



USYD Dialup

Linux Setup Guide

Document Description: Setup guide for USYD Dialup on Linux

For user by: All Staff and students that wish to use USYD Dialup on Linux

Quick Start:

Dial in Number: 9325 0333

Automatic Configuration Script: <http://www.usyd.edu.au/proxy.pac>

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1 Introduction

This document contains directions for setting up a dialup Internet connection through The University of Sydney with a PC running Linux. Generally, there is more difference between individual Linux systems than between machines running other operating systems, so the steps involved in setting up a dial up connection can differ. The procedures described here should, however, work on *most* systems.

If you already know what you are doing, here are all the settings you need:

Username & Password: Use the UniKey details that came with your confirmation of enrolment.

Dial in phone number: 93250333

Primary DNS: 129.78.64.2

Secondary DNS: 129.78.64.1

Gateway: 129.78.64.3

Incoming (POP) mail server: pop.usyd.edu.au

Incoming (IMAP) mail server: imap.usyd.edu.au

Outgoing (SMTP) mail server: smtp.usyd.edu.au

Preferred Home Page: <http://www.usyd.edu.au>

Automatic proxies: <http://www.usyd.edu.au/proxy.pac>

2 Minimum system requirements:

2.1. 486 or better PC.

2.2. 16Mb minimum RAM.

2.3. Linux kernel 2.2 (in particular, Redhat, Debian or Slackware distributions)

2.4. 28.8Kbps or better modem (Win modems and other non-standard modems are not supported; see the modem configurations section for details). Any standard Linux distribution will have all the software needed to set up your connection. You should not expect any difficulty unless you have altered the standard distribution or the kernel provided with your distribution - in which case you may have to obtain and install software, or even install a new kernel.

3 Ensuring your kernel includes PPP support:

3.1. All the major Linux distributions come with PPP support set up by default. To check that your kernel includes PPP support, enter the command:

```
dmesg | grep PPP
```

3.2. You should see something like:

```
[root@blah]# dmesg | grep PPP
PPP: version 2.3.7 (demand dialling)
PPP line discipline registered
```



- 3.3. If you get that response (or something similar), then your kernel is already configured for PPP and you can skip this section.
- 3.4. If you **do not** get a similar response, then you will need to set up PPP before you proceed...
Read on:
- 3.5. As `root`, enter the command:

```
modprobe ppp
```

- 3.6. You should see something like:

```
[root@blah]# modprobe ppp
PPP: version 2.3.7 (demand dialling)
PPP line discipline registered
```

- 3.7. If you **do** receive this response (or something similar), then the PPP module is now installed in the kernel.
- 3.8. If you see something like this instead:

```
[root@blah]# modprobe ppp
modprobe: Can't locate module ppp
[root@blah]#
```

You will have to compile and install a new kernel with ppp support.

- 3.9. Now you will have to make sure the ppp module loads automatically when Linux starts.
- 3.10. There are a couple of ways to do this:
 - 3.10.1. If your system includes the file `/etc/modules`, add a line saying ppp to the end of it

```
[root@blah]# ls -l /etc/modules
-rw-r--r-- 1 root root 109 Dec 15 20:32 /etc/modules
[root@blah]# echo ppp >> /etc/modules
[root@blah]# cat /etc/modules
pci-scan
pci-skeleton
natsemi
ppp
[root@blah]#
```

- 3.10.2. If your system does not have an `/etc/modules` file, **DO NOT** make one. Instead, try adding a line like `/sbin/modprobe ppp` somewhere like `/etc/rc.d/rc.local` or where ever you think it most appropriate.

```
[root@blah]# ls -l /etc/modules
ls: /etc/modules: No such file or directory

[root@blah]# vi /etc/rc.d/rc.local
```



```
#!/bin/sh
##
This script will be executed *after* all the other init scripts.
# You can put your own initialisation stuff in here if you don't
# want to do the full Sys V style init stuff.
[ -f /etc/sysconfig/system ] && source /etc/sysconfig/system
[ -z "$SECURITY" ] && SECURITY=0
```

<SNIP SNIP>

~~jump to somewhere near the end of the file~~

~~and add a line to load ppp module~~

<SNIP SNIP>

```
# Force PPP module to load at boot
/sbin/modprobe ppp

[root@blah]# grep ppp /etc/rc.d/rc.local
/sbin/modprobe ppp

[root@blah]#
```

