Cable Modem Providers HOWTO

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Revision History

Revision v4.29	December 8, 2000	Revised by: vv
Many updates.		

This document attempts to answer basic questions on how to connect your Linux box to cable modem or cable Internet provider.

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1. Introduction

The main goal of this document is to get your system running with your cable modem, and cable internet provider. Unfortunately, many ISPs that provide cable modem services, give you Windows and Macintosh software only.

This document attempts to explain how to setup some cable modems and internet providers in Linux, the tricks to get them working correctly, and the traps not to fall down. It is hoped that this document will assist you, however we make no claims for the validity of the information contained within.

1.1. New Versions of this Document

The newest version of this HOWTO will always first be made available on

http://www.cs.unm.edu/~vuksan/linux/Cable−Modem.html

1.2. Feedback

Feedback is most certaintly welcome for this document. Without your submissions and input, this document wouldn't exist. So, please send your additions, comments and criticisms to `<vuksan-feedback@veus.hr>`.

1.3. Contributors

The following people have contributed to this mini−HOWTO.

- Dan Sullivan `<dsulli@home.com>`
- Andrew Novick
- Michael Strates

1.4. Standard Disclaimer

No liability for the contents of this documents can be accepted. Use the concepts, examples and other content at your own risk. As this is a new edition of this document, there may be errors and inaccuracies, that may of course be damaging to your system. Proceed with caution, and although this is highly unlikely, I don't take any responsibility for that.

Also bear in mind that this is *NOT* official information. Obtaining official information is usually an impossibility with many ISPs. Much content in this document are assumptions, which appear to work for people. Use the information at your own risk.

1.5. Copyright Information

2. Setting up your Ethernet Card

All of the setups below use ethernet cards (network cards) to connect you somehow to the Internet. That is why first we need to check if your ethernet card is working and most importantly can be used (read is supported) in Linux. There is a comprehensive Ethernet HOWTO at http://www.linuxdoc.org/HOWTO/Ethernet−HOWTO.html if you would like to read it otherwise try this.

Boot into Linux, During boot up a message like this should appear...

```
eth0: 3c509 at 0x300 tag 1, 10baseT port, address  00 20 af ee 01 23, IRQ 10.
3c509.c:1.07 6/15/95 becker@cesdis.gsfc.nasa.gov
```

If you missed it type **dmesg**.

If you see a message like that you are set and you can go to the next section. If you can't see a message like this there are two possible explanations, your ethernet card is PNP (plug−n−play) and you need to use tools such as isapnptools to get it recognized (I am not quite sure on this because I don't have a single PNP card so correct me if I am wrong). The other explanation is that you need to set up your card.

Most cards today come with DOS programs that are used to setup your card. For example to get my 3COM 3c509 to work all I needed to do is boot into DOS and use a utility to configure my card. There is usually a Auto Configure option. If that does not solve your problem try changing the IRQ for the card using the same utility. I find that usually IRQs 10,11 and 12 work well. If none of this solves your problem please read the Ethernet HOWTO referenced above or post to a newsgroup such as comp.os.linux.setup or comp.os.linux.networking.

3. Regular Cable Modem ISPs

If you think you have the card recognized you have to now look at the entry for your ISP. I have sorted the information according to a provider because setups are mostly ISP specific.

3.1. ATT (formerly MediaOne)

MediaOne Express is a Internet cable service provided by MediaOne. The hardware setup consists of a cable modem produced by LanCity or General Instruments which plugs into an ethernet card using a 10BaseT (UTP−45) cable. Assignment of IP addresses and other networking information is done using DHCP which stands for Dynamic Host Configuration Protocol. The only thing you need to do is read the DHCP mini−HOWTO and configure your system appropriately. There is no other necessary configuration. DHCP mini−HOWTO can be found at http://www.oswg.org/oswg−nightly/DHCP.html.

Most of Mediaone/RoadRunner tracks you're MAC (ethernet) address, and won't allow any other MAC address to use the CableModem.

To get around this you could either call Mediaone and ask them to change you're MAC address to you're current one. They do allow you to have multiple allowed MAC addresses, but they might not allow more than two. Other approach is to tell your ethernet card what MAC address to use. Most cards will allow it. So first make sure you write down the MAC address of the card you used when Mediaone technicians showed up and they type something like this:

```
ifconfig eth0 hw ether 00:23:56:74:25:12
```

Additional notes by Peter Zurich:

Pump will not work without specifying the hostname ("−h fubar") on the command line. It doesn't seem to matter what exactly you give it as the hostname, as long as you give something.

