not seen the addresses you are trying to reach Pings may fail! Please try a second time before you give up and think that there is a problem.

i) This week is a fairly simple lab, it is mainly to let you see the steps to configure a router are very similar to configuring a switch. We did not implement ssh, or a local user and password list, or some of the other things we did to the switches in the past weeks. Just a basic config and basic routing for today. Make the following screen captures.

(PowerPoint – Capture 2)

(PowerPoint – Capture 3)

(PowerPoint – Capture 4)

(PowerPoint – Capture 5)

(PowerPoint – Capture 6)

(PowerPoint – Capture 7)

That's it for today.

Clean out the configurations on the switches and routers you used this week.
Don't forget to collect your cables.
Then cleanup your workstations