4 Ensuring the PPP software is installed:

- 4.1. To set up your connection you will need the Linux ppp software, version 2.1 or later. This software is included with all Linux distributions.
- 4.2. To check that you have ppp installed execute the following command as root:

```
ls /etc/ppp
```

- 4.3. Here is the output when we ran the command:

```
[root@blah]# ls /etc/ppp
chap-secrets
ip-down*
ip-down.local*
ip-up*
ip-up.local*
options
pap-secrets
peers/
[root@blah]#
```

- 4.4. If you see something like the list above, then ppp is installed on your system and you can move on to the next step.
- 4.5. If you get the following response, then you are not working as the root user - log in as the root user.

```
ls: /etc/ppp: Permission denied
```



4.6. If you get the response, then you will need to install ppp.

```
ls: /etc/ppp: No such file or directory
```

5 Installing PPP

5.1. By far the simplest way to install the PPP software is to use the package that came with your distribution. See the documentation that came with your version of Linux for instructions on how to do this.

6 Tidying up loose ends.

6.1. Your system will need to know the addresses of our DNS servers.

6.2. The simplest way to do this is to enter the information into your `/etc/resolv.conf` file.

6.3. If this file doesn't exist, you will need to make it and RESTART your computer.

```
[root@blah]# ls -l /etc/resolv.conf
ls: /etc/resolv.conf: No such file or directory
[root@blah]# touch /etc/resolv.conf
[root@blah]# echo "search ucc.usyd.edu.au" >> /etc/resolv.conf
[root@blah]# echo "nameserver 129.78.64.2" >> /etc/resolv.conf
[root@blah]# echo "nameserver 129.78.64.1" >> /etc/resolv.conf
[root@blah]# cat /etc/resolv.conf
search ucc.usyd.edu.au
nameserver 129.78.64.2
nameserver 129.78.64.1
[root@blah]# shutdown -r now
```



7 Setting up WvDial

- 7.1. There are many methods under Linux of controlling modems and establishing dialup connections. Only one, WvDial, will be discussed in full here, due to it always working with USYD Dialup.
- 7.2. Other methods are discussed in full in the Linux PPP HOWTO here. WvDial is an "intelligent dialer", a program that will dial up and connect with a minimum of information being provided by the user. Many distributions include wvdial, and if you have it, it is probably the easiest way to configure your connection. Check whatever way you want to see if WvDial is installed already. Here are just a couple of examples of how:

```
[root@blah]#  
[root@blah]# which wvdial  
/usr/bin/wvdial  
[root@blah]#  
[root@blah]# which wvdial  
which: no wvdial in (/sbin:/usr/sbin:/bin:/usr/bin:/usr/X11R6/bin)  
[root@blah]# ls -l /usr/local/bin/wvdial*  
-rwxr-xr-x 1 root root 77264 Jan 21 21:19 /usr/local/bin/wvdial*  
-rwxr-xr-x 1 root root 53220 Jan 21 21:19 /usr/local/bin/wvdialconf*  
[root@blah]#  
[root@blah]#rpm -q wvdial  
package wvdial is not installed  
[root@blah]# cd /misc/cd  
[root@blah]# rpm -i RPMS/wvdial-1.41.i586.rpm  
[root@blah]# rpm -q wvdial  
wvdial-1.41  
[root@blah]#
```

- 7.3. Configure WvDial by running the following commands as `root` (First, make sure your modem is firmly attached to your computer and turned on!)

```
/usr/local/bin/wvdialconf /etc/wvdial.conf
```