Notes from Seattle, Washington area

You have to supply the −h option to dhcpcd if you want to get your service running. "windowsidentification" is the one ATT provides you and is REQUIRED for it to work. it ends in a "−a". For example

```
dhcpd -h {windowsidentification -->'cXXXXXX-a'} eth0
```

Alternatively if you would like to use pump check out the notes of user in Mobile, Alabama.

Information about ATT Broadband can be found at http://www.broadband.att.com.

3.2. @Home

@Home uses a similar setup to *ATT (formerly MediaOne)*. However, there are a few fundamental differences, outlined by contributors. Since @Home spans different geographic locations you might get assigned different kind of equipment and have slightly different kind of setups.

Before you try anything, go to control panel, network, and properties for your network card. Write down all of the information. You will need it later.

TCI, the company that runs @Home issues a Etherlink III 3c509b NIC for all of their customers. What TCI does not tell you is that when they install your ethernet card, it is in PnP mode. Now in Slakware, if you uncomment the proper line for this card, everything will appear to be working fine. There will be no system problems, but the 'PC' light on your CyberSURFR modem will never turn on. If you are using Slakware, and are having this problem, reboot in DOS and skip the next paragraph.

In RedHat 5, your system will have some trouble autodetecting the card. If you try to pass the paramaters manually, the system will hang. This should be obvious that your card is not setup properly. Before wasting anymore time, reboot in DOS (This is a must because as of 12/25/97, there is no utility written for Linux to turn off PnP and turn on ISA.)

TCI does not give out a utility disk for your ethernet card, so you must download the utility from one of 3Com's sites. Here is a link to 3COM's page for driver download.

http://support.3com.com/infodeli/tools/nic/index.htm

Once you have downloaded your driver files you will need to run them and disable the PNP mode of your network card.

What you've now done will make your ethernet card 'broken' in Windows 95. You'll need to go to Control Panel, Network, and remove the network card and the adapter. Reboot your computer, and again go back to control panel. Go to add/remove new hardware, and have it autodetect. It will automatically setup the correct i/o address for you. You will most likely need to reboot again. Now you should be in Windows 95, with the 'PC' light on your cable modem on. You will also notice that none of your internet applications seem to work, you can't ping, and you can't resolve DNS. You now must go back to control panels, network, and click on properties for your network card (not the adapter). Re−enter all the data you wrote down, and reboot.

With a little luck, your ethernet card should be working in Windows 95, and ready to rock in Linux.

3.2.1. Notes from Hampton Roads, VA and Phoenix, AZ by Mark Solomon:

With the @home service in Hampton Roads, VA, it is absolutly neccessary to run dhcpcd−0.70 (or higher) that supports the "−h" option to specify the hostname of your computer. Without this switch the @home dhcpcd server will not assign addresses.

@Home user from Hampton Roads Scott Stancil <`sstancil@home.com`> has provided an RPM that can be used to easily configure @Home connection. Check it out at http://www.linuxforum.com/plug/projects.html

More information on setting up dhcpcd−0.70 and @Home service with Intel Ether Express cards can be found at http://www.monmouth.com/~jay/Linux/

3.2.2. Notes for Baltimore, MD and Colleyville,TX

In Baltimore subscribers are issued Intel Ether Express Pro 10 nics and a static IP number.

3.2.3. Notes for Milpitas, CA, USA

Information provided by Joe Byrne

@Home service assignes 3Com 509b cards. IP addresses assigned statically.

3.2.4. Notes for Salt Lake City, UT, USA

Information provided by <akaiceman@hotmail.com>.

@home (at least in the Salt Lake City, Utah areas, i'm not sure if this is everywhere yet) has started giving out 3com 900B NIC's, unless you ask for a ISA card in particular. 3COM 900B are PCI based ethernet cards which might require kernel recompilation.

3.2.5. Notes from Connecticut, USA

Information provided by <dan@sidhe.org>.

The @Home folks are using Motorola cable modems (I know, I got one) in addition to any other brand folks have reported. If it's getting hooked into a hub it needs to either get plugged in with a twisted−pair cross−over cable or go into the 'to other hubs' port if your hub has one. (Which is standard, I expect, for these things, but useful to keep in mid if, like me, you're hooking the thing on to an existing local network) I have a plain Compaq 10/100 ethernet card (I think it's the NC3131, but I'm not 100% sure) in my linux box and it worked without a hitch.

