Switches, Hubs and Others

These are all hardware devices that are used to control and direct communication between devices that are present on the network. Connections can be of many different ones, such as; computers (workstations, servers), printers, data storage devices and basically anything that can send or receive data.

Starting with HUBS, which are the most basic, this device receives data on its input port and then sends that data to every one of its output ports whether those ports are connected to another device which has requested or even needs the data.

Switches on the other hand are like HUBS but with a brain. Ports on a switch are addressed which means when a device is connected to a specific port it will send and receive data over that port. The other ports will not receive any data requested from the port requesting the communication. This is controlled by the software that is hard coded in the switch.

Terminal Servers are like switches, but they can be accessed and programmed to work in specific ways. The communications parameters such as 'baud rate' and other networking settings can be set individually for each port on the switch. This makes the switch ideal for working with devices like instrument interfaces, since different instruments will have different communications parameters. For instance, if an instrument communicates using a baud rate (number of bits per second) of say 1600 and the port is set to 3200 it will result in a data stream that cannot be read correctly on the other side of the switch from the instrument. Some instruments can only communicate very slowly, while others can really speed along.

Ports on a Terminal Server are specific to the port number that is configured for a specific device. That device must be configured to communicate over that specific port on the terminal server. Terminal servers are identified on the network by their IP Address and the port number is appended to the end of that address. Example is an instrument that is set to communicate over port 5 on a terminal server with the IP address of 192.168.029.056 would be defined as 192.168.029.056:5 so you see the IP is followed with a colon and then the port number. Okay, this is more detail than you wanted, but just in case you are asked for and IP address and you see that format you will not be confused. In the above example if the terminal server port 5 was configured for the instrument, but the instrument was configured for port 6 then no communication would happen.

So, as a down to earth example, lets' look at this as the data signal is looking for a restroom. The HUB will just go into all the restrooms at the same time, while the Switch will pick out the correct gender for the signal it received. Then the Terminal Server would pick out the correct restroom and also the toilet rather than the sink. I hope that helps make it simple.