Here is the output from when we ran this command:

```
[root@blah]# touch /etc/wvdial.conf  
[root@blah]# /usr/local/bin/wvdialconf /etc/wvdial.conf  
Scanning your serial ports for a modem.  
ttyS1<*1>: ATQ0 V1 E1 -- OK  
ttyS1<*1>: ATQ0 V1 E1 Z -- OK  
ttyS1<*1>: ATQ0 V1 E1 S0=0 -- OK  
ttyS1<*1>: ATQ0 V1 E1 S0=0 &C1 -- OK  
ttyS1<*1>: ATQ0 V1 E1 S0=0 &C1 &D2 -- OK  
ttyS1<*1>: ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 -- OK  
ttyS1<*1>: ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0 -- OK  
ttyS1<*1>: Modem Identifier: ATI -- 5607A  
ttyS1<*1>: Speed 2400: AT -- OK  
ttyS1<*1>: Speed 4800: AT -- OK  
ttyS1<*1>: Speed 9600: AT -- OK  
ttyS1<*1>: Speed 19200: AT -- OK  
ttyS1<*1>: Speed 38400: AT -- OK  
ttyS1<*1>: Speed 57600: AT -- OK
```



```
ttyS1<*1>: Speed 115200: AT -- OK
ttyS1<*1>: Max speed is 115200; that should be safe.
ttyS1<*1>: ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0 -- OK
ttyS0<*1>: ATQ0 V1 E1 -- ATQ0 V1 E1 -- ATQ0 V1 E1 -- nothing.
Port Scan<*1>: S2 S3 S4 S5 S6 S7 S8 S9
Port Scan<*1>: S10 S11 S12 S13 S14 S15 S16 S17
<<SNIP SNIP>>
Port Scan<*1>: SR498 SR499 SR500 SR501 SR502 SR503 SR504 SR505
Port Scan<*1>: SR506 SR507 SR508 SR509 SR510 SR511
Found a modem on /dev/ttyS1.
ttyS1<Info>: Speed 115200; init "ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0"
[root@blah]#
```

- 7.4. If WvDial does **not** find your modem, and it is plugged in **and** turned on, please go to setting up serial support.
- 7.5. If you have **already** set up serial support and WvDial **still** doesn't find your modem, please go to setting up WvDial manually
- 7.6. If all went well and WvDial found your modem... keep reading:
- 7.7. This wrote the file /etc/wvdial.conf as follows:

```
[root@blah]# cat /etc/wvdial.conf
[Dialer Defaults]
Modem = /dev/ttyS1
Baud = 115200
Init1 = ATZ
Init2 = ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0
; Phone = <Target Phone Number>
; Username = <Your Login Name>
; Password = <Your Password>
[root@blah]#
```

- 7.8. Now edit the file /etc/wvdial.conf:
- 7.9. Remove the leading ";" from the last three lines
- 7.10. Replace "<Target Phone Number>" with 93250333
- 7.11. Replace "<Your Login Name>" with YOUR login name
- 7.12. Replace "<Your Password>" with YOUR password
- 7.13. This is how the file looked after we edited it in our favourite text editor:

```
[root@blah]# cat /etc/wvdial.conf
[Dialer Defaults]
Modem = /dev/ttyS1
Baud = 115200
Init1 = ATZ
Init2 = ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0
Phone = 93250333
Username = [UNIKEY LOGIN]
Password = [UNIKEY PASSWORD]
[root@blah]#
```

8 Dialling the Internet with WvDial

- 8.1. You can now fire up your Internet connection by entering the following command as root:



```
/usr/local/bin/wvdial
```

8.2. Here is the output from when we ran the above command:

```
[root@blah]# /usr/local/bin/wvdial
--> WvDial: Internet dialer version 1.41
--> Initializing modem.
--> Sending: ATZ
ATZ
OK
--> Sending: ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0
ATQ0 V1 E1 S0=0 &C1 &D2 S11=55 +FCLASS=0
OK
--> Modem initialized.
--> Sending: ATDT 93250333
--> Waiting for carrier.
ATDT 93250333
CONNECT 115200
--> Carrier detected. Waiting for prompt.
The University of Sydney Modem Pool mp-15
Authorised access only
*****
* WARNING: It is a criminal offence to: *
* i. Obtain access to data without authority *
* (Penalty 2 years imprisonment) *
* ii Damage, delete, alter or insert data without authority *
* (Penalty 10 years imprisonment) *
*****
User Access Verification
Username:
--> Looks like a login prompt.
--> Sending: username
username
Password:
--> Looks like a password prompt.
--> Sending: (password)
Entering PPP routing mode.
Async interface address is unnumbered (FastEthernet0)
Your IP address is 10.0.0.0. MTU is 1500 bytes
Header compression will match your system.
--> Looks like a welcome message.
--> Starting pppd at Wed Jan 24 09:57:19 2001
```

8.3. We now have an Internet connection. WvDial will retain ownership of the terminal until it is turned off.

8.4. To turn WvDial off enter <Ctrl C> at the WvDial prompt (ie Tap the C key while holding down the Ctrl key)

```
--> Looks like a welcome message.
--> Starting pppd at Wed Jan 24 09:57:19 2001
```



```
Caught signal #2! Attempting to exit gracefully...
--> Disconnecting at Wed Jan 24 09:58:28 2001
[root@blah]#
```

