Lab 6.1 - Build a Network

Building the Network

Using the following list of network components, build and connect a network as illustrated in figure 1.

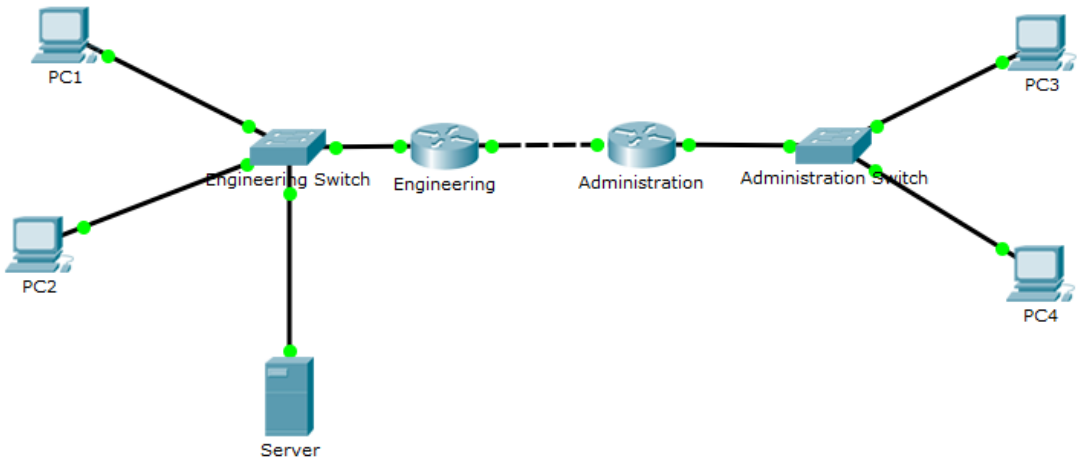

Figure 1: Network Topology

The network configuration consists of:

- 2 x Cisco 1841 Router
- 2 x Cisco 2960 Switch
- 4 x PC's
- 1 x Server

Place each of the network components within the packet tracer work space.

Each of the devices are to be connected with the *copper straight through* cables with the exception of the routers which requires a *copper cross-over* cable.

The cable used to connect the two routers is different, why is this the case?

A cross-over cable is used to connect devices of the same type.

Configure the Network

Securing the Network

After constructing your network topology, you need to secure connectively before carrying out any configuration. Using the passwords in Table 1, restrict access to the routers using an encrypted password.

Table 1: Password Configuration

Devices	Access	Password
Engineering Router **Administration Router**	Console	console1
	Privileged Mode (Encrypted)	enable1

What is the command to configure the Message of the Day (MOTD)?

banner motd [message]

Using the command identified, set the MOTD to:

"WARNING – NOT AUNAUTHORIZED ACCESS ALLOWED"

Configure the Interfaces

Default gateway can be the same as IP address for FA0/0?

Device	Interface	IP	Subnet	Default Gateway
Engineering Router	FA 0/0	192.168.1.1	255.255.255.0	
	FA 0/1	192.168.2.1	255.255.255.0	
Administration Router	FA 0/0	192.168.2.2	255.255.255.0	
	FA 0/1	192.168.3.1	255.255.255.0	
PC 1		192.168.1.2	255.255.255.0	192.168.1.1
PC 2		192.168.1.3	255.255.255.0	192.168.1.1
Server		192.168.1.4	255.255.255.0	192.168.1.1
PC 3		192.168.3.3	255.255.255.0	192.168.3.1
PC 4		192.168.3.2	255.255.255.0	192.168.3.1

Starting in configuration mode, use the following commands to configure the FA 0/0 interface on the Engineering Router.

- interface FA 0/0
- ip address 192.168.1.1 255.255.255.0
- no shut
- exit

Repeat these steps for each of the remaining router interfaces

What is the purpose of the “no shut” command in the configuration guidelines listed above?

To start the interface and keep it running.
They are usually left down for security reasons.

How many networks are in this topology?

3

The network address scheme is considered wasteful, why is this?

There are 254 usable host addresses on each network. There are a total of only 9 used.

The switch is not configured with an IP address, why is this?

The switch is used on the data link layer. It just needs MAC address.

Router RIP

Why can’t a computer in Engineering ping a computer in Administration?

The Administration router does not have routing information for devices on the Engineering network.

What is the purpose of RIP?

To broadcast neighbour ip addresses and learn routing to devices outside it's network.

Starting in configuration mode, use the following commands to enable and configure RIP for the Engineering Router:

- router rip
- network 192.168.1.0
- network 192.168.2.0

Using the above commands as an example, repeat the process on the administration router.

Remember! You only need to advertise networks which are directly connected.

Using a command, identify the routes which are known to the router to each of the routers.

show ip route

What is the difference between routing table entries which begin with “C” and “R”?

"C" = directly connected, "R" = learned through RIP

There are two versions of RIP, V1 and V2 – What is the difference between these?

The main difference is Classful (v1) vs. Classless Routing (v2 only).
v1 does not support Authentication, v2 does.

Identify the command enable RIP V2

> router rip , > version 2

What is the purpose of the “default-information originate” command? Where would this be useful?

Used in routing protocols (such as RIP, OSPF, and BGP) to allow a router to advertise a default route (a route to 0.0.0.0/0) to its neighboring routers.

Calculate an alternative non wasteful addressing scheme for the network