**Serial Interfaces and Static Routes**

When we connect routers to other routers, we construct a WAN (Wide Area Network). These connections involve serial interfaces. Typically this connections are managed by an Internet Service Provider (ISP), such as Comcast or AT&T. By creating multiple WAN links and interconnecting numerous routers, we develop a spider-web of interconnecting LANs that we call the Internet. Every network that has Internet access connects to the same WAN.

Let’s examine some of the details of these serial interfaces:

1. Most connections are Point to Point, meaning a router will only connect to one other router through a single serial interface. In this example. Router A (Serial2/0) connects to Router B (Serial 3/0).
2. One of the two sides controls the speed of WAN link. This is denoted by the small clock symbol on one side. (Router A in the example) This is almost always the side controlled by the ISP.
3. The two connected serial interfaces must be given IP addresses from the same network or they will not communicate. (Like hosts on a LAN)
4. When we have a point to point connection, you will only need two IP addresses to bring up a serial (WAN) link, so a /30 or 255.255.255.252 is a perfect subnet mask.

The next thing we must consider is how the routers are going to learn about networks that are not connected to it. To start, we are going to use static routes. Static routes are manually entered into the router and tell the router where to send data destined for particular networks. In the above topology, Router A will not know about the existence of LAN “Z” and Router B will not know about LAN “X”. To solve this situation, we will insert a static route in each of these routers, telling each what to do with a request to go to each of these networks.

1. Static routes use an “exit interface” as a part of the static route. This simply means the interface it must send the data out to reach that network. For example, in the above topology, Router A would have to send the data out S2/0 to reach LAN “Z”. Router B would have to send it out to reach LAN “X”.
2. The interface you are trying to forward the data out must be “up” and active or it will not work. Thus, you must configure the serial interfaces involved in the static routes before you create the static routes themselves.

**Command Syntax**

INT S2/0

IP ADDRESS 200.0.0.1 255.255.255.252

CLOCK RATE 56000

NO SHUT

IP ROUTE 201.100.11.0 255.255.255.0 S2/0