If `/etc/wvdial.conf` is pointing at the wrong serial port or the modem is not plugged in or

is turned off, you will get the following message:

```
[root@blah]# /usr/local/bin/wvdial
--> WvDial: Internet dialer version 1.41
--> Initializing modem.
--> Sending: ATZ
--> Modem not responding.
[root@blah]#
```

8.5. In this case, make sure your modem is plugged in and turned on and that the correct serial port is being referenced in `/etc/wvdial.conf`

8.6. NOTE: If you do not want to have to login as root to run WvDial you could `setuid root` on the program:

```
[root@blah /root]# ls -l /usr/local/bin/wvdial
-rwxr-xr-x 1 root root 75k Jan 19 11:44 /usr/local/bin/wvdial*
[root@blah /root]# chmod +s /usr/local/bin/wvdial
[root@blah /root]# ls -l /usr/local/bin/wvdial
-rwsr-sr-x 1 root root 75k Jan 19 11:44 /usr/local/bin/wvdial*
[root@blah /root]#
```

We do not know what the security implications of the last step may or may not be. If you go ahead and do this, and it causes havoc... please remember: you have been warned and we take no responsibility.

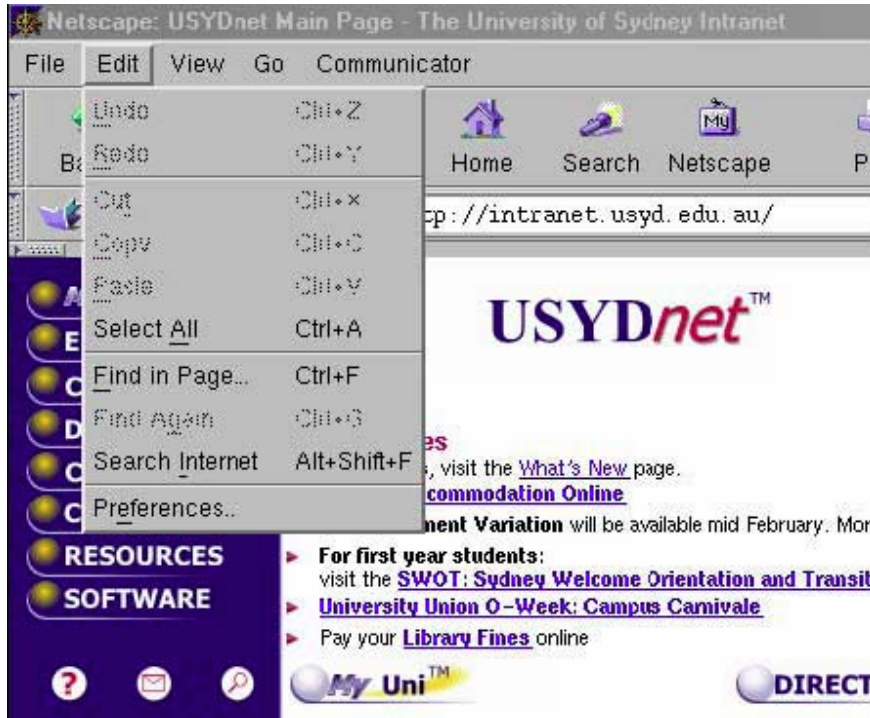
8.7. NOTE: When you run WvDial it may not connect to the Internet straight away. If this is the case, then WvDial may be laying in wait for you to try to access something on the Internet, at which time it will dial.

9 Configuring Netscape Communicator

9.1. What you need to know:

- 9.1.1. Recommended home page: <http://www.usyd.edu.au>
- 9.1.2. Automatic proxies: <http://www.usyd.edu.au/proxy.pac>
- 9.1.3. Incoming (pop) mail server: pop.usyd.edu.au
- 9.1.4. Outgoing (SMTP) mail server: smtp.usyd.edu.au

9.2. They say a picture is worth a thousand words... so here's five or six thousand words:





Netscape: Preferences

Category

- Appearance
- Navigator
- Mail & Newsgroups
- Identity**
- Mail Servers
- Newsgroups Servers
- Addressing
- Messages
- Copies and Folders
- Formatting
- Return Receipts
- Disk Space
- Roaming User
- Composer
- Advanced

Identity Set your name, email address, and signature file

The information below is needed before you can send mail. If you do not know the information requested, please contact your system administrator or Internet Service Provider.

