Setting up a serial modem on a Debian PC

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Abstract

This article describes how to set up an external serial modem on a desktop PC running Debian Linux 2.2 ("Potato"). It does not cover internal modems (which are normally "winmodems") or USB serial modems.

1. About this article

1.1. Copyright information

1.2. Bugs, errors and mistakes

If you find any errors, omissions etc, please let me know.

1.3. Spelling, punctuation and grammar

This document is written in English (not American English). If you spot a mistake, please check with a British dictionary or spell-checker before contacting me!

2. Preparing for the installation

2.1. System requirements

I have tested these instructions on my i386 system. I started with a fresh, clean, base installation of Debian 2.2 r4. I then installed The X Window System (core) and the Gnome desktop. You don't need to work within X, but you may wish to test the installation using a browser.

You should already have ppp installed. (This is part of the standard base install, so it should already be there unless you have removed it. If it has been removed, it should automatically be re-installed as a dependency of pppconfig in the next section ("Installing pppconfig").

You may wish to have a browser installed so that you can test your connection with it. You can install Mozilla with the command **apt-get mozilla**.

2.2. Gathering information about your modem

Really, all you need to know is that your modem is

- an external modem (that is, it is not a card inside the computer case, but it is a separate box that connects to the computer with a cable)
- a serial modem (that is, it connects to the computer's serial port - usually a 9-pin or 25-pin D-connector labelled COM1 or COM2).

In my case, I bought the cheapest brand new modem I could find. It was up-to-date enough to support 56k V92. I was concerned that it might be too modern for Debian 2.2r4. In fact, it installed and ran perfectly first time.

2.3. Gathering information about your dial-up connection

2.3.1. Information you need

- name of ISP (Internet Service Provider) - this is not essential, but useful if you have more than one ISP
- IP addresses of DNS (Domain Name Servers) - these are numbers of the form nnn.nnn.nnn.nnn
- ISP's IP address. This is only needed if your ISP uses a static IP address instead of a server-assigned IP address. The static IP address is of the form nnn.nnn.nnn.nnn
- authentication method - if you cannot find out, assume this is PAP
- your username at the ISP - eg username.provider.net
- your password at the ISP
- whether your telephone uses pulse or tone dialing - you have pulse dialing if your telephone earpiece produces a short series of musical notes when you dial a number
- the telephone number of your ISP connection

2.3.2. Where to find the information

You can find out this information by telephoning your ISP's "customer services" or "support" hotline. You can also find the information direct from a MS Windows machine with an existing connection to your ISP. The exact format may vary in different flavours of MS Windows, but the basic procedure is the same.

Open "Dial-Up Networking" from the "Start" menu and find the page with the ISP and modem details. In Windows 98:

Start⟶Programs⟶Accessories⟶Communications⟶Dial-Up Networking

`right-click on ISP icon`
Properties

or in Windows NT4:

Start⟶Programs⟶Accessories⟶Dial-Up Networking

`Choose ISP from drop-down menu`
More⟶Edit entry and modem properies

Use the **Basic** and **Server** tabs to find the information you need. The **TCP/IP Settings...** button will give you any static IP address and DNS server addresses.

3. Installing pppconfig

You set up (or change) the ppp settings using pppconfig. You must have "super user" permissions to install and run pppconfig. You will need the root password.

3.1. Logging in as an ordinary user

You could login and stay in text mode, or you may prefer to use an X terminal window (eg xterm or GNOME terminal). Working in the X Window System makes testing easier.

Login as an ordinary user. The hostname of my PC is "debian". It has an ordinary user called "chris". My login screen looks like this:

```
Login: chris enter
Password: ****** enter
```

Start the X Window System.

```
chris@debian:~$ startx enter
```

Open a terminal window such as "xterm". Activate the desktop menu and choose xterm.

xterm

3.2. Becoming a super-user

You need to have root priviledges to install Apsfilter. The "super-user" command, **su**, enables you to do this, and it is safer than actually logging in as root. The password is the root password.

```
chris@debian:~$ su enter
Password: ****** enter
```

