Student Handout

Duration: 1 hour

Objectives:

At the end of this lab students will be able to:

a) Do subnetwork calculations.
b) Set up your own subnet.
c) Test your subnet

Summary:

You will be given a subnet questions. You must perform the necessary calculations to get the subnet works. After which, your tutor will assign you a subnet. You will then configure your router as a subnet. Your router will be connected to a larger router which will already be pre-configured.

Procedure

Setting up your subnet

1. The lab will be configured around the following question.

You have an IP address 192.168.1.5 and need 4 subnets. Find the subnet mask and list the subnets for this configuration.

2. At this step, your tutor will go through the calculations with you.
3. You will be given a router to configure. This router will be connected to a main router which will be connected to the internet via the computer laboratory.
4. You will then be assigned a subnet.
5. Enter subnet configurations in the Network Setup as shown in Figure 1.

Testing of the subnets.

Perform the test of connecting to the router on your LAN and then connect to the router on the other subnet

1. Open a command prompt.
2. Type in "ipconfig /all" in the command line.
3. Ping the following IP addresses to ensure connectivity within the system
    - Ping your router
    - Ping the address of your neighbor on same subnet.

- Ping the address of a person on a different subnet.

BEFORE YOU LEAVE RESTORE THE ORIGINAL SETTINGS THAT WERE ON THE COMPUTER SUCH AS DHCP, DNS SETTINGS, FIREWALL SETTINGS, BROWSER SETTINGS AND ANY OTHERS THAT WERE CHANGED DURING THIS LAB.

Appendix

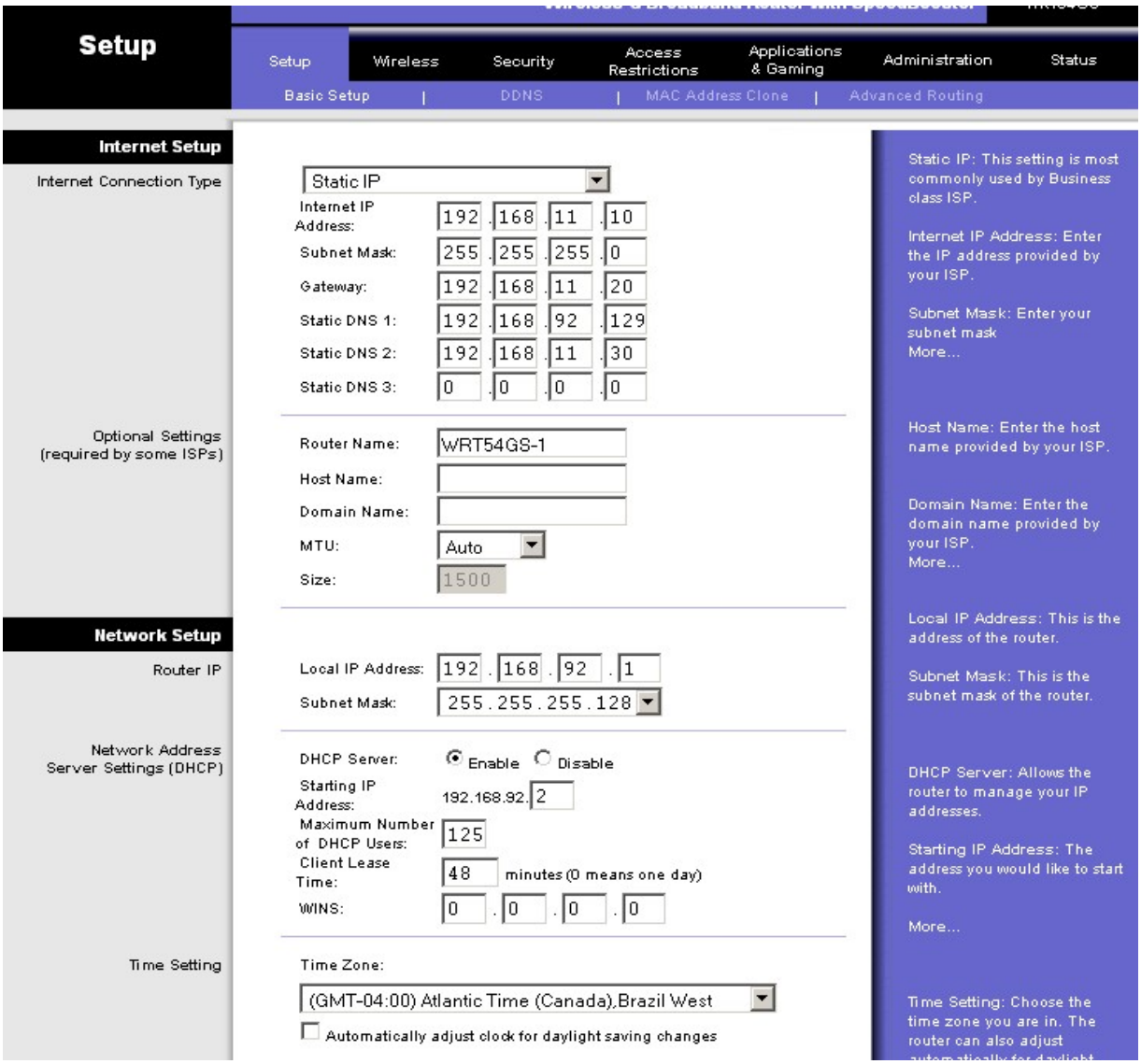

Figure 1

In networks we have a LAN side and a WAN Side. Notice to the back of your router you have normal connections and one Internet connection. The internet connection is the WAN connection and it is used to connect this LAN network to other LAN networks. When performing subnetting, it is essential to create different LANs and connect them together to form a WAN.

Details for the above screen shot.

Settings	**Variables**	**Description**
Setup ->Basic Setup -> Internet Setup -> Static IP **(WAN SETTINGS)**	Internet IP address	We have to assign a WAN IP address that is not within the range of the subnet, else it would just be a node on the subnet. This is the external network to the LAN hence why the IP address is 192.168.11.X.
	Subnet Mask	It is 255.255.255.0 because it is a different network from the subnet.
	Gateway	This is the WAN IP address of the other subnet that you will be connecting to via the router.
	Static DNS 1 & 2	If the network is trying to resolve names for the IP addresses, it first looks within its own network, if it is not found then it will know that it has to go out to the internet to resolve this name. It is important to put the DNS in the appropriate order.
Setup -> Basic Setup -> Network Setup **(LAN Settings)**	Local IP Address	This is the IP address of the router.
	Subnet Mask	This has to be 255.255.255.128 in order to partition the network.
	DHCP	Sets the router to automatically give out IP addresses
	Maximum number of users	This is based on the number of subnets, for this subnet if you try to enter more than 125 host it will reject it since,

You will need to save the changes and reconnect to the routers with the new IP addresses.