Your name:

Your Real Name: [Your Real Name]

Email address:

YOUR_login@mail.usyd.edu.au

Reply-to address (only needed if different from email address):

[]

Organization:

[]

Signature File:

[] Choose...

Attach my personal card to messages (as a vCard) Edit Card...

OK Cancel

9.3. Where "YOUR login" is your UniKey login name



Netscape: Preferences

Category: Mail Servers

Mail Servers Specify servers for mail

Incoming Mail Servers

Outgoing Mail Server

Outgoing mail (SMTP) server: mail.usyd.edu.au

Outgoing mail server user name: YOUR_login

Use Secure Socket Layer (SSL) or TLS for outgoing messages:

Never If Possible Always

Local mail directory

Directory: Choose...

OK Cancel

Netscape

General POP

Server Name: mail.usyd.edu.au

Server Type: POP

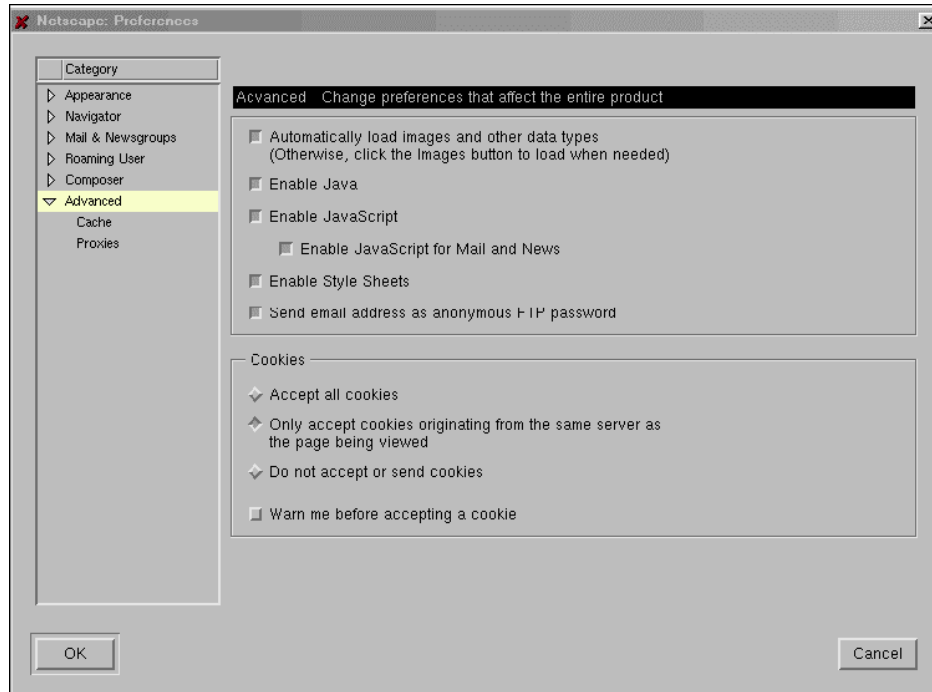
User Name: YOUR_login

Remember password.

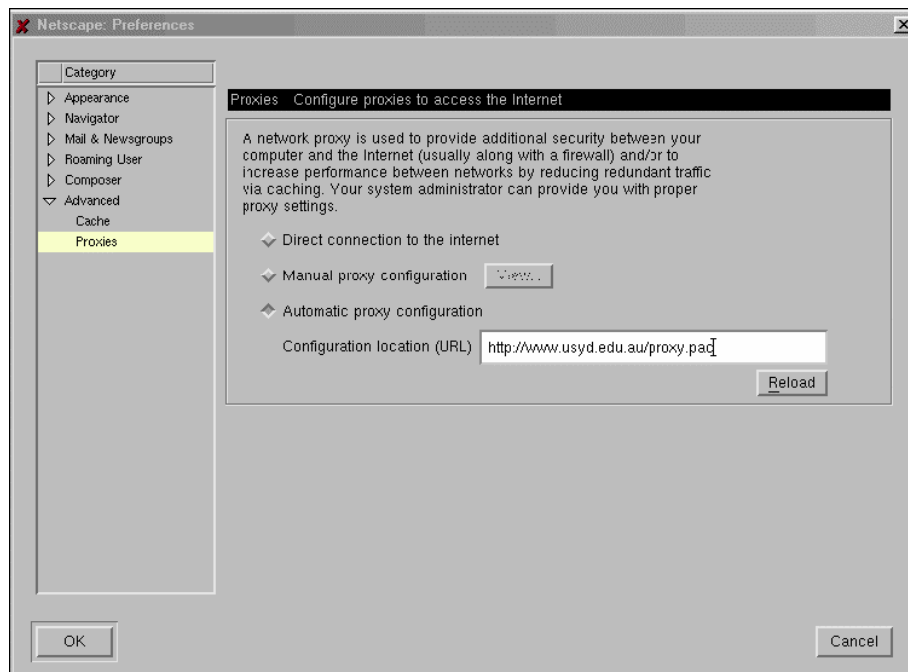
Check for mail every 10 minutes.