Also, they are handing out fixed IP addresses, at least in Connecticut, and you can get up to three. (They charge $4.95/mo for each extra IP address they allocate) They make no requirements on the OSes on these extra machines−−I've a Vax running VMS and they didn't bat an eye when I signed it up. They did want the initial machine to be something they recognized (I booted over to Win98 for the duration) but they would've handled a linux−only install if really, *really* pressed

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3.2.6. Notes from Dallas, TX or anyone using Motorola CyberSurfr

If you have a Motorola CyberSurfr cable modem you will need to press the reset key on the back of the modem if you switch network cards. The ethernet card hardware address is read by the modem and once it is setup if the card is switched it must be reset.Just press the reset key for 10+ seconds and it will reread.

If you are still not able to get your cable connection going check out mini−HOWTO for cable modems and Cox@Home at http://www.kernel−panic.com/user_files/cox.at.home.html

Update from James Stormes <jstormes@gtfcu.com>

@Home has been upgrading the cable modem system in Bedford Texas (the area around Dallas Texas). I have found that with the new system your NIC's MAC address must match what the cable system has. That is the Linux system you plug into the cable modem must use the same MAC that is programmed into the board you got from @Home. I use two diffrent computers on the cable modem (Linux and Windows) so this was a problem.

For some NIC drivers you can specify the MAC. For example in n REDHAT 6.1 in the /etc/sysconfig/network−scripts/ifcfg−eth0 you can add the line MACADDR="0F4F3E54A659". Where eth0 is the NIC card attached to the cable modem and the 0F4F3E54A659 is the MAC that the cable modem system is expecting.

3.2.7. Notes from Louisville, KY by Devin Bundrent `<mrscoobdoo@home.com>`

As of now, @Home/Insight issues Realtek RTL8029(AS) PCI Ethernet NICs, and Static IP addresses. In addition, the customers of the service are given(by default, others can be bought, and used) the RCA DCM105 Digital Cable Modem, without utilities disk.

3.2.8. Notes from Madison, WI and Lakeridge, VA

I have a cable modem from Bresnan in madison wi, they use the @home network for internet trafic and supply there users with the RCA cable modems. In the howto it states that the −h flag should be used for the host name with dhcpcd. That didn't work for me. They provided me with a machine name of cb46597−a.mdsn1.wi.home.com, the cd46597−a obviously being my hosts name.... anyway.. the flag I had to use to get dhcpcd working was the −I flag for ClientID. ClientID is actually the MAC (Ethernet) address of your NIC e.g. 00:00:21:61:7C:F0.

3.2.9. Notes from Baton Rouge, LA by Van Goodwin `<positron@redstroke.com>`

Here, @Home doesn't seem to have a standard ethernet card. They gave me a "SMC EtherEZ" ISA card, but I've seen them install totally different cards in other systems. The installer told me they gave static IP addresses to people who use Windows NT and dynamic to everyone else. Don't ask me why.

3.2.10. Notes from Richmond, VA and its surroundings by Robert Marshall `<no_robmars_spam@yahoo.com>`

In Chesterfield County, Virginia (a suburb of Richmond), @Home offers cable modem service through the local cable provider, Comcast. The service runs very well with Linux. As with many @Home locations, IP addresses are assigned via dhcp, and they require that all dhcp request packets contain the user's @Home−assigned hostname. The dhcpcd package works well for this, using the −h parameter. Personal best download − 16Mbytes in 54 seconds.

In Henrico County, Hanover County, and the city of Richmond, Virginia, MediaOne is offerring their Road

Runner service. IP addresses are assigned using dhcp, but are exclusively reserved by MAC address. This requires that the user call MediaOne support if the MAC address attached to the cable modem ever changes. The MediaOne people refused to re−register my friend's new MAC address when he told them that he had purchased a personal firewall from NetGear. They even tried to insist that he purchase commercial service, even though he was only going to have one PC connected to the service. Thus, I strongly agree with your wording in the HOWTO that MediaOne customers carefully avoid mentioning the words "router", "firewall", or "Linux".

3.2.11. Notes from Mobile, Alabama R. Jason Valentine **<miracle@procyon.com>**:

In Mobile, Comcast cable provides cable modem service through the @home network. An RCA cable modem (model DCM205) is issued along with a SMC EZ−Card (10/100) if you don't already have a cable modem.

Static IPs are not given, but rather assigned through DHCP. You need to make your ethernet card (eth*) use DHCP − linuxconf is the easiest way to set that up. Next, you'll need to find the following line in /sbin/ifup

```
-----------------------------------------------------------------
if [ -n "$PUMP" ]; then
     echo -n "Determining IP information for $DEVICE..."
     if /sbin/pump -i $DEVICE; then
         echo " done."
     else
         echo " failed."
         exit 1
     fi
 else ...
-----------------------------------------------------------------
```

and change it to

```
-----------------------------------------------------------------
if [ -n "$PUMP" ]; then
     echo -n "Determining IP information for $DEVICE..."
     if /sbin/pump -i $DEVICE -h YOURHOSTNAME; then
         echo " done."
     else
         echo " failed."
         exit 1
     fi
 else ...
-----------------------------------------------------------------
```

Where YOURHOSTNAME is the computer name (cc123456−a − or whatever yours may be.)

3.2.12. Notes from Auburn, Alabama by Andrew W. Jones **<andywjones@home.com>**

I would like to note that Auburn's @home service supports DHCP. If you simply issue `dhcpcd −h hostname` all your network settings are taken care of...

3.2.13. Notes from Santa Barbara, California by Tim Newsome <nuisance@DELETE_BEFORE_SENDINGcmu.edu>

My provider (Cox@Home, in Santa Barbara, CA) does the same thing as *Notes from Hampton Roads, VA and Phoenix, AZ by Mark Solomon:*. I'm using Debian, with dhclient version 2.0. I added the following line to my /etc/dhclient.conf: send host−name "cx803168−a"; Where cx803168−a is the hostname I've been assigned. It is listed on the purchase order.

Information about @Home Service can be found at http://www.home.com/.

3.2.14. Notes from Connecticut, USA

Information provided by John Cusick <`JCusick@SPELLNET.com`>.

In Hartford, Connecticut, TCI (now AT T) is issuing a Farallon PnP ISA Ethernet card. This card may be detected with the isapnp tools or jumpered. The info is on Farallon's website for this card. It is NE2000 compatible.

3.3. RoadRunner

RoadRunner is an Internet cable service provided by Excalibur Group (Time Warner). The hardware setup consists of a cable modem produced by Motorola and Toshiba which plugs into an ethernet card using a 10BaseT (UTP−45) cable. From what I can gather RR uses DHCP for IP assignment. In order to set up Linux to use DHCP you need to read the DHCP mini−HOWTO http://www.oswg.org/oswg−nightly/DHCP.html.

If this doesn't work out for you you should check out http://www.math.uakron.edu/RoadRunner/ for Akron, Ohio and http://people.qualcomm.com/karn/rr/index.html for San Diego, California. It might help solve your problem.

Another good site is http://www.vortech.net/rrlinux/.

One more thing that might be worth mentioning: you will need a Windows NT, 95, or 98 or Macintosh PC for the RoadRunner installers to configure the modem. It's not technically necessary, but they will insist, and will not install on a Linux system. It's also best not to mention the IPFW system while they're around.

Additional notes by Phil Baird <`pjb@rocsoft.com`> from Rochester, NY:

About getting hooked up initially. It is true the RR techs don't want to talk about Linux. However, they now offer us a "self−install" that is half the price ($50). Basically, they come out, run the cable, and make sure the signal gets to the modem. You must supply your own nic card and do the rest of the setup on your own.

Information about RoadRunner Service can be found at http://www.rr.com/.

3.4. Rogers@Home

The hardware setup consists of a cable modem produced by LanCity which plugs into an ethernet card using a 10BaseT (UTP−45) cable.

When the cable modem is installed by Rogers@Home technicians you are assigned a static IP address. They should also provide you with information on your subnet mask, router (gateway) numbers and DNS numbers.

If above doesn't help you can check out Randal Leavitt's `<randal.leavitt@home.com>` "Connection Notes" for Rogers@Home at http://members.home.net/randal.leavitt/CableModemConnectionNotes.html.

Notes from Greg Jacobs `<gregjacobs@home.com>`

They now only give out dynamic IP's. The techs says its pretty much fixed after first issue, they just want to use DHCP so any network changes on their end can just be 'pushed out' so to speak.

Also Make sure any cablemodem uses ensure they don't use a DHCP server on their cablemodem interface. The cable company gets very angry and often pull the plug then tell you ;).

Other information about Rogers@Home Service can be found at http://rogers.home.com/.

3.5. Sunflower Cablevision

This information is provided by Frank Wiles `<admin@sunflower.com>`:

In order to get online with Sunflower all you have to do is enable DHCP. DHCP mini−HOWTO (http://www.oswg.org/oswg−nightly/DHCP.html) has instructions how to set up DHCP under Linux.

Also they should contact me at admin@sunflower.com for lawrence.ks.us domains

We use DOCSIS compliant modems now, not the old Zenth stuff.

3.6. Jones Intercable

This information is provided by Bob Kimble:

Jones Internet Cable supplies a Hybrid cable modem that connects to your machine / network via 10BaseT ethernet. They provide you with a static IP address for your machine, and another static IP address for the modem. The modem acts as a gateway to their network. Your IP address and the modem IP address are on the same network and have the same network mask (in my case 255.255.255.0 −− 24 bits). They also provide two DNS IP addresses which you enter into your configuration. I just entered the numbers when I installed Red Hat Linux 5 and it worked like a champ from the beginning. Since then I have configured my Linux machine to enable IP masquerading and domain name services, and it now acts as a router for my entire private network. My other machines are connected via a private network using the addresses 192.168.0.x. They are running Windows 95, Windows NT (Intel and Alpha) and OS/2. My Linux machine has two IP addresses −− the one from the cable company and one from the 192.168.0.x private network. Everything works like a champ. All six machines can browse the web simultaneously. My kids are even able to connect to their favorite game site, "The Realm" from Sierra.

3.7. GTE Worldwind

This information is provided by Blake R. Swopes (bhodi@bigfoot.com):

GTE WorldWind service is available in only a few areas (parts of California and Florida), its home page is located at http://www.gtecablemodem.com/.

GTE will send a technician out to hook up the cable modem to the wall, but does not do any configuration of your computer. The cable you hook up to your computer is the ethernet standard 10baseT (and you'll probably need to buy your own, since the one they left with me was only about two feet long).

The technician should leave you some information about configuring your system (IP address, gateway address, netmask, DNS addresses) and the number for GTE's support line (1−800−GTE−VIDEO, since WorldWind is attached to GTE's Americast cable service). If you have read the Ethernet−HOWTO and the DHCP mini−HOWTO, you should have no trouble configuring your system to work with WorldWind.

GTE provides one e−mail address, which they assign to you, but you can create aliases to that account and web mail accounts through gte.net.

According to GTE, they block inbound traffic on several ports for security purposes and to keep people from running servers that will eat into other users' bandwidth (e.g., telnet, DNS, News, and Netbios (Good news for Windows users)). In actual practice, I have found that I was able to telnet into my system from remote hosts.

GTE does not provide technical support for Linux users, so you will pretty much be on your own. My experience was that as soon as I mentioned Linux, they tried to get me off the phone, but that might have been the particular tech I was speaking to at the time.

GTE also advised me that they do not support users who have IBM Aptivas, however I was able to briefly connect an IBM Aptia 2176−C77 with a SOHOWare PCI 10/100 Ethernet Card to the service with no trouble at all.

I regularly test my connection speed through the bandwidth test at MSN (http://computingcentral.msn.com/topics/bandwidth/speedtest.asp and regularly find my connection speed to be between 320−390Kbps. Depending on the site, I have seen transfers at up to 135K, though the average is probably 35−45.

3.8. SpeedChoice, Phoenix, Arizona

According to Micah `<peenchee@asu.edu>`:

Just thought I'd let you know that in my area (Phoenix, AZ, usa) there is a company called speedchoice that provides cable modem service. The service uses a hybrid cable modem and the set up is almost identical to that of Jones intercable described in the howto. See *Jones Intercable*. For any other issues mail Micah.

3.9. Cedar Falls Utilities Cybernet, Cedar Falls, Iowa

This information is provided thanks to Joe Breu `<breu@cfu.net>`

We are an ISP in Cedar Falls, Iowa that uses a mix of Zenith, Lancity, and DOCSIS Cable Modems over our own Hybrid Fiber/Coax system. Our system uses no proprietary connection software and is straight TCP/IP connections. We do use DHCP, but will offer static IP addresses to customers with older Macintosh machines or computers unable to use DHCP. We will answer basic questions if you want to hook up a Linux box to our network but it should be drop and surf.

3.10. Telstra Big Pond Advance, Australia

This information is provided by Mike Battersby `<mib@post.com>`

Linux is not an officially supported platform for Telstra Big Pond Advance cable internet. Do not report faults regarding Big Pond Advance and Linux to them, as they will not help you.

In order to use Big Pond Advance under Linux, you will need:

- a working NIC
- a DHCP client, to obtain an IP address
- a BIDS v2 (Broadband Internet Delivery System) login client

For more information on getting a DHCP client working, see the DHCP mini−HOWTO: http://www.oswg.org/oswg−nightly/DHCP.html.

Big Pond Advance user Shane Hyde wrote and maintains an excellent open source BIDS v2 login client, BPALogin. The BPALogin web site is: http://www.users.bigpond.net.au/bpalogin/. Available at the same site is a page of instructions on getting BPALogin to work with Linux: http://www.users.bigpond.net.au/bpalogin/tutorial.html.

Basic steps for connecting to Big Pond Advance under Linux are:

- get your Network Interface Card working.
- get a DHCP client to request an IP address.
- authenticate with BPALogin

See the tutorial on the BPALogin site (http://www.users.bigpond.net.au/bpalogin/tutorial.html) for more details.

3.11. Fibertel, Buenos Aires, Argentina

This information is provided by Pablo Godel.

My name is Pablo Godel and want report that I'm using the cable service of Fibertel in Buenos Aires, Argentina and it works perfectly with Linux.

They gave me a static IP. The brand of the cablemodem is COM21 and the model is ComPort.

I connect it to the nic properly, configured in Linux and it worked perfectly.

Update by Albert Claret <albert.claret@fibertel.com.ar>:

Besides the static IP/COM21 cablemodem setup you already list in the HOWTO, the company is also providing a DHCP/motorola surfboard cablemodem service, and AFAIK, they are planning to remove all of the static IP cablemodems and replace them. As far as the setup for the dhcp/motorola, just firing your plain old DHCP client will get you up and running without any problems. At present time, there are no ports filtered by them.

More information about Fibertel can be found at http://www.fibertel.com.ar.

3.12. Videotron (Videon), Canada

I don't have much information about Videotron except the fact that they use DHCP for the assignment of IP addresses and other networking information. Just read the DHCP mini−HOWTO and configure your system appropriately. There is no other necessary configuration. Also important thing to note is that the Ethernet card that Videotron distributes is a NE2000 compatible PCI card for which you need to use.

ne2k−pci driver

Additional information from Philip Gwyn <gwynp@artware.qc.ca>:

They use Motorola CyberSURFR (sic) modems. This will give you an ethernet NIC when you sign up. They gave me a TMC NE2000 PCI clone, which Linux recognises as a "RealTek RTL−8029". It couldn't configure it propperly however, until I downloaded the manufacturer's driver disk and changed the media type to "auto−config".

While they can't guarantee to get it working with Linux, they will do a bit of hand holding so it works. Many of the tech−support have Linux−clues, as it were, even asking questions like "what kernel are you running?" "do you have the latest version of dhcpcd?". When their DHCP server broke, they even suggested I delete the cache files in /etc/dhcpcd to start over from zero, as it were. This worked.

Additional information from Mihai Petre <mihaip@videotron.ca>:

Yes they are using DHCP for the tcp settings. You can also try posting your problems on news.powersurfr.com newsgroup videon.linux.

As far as running servers using your cable connection according to Alex Nuta says that "contract explicitly states that *no* servers of any kind are permitted; HTTP, FTP or otherwise".

Additional information from Stasnilav Kogan <s_kogan@alcor.concordia.ca>:

The modem they provide is now Samsung InfoRanger (SCM−100R). The ISA card they provide is an SMC NE2000 compatible (FCC ID: HED1661EN2). It is necessary to configure the card from DOS to NE2000 mode before attempting to get it to work under Linux. (Generally, this card is horrible. I replaced with a 3Com card as soon as possible).

The technical support in Videotron is absolutely HORRIBLE. (Not to mention Linux support). So, whoever signs up with them, should expect to work alone. However, aside from the NIC problems, the setup was a breeze. They use DHCP, so all the standard procedures apply.

Information about Videotron can be found at http://www.videotron.ca.

3.13. Telekabel (Teleweb), Austria

There are two approaches to setting up your Telekabel connection. First one is the approach used by Andreas Kostyrka:

- You may want to mention, that the Austrian Telekabel (Teleweb) ISP works with Linux. It seems quite similiar like MediaOne Express (3c509+dhcp, etc.)
- Second there are 3COM configuration utilities for Linux (But don't fool around with them on a busy system, 3c509 may lock the bus if touched the wrong way :( ):
    - ftp://ftp.redhat.com/pub/contrib/hurricane/SRPMS/3c5x9utils−1.0−3.src.rpm
    - ftp://ftp.redhat.com/pub/contrib/readmes/3c5x9utils−1.0−1.README

Second approach is provided by Marcel Ebