Dialing Up to the Internet with PPP

**AGENDA**
- About PPP
- Setting up a PPP Client
- Configuration tools to set up PPP

### PPP
- PPP (the Point to Point Protocol) is a mechanism for creating and running IP (the Internet Protocol) and other network protocols over
  - a serial link
  - over a telnet established link, or
  - a link made using modems and telephone lines.
- PPP is strictly a peer to peer protocol
- When you dial into a site to establish a PPP connection, you are a *client*. The machine to which you connect is the *server*.
- Any Linux PC can be both a PPP server and client
- Most people are interested in using their Linux PC as a client.
- Vast majority of ISPs make it possible for their clients to connect thru PPP.

### IP Numbers
- Every device that connects to the Internet must have its own, unique IP number. These are assigned centrally by a designated authority.
- There are IP numbers that are specifically dedicated to LANs that do not connect to the Internet. The IP number sequences are:
  - One A Class Network Address 10.0.0.0 (netmask 255.0.0.0).
  - 16 B Class Network Addresses 172.16.0.0 - 172.31.0.0 (netmask 255.255.0.0).
  - 256 C Class Network Addresses 192.168.0.0 - 192.168.255.0 (netmask 255.255.255.0).

### Setting up a Client
- Obtaining/Installing Software
  - the PPP daemon (PPP installed as a package)
- Getting information about the PPP server.
  - The telephone number(s) to dial for the service
  - Does the server use DYNAMIC or STATIC IP numbers.
  - What are the IP numbers of the ISPs Domain Name Servers
  - Does the server automatically start PPP, or do you need to issue any commands to start PPP on the server once you are logged in.
Setting up a Client

- Configuring your modem and serial port
  - make sure that your modem is correctly set up and that you know which serial port it is connected to.
  - If you are using a high speed (external) modem (14,400 Baud or above), your serial port needs to be capable of handling the throughput.
  - Once you have sorted out the serial port and modem settings it is a good idea to make sure that these settings do indeed work by dialing your ISP and seeing if you can connect.

- Setting up Name to Address Resolution (DNS)
  - On a TCP/IP network, we call machines by a particular name. However, for this machine to be found by other computers on the Internet, it is actually known by its IP number when computers are communicating across the Internet.
  - When you make a PPP connection, you need to tell your Linux machine where it can get host name to IP number (address resolution) information so that you can use the machine names but your computer can translate these to the IP numbers it needs to do its work.
  - The best way is to set up Linux so that it knows where to go to get this name to number information - automatically. This service is provided by the Domain Name Server (DNS) system. All that is necessary is to enter the IP number(s) for the domain name servers into your /etc/resolv.conf file.

- Your PPP server (ISP Provider) people should provide you with two DNS IP numbers.

- Your /etc/resolv.conf should look something like:
  domain your.isp.domain.name
  nameserver 10.25.0.1
  nameserver 10.25.1.2

- The /etc/host.conf file
  order hosts,bind
  multi on

- This tells the resolver to use information in the host file before it sends queries to the DNS for resolution.

- You now need to be logged in as root to create the directories and edit the files needed to set up PPP
  - /usr/sbin/pppd # the PPP binary
  - /etc/ppp/options # the options pppd uses for all connections
  - /etc/ppp/options ttyXX # the options specific to a connection on this port

- Setting up PPP connection manually
  - Fire up your communications software, dial into the PPP server and log in as normal.
  - Now quit the communications software without resetting the modem
  - at the Linux prompt (as root) type:
    - /usr/sbin/pppd -d -detach /dev/ttySx 38400 &
  - At this point you can look at the PPP interface, by issuing the command:
    - ifconfig
  - Now test the link by 'pinging' the server at its IP number as reported by the ifconfig output.
Setting up a Client

- Automating your connections - Creating the connection scripts
  - A set of scripts automates the log in and PPP start up so all you have to do (as root or as a member of the PPP group) is issue a single command to fire up your connection.
  - ppp-on; ppp-off; ppp-on-dialer scripts.
  - chat-script

Testing your connection
- ppp-on
- ppp-off
- /var/log/messages

Configuration tools to set up PPP

- KPPP - The KDE PPP Dialer
  - KPPP is an easy tool for configuring your PPP links. It comes with the default installation of KDE, and is quite well integrated into that environment.

- WvDial - A command-line pppd driver
  - WvDial is a command-line pppd driver. It has two main components, wvdialconf and wvdial. Both must be run as root.

- rp3 - RedHat PPP dialer
  - rp3 is available on any RedHat system running RedHat 6.2 or later. It is located on your GNOME menu under Internet-called "Dialup Configuration Tool".