3.3. Running apt-get install

apt-get is a simple command line interface for downloading, installing and removing packages. You will need the Debian 2.2 Official Binary CDs. They contain the packages (or .deb files). To install the apsfilter package, type **apt-get install apsfilter** and tap **enter**.

```
debian:/home/chris# apt-get install pppconfig enter
```

apt-get will give you a list of packages to be installed. Usually, there will only be one - pppconfig - but you might see others such as "ppp". The package "ppp" is part of the base install, so you should have it already. You will also be asked to insert the appropriate CD-ROM disc(s).

```
Media Change: Please insert the disc ... in the drive '/cdrom/' and press enter
enter
```

apt-get will unpack some files onto your hard drive. You may be asked to insert another CD-ROM.

```
Media Change: Please insert the disc ... in the drive '/cdrom/' and press enter
enter
```

You will be returned to the command prompt when apt-get has finished installing pppconfig..

3.4. Tidying up

Finally, remove any unwanted software.

```
debian:/home/chris# apt-get clean enter
```

pppconfig is now installed. You are now ready to configure ppp.

4. Configuring ppp

pppconfig is a utility that automates the setting up of a dial-up ppp connection. (You can find out more by entering "man pppconfig" at the command prompt.)

4.1. Running pppconfig

You should still be logged in as the super user. At the command prompt, type **pppconfig** and tap **enter**.

```
debian:/home/chris# pppconfig enter
```

You should now see a screen titled "GNU/Linux PPP Configuration Utility" and headed "Main Menu". Use the arrow keys and the tab key for navigating the menus.

4.2. Entering the information

4.2.1. Creating a connection

From the main menu, choose "Create" and tap **enter**.

```
Main Menu
Create    Create a connection   enter
```

Leave the provider name as "provider" in the next screen. You only need to change this if you are using more than one ISP. The "provider" stting is used by default when your modem dials. If you enter a different name here, you will have to specify it when you invoke the dial-up command.

```
Provider Name
provider   enter
```

4.2.2. Configuring DNS

If your ISP connection uses server assigned name server addresses, choose "Dynamic" and skip to next section.

```
Configure Nameservers (DNS)
(*) Dynamic    Use dynamic DNS   enter
```

If your ISP connection specifies name server addresses, choose "Static" and enter the addresses.

```
Configure Nameservers (DNS)
(*) Static    Use static DNS   enter

IP number
Enter the IP number for your primary nameserver.
nnn.nnn.nnn.nnn enter

IP number
Enter the IP number for your secondary nameserver (if any).
nnn.nnn.nnn.nnn enter
```

4.2.3. Configuring authentication method

It is likely that your ISP has designed its service for MS Windows clients. In that case, the "PAP" protocol will work.

```
Authentication Method for provider
PAP    Peer Authentication Protocol   enter
```

4.2.4. Configuring user name and password

The user name is the name of your account with your ISP. Delete the message "replace_with_your_login_name" and enter your user name. Then enter your password.

```
User Name
Enter the username given to you by your ISP.
username   enter

Password
Enter the password your ISP gave you.
*******   enter
```

4.2.5. Configuring the modem connection

Set the modem port speed to its highest value (115200). Choose pulse or tone dialling, and enter the telephone number of your ISP connection.

```
Speed
115200   enter

Pulse or Tone
(*)Tone   tab enter

    OR

    Pulse or Tone
    (*)Pulse   tab enter

Phone number
nnnnnnnnnnn   enter
```

4.2.6. Selecting the modem port

Make sure your modem is switched on. pppconfig can then identify your modem port automatically.

```
Choose Modem Config Method
Yes   enter
```

This may take a little while. You should see activity on your modem's Rx/Tx led. pppconfig then presents you with a list of ports. The detected port is indicated with a "*" and should correspond to the physical connection to your PC (COM1 = /dev/ttyS0, COM2 = /dev/ttyS1). If the selection is correct, **tab** to **<Ok>** and tap **enter**.

```
Select Modem Port
(*) /dev/ttySn tab enter
```

You should now see a summary screen. By default, only the "root" user is allowed to dial out. You should not be using "root" for everyday tasks, so you will want to enable at least one normal user to dial out. The next section shows you how.

4.3. Adding normal users

You should be looking at a summary screen headed "Properties of provider". If not, you can re-run pppconfig and choose "change a connection" from the main menu. Use the arrow keys to highlight "Advanced" and tap **enter**.

```
Properties of provider
Advanced    Advanced Options   enter
```

You now have a list of advance options. Choose **Add-user** and enter the user's name.

```
Advanced Settings for provider
Add-user    Add a ppp user   enter

Add User
user's name   enter
```

You will be returned to the "Advanced Settings for provider" screen. Scroll down the menu to "Previous", and return to the "Properties of provider" screen.

```
Advanced Settings for provider
Previous    Properties of provider   enter
```

From here you can save your settings, return to the main menu and exit.

```
Properties of provider
Finished    Write files and return to main menu.   enter

Finished
<OK>   enter

Main Menu
Quit    Exit this utility   enter
```

4.4. Finishing off

You no longer need to be logged in as the super user. Enter "exit" at the command prompt.

```
debian:/home/chris# exit   enter
chris@debian:~$
```

5. Testing the connection

You should have finished configuring your ppp dial-up connection. You should be logged in as an ordinary user, and your modem should be connected and switched on.

5.1. starting a ppp connection

5.1.1. Running pon

If you have configured the ISP's name as "provider", enter "pon". If you have used a different ISP name, enter "pon *ISPname*". (See "man pon" for details.)

```
debian:/home/chris# pon   enter
```

If your modem has led indicators, the "On" or "Connection" led should light. You should also hear the characteristic sound of the modem dialing and speaking to the host.

If nothing happens, skip to the next section - "Don't panic".

When all activity has ceased, close the connection by entering poff". If you specified an ISP name, enter "poff *ISPname*". (See "man poff" for details.)

```
debian:/home/chris# poff   enter
```

5.1.2. Don't panic!

If nothing happens after a few seconds, check the following:

- the modem is connected to the serial port
- the modem is connected to the telephone socket
- the modem is switched on - if you have indicator leds, the "Power" led is lit.

If the modem still will not dial out, you may have a problem with access permissions. Logout, login again as root and run pon again. (If you are working from a terminal window in X, you must exit to the command line first by choosing **Logout...** from the X menu.)

```
Logout...
Confirm Logout
Logout will close all active applications.
Procede?
OK

debian:/home/chris# logout
Login: root   enter
Password: ******   enter
debian:~# pon enter
```

If this works, then for some reason the ordinary user has not been given permission to dial out. You should check that the ordinary user is a member of group "dip". Use a text editor to look at the file /etc/group. If you use emacs, the command is "**emacs /etc/group**"

```
debian:~# emacs /etc/group   enter
```

Look for a line beginning with "dip" and containing the ordinary user's name.

```
dip:x:30:chris
```

The second field is connected with an encrypted group password. I don't know much about this, but, if you don't mind the ordinary user having dial-up access without a password, just remove this field. (See "man group" for details.)

```
dip::30:chris
```

Save the changed file and exit emacs.

F10 f s
F10 f e

Now log out and log in as the ordinary user and try again.

5.2. Testing a browser

You should be logged in as an ordinary user, and X should be running.

Open a browser, eg Mozilla. Open a terminal window (eg xterm) and open a ppp connection by entering **pon**.

`debian:/home/chris#` **pon   enter**

Try connecting to a URL. There are several links on the Mozilla default page including "www.google.com/linux". When you are satisfied that everything is OK, disconnect by entering **poff** in the terminal window

`debian:/home/chris#` **poff   enter**

6. Checklist

1. Check the make and model of your modem. It should be an external, serial modem.
2. Check the port that your modem is attached to. It should be a serial port.
3. Make sure that you have the details of your ISP (Internet Service Provider) dialup account.
4. Check that the package "pppconfig" is installed. If not, install it
5. Make sure that the modem is attached to the serial port and the telephone line, and that it is switched on.
6. Configure the modem using "pppconfig".
7. Test the ISP connection using "pon" and "poff".
8. Test connection using a browser.