Automatically download any new messages.

OK Cancel



9.4. These settings are particularly important when using The Universities Web based email and Intranet.





10 Checking for serial support

- 10.1. You are here because WvDial could not find your modem.
- 10.2. Unfortunately, not all modems work under Linux. In particular, very few "soft-modems" or "win-modems" work under Linux.
- 10.3. This documentation only covers the use of "standard" serial modems. If you do have a "soft-modem", "win-modem", USB modem or other non-standard modem, it *may* be still be possible to use it – you will have to refer to the Modem-HOWTO here.
- 10.4. Provided your modem is correctly physically connected, you should only need two pieces of information about it to proceed:
 - 10.4.1. The name of the serial port the modem is connected to.
 - 10.4.2. The baud speed of the serial port.
 - 10.4.2.1. The Serial Port
 - 10.4.2.1.1. Most PCs have one or two external serial ports. If your modem is an internal modem, it will have a built-in serial port of its own. If you have an external modem, the serial port will be `/dev/ttyS0` (COM1 under DOS and Windows) or `/dev/ttyS1` (COM2).
 - 10.4.2.1.2. If you have an internal modem the serial port could be `/dev/ttyS0` (COM1), `/dev/ttyS1` (COM2), `/dev/ttyS2` (COM3) or `/dev/ttyS3` (COM4) depending on how the manufacturer set up your computer.
 - 10.4.2.1.3. All the major Linux distributions come with Serial support set up by default. To check that your kernel includes Serial support, enter the command (as root):

```
cat /proc/tty/driver/serial
```

10.4.2.1.4. You should see something like:

```
[root@blah]# cat /proc/tty/driver/serial
serinfo:1.0 driver:4.27
0: uart:16550A port:3F8 irq:4 baud:9600 tx:0 rx:0
1: uart:16550A port:2F8 irq:3 baud:9600 tx:0 rx:0
2: uart:unknown port:3E8 irq:4
3: uart:unknown port:2E8 irq:3
[root@blah]#
```

10.4.2.1.5. This tells us that the kernel supports two serial ports (port 0 and 1) and they have 16550A uarts.

10.4.2.1.6. If you see something like this instead:

```
[root@blah]# cat /proc/tty/driver/serial
cat: /proc/tty/driver/serial: No such file or directory
[root@blah]#
```



10.4.2.1.7. Serial support may be available as a module. Try the command (as root):

```
modprobe serial
```

10.4.2.1.8. Here is the output from when we ran the command and checked for serial support again:

```
[root@blah]# cat /proc/tty/driver/serial
cat: /proc/tty/driver/serial: No such file or directory
[root@blah]#
[root@blah]# modprobe serial
[root@blah]#
[root@blah]# cat /proc/tty/driver/serial
serinfo:1.0 driver:4.27
0: uart:16550A port:3F8 irq:4 tx:0 rx:0
1: uart:16550A port:2F8 irq:3 tx:0 rx:0
2: uart:unknown port:3E8 irq:4
3: uart:unknown port:2E8 irq:3
[root@blah]#
```

10.4.2.1.9. If you **do** receive this response (or something similar), then the serial module is now installed in the kernel and we can see that the kernel supports two serial ports (port 0 and 1) and they have 16550A uarts.

10.4.2.1.10. If you see something like this instead, you will have to compile and install a new kernel with serial support.

```
[root@blah]# modprobe serial
modprobe: Can't locate module serial
[root@blah]#
```

10.4.2.2. Now you will have to make sure the serial module loads automatically when Linux starts. There are a couple of ways to do this:

10.4.2.2.1. If your system includes the file `/etc/modules`, add a line saying `serial` to the end of it.

```
[root@blah]# ls -l /etc/modules
-rw-r--r-- 1 root root 109 Dec 15 20:32 /etc/modules

[root@blah]# echo serial >> /etc/modules

[root@blah]# cat /etc/modules
pci-scan
pci-skeleton
natsemi
ppp
serial
```



```
[root@blah]#
```

10.4.2.2.2. If your system does not have an `/etc/modules` file, **DO NOT** make one. Instead, try adding a line like `/sbin/modprobe ppp` somewhere like `/etc/rc.d/rc.local` or where ever you think it most appropriate.

```
[root@blah]# ls -l /etc/modules
ls: /etc/modules: No such file or directory

[root@blah]# vi /etc/rc.d/rc.local
#!/bin/sh
##
This script will be executed *after* all the other init scripts.
# You can put your own initialisation stuff in here if you don't
# want to do the full Sys V style init stuff.
[ -f /etc/sysconfig/system ] && source /etc/sysconfig/system
[ -z "$SECURITY" ] && SECURITY=0
```

<SNIP SNIP>

~~jump to somewhere near the end of the file~~

~~and add a line to load serial module~~

<SNIP SNIP>

```
# Force serial module to load at boot
/sbin/modprobe serial
```

```
[root@blah]# grep serial /etc/rc.d/rc.local
/sbin/modprobe serial
```

```
[root@blah]#
```

10.4.2.2.3. Now go back to configuring WvDial

11 Setting up WvDial manually.

- 11.1. In this section we will write our own `/etc/wvdial.conf` file.
- 11.2. The file will be in the following format:

```
[Dialer Defaults]
Modem = <serial port modem is attached to>
Baud = <baud speed of your serial port>
Init1 = <initialisation string for your modem>
Init2 = <OPTIONAL second initialisation string for your modem>
Phone = <isp phone number>
Username = <your user name>
Password = <your password>
```

12 Gathering information:

- 12.1. First run the following command as root:



```
cat /proc/tty/driver/serial
```

12.2. Here is the output from when we ran the command:

```
[root@blah]# cat /proc/tty/driver/serial
serinfo:1.0 driver:4.27
0: uart:16550A port:3F8 irq:4 baud:9600 tx:0 rx:0
1: uart:16550A port:2F8 irq:3 baud:9600 tx:0 rx:0
2: uart:unknown port:3E8 irq:4
3: uart:unknown port:2E8 irq:3
[root@blah]#
```

12.3. From this output we can see:

12.3.1. There are two active serial ports (0 and 1)

12.3.2. Both ports have 16550 uarts

12.4. Therefore we know that:

12.4.1. Our modem is attached to either /dev/ttyS0 or /dev/ttyS1

12.4.2. The baud rate for the ports can be set to 115200

12.4.3. (If the uart was *not* a 16550 then the baud rate could only be set to 57600)

12.5. So now we have all the information we need to write /etc/wvdial.conf

Modem: either /dev/ttyS0 or /dev/ttyS1 (we happen to know that ours is /dev/ttyS1 because the port is labelled COM 2 on the back of our computer)

Baud: 115200

Init1 ATZ (this sets the modem back to factory defaults and is usually OK)

Init2 dependant on your modem (OK to leave this line out)

Phone 93250333

Username Your UniKey (extro) Login

Password Your UniKey (extro) Password

Here is our /etc/wvdial.conf

```
[Dialer Defaults]
Modem = /dev/ttyS1
Baud = 115200
Init1 = ATZ
Phone = 93250333
Username = OUR_LOGIN
Password = OUR_PASSWORD
```

Now we can move on to Running WvDial

13 Recompiling the kernel

13.1. If you are here, you must be using a kernel without PPP and / or Serial support.

13.2. You will need to compile and install a kernel that does have PPP and Serial support.

13.3. If you do not know how to do this, please read:

The Linux Kernel HOWTO,

The relevant sections of The Linux PPP HOWTO, and

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The Linux Serial HOWTO

- 13.4. Once you have compiled and installed your new kernel (WITH PPP AND SERIAL SUPPORT), and restarted your system, go back and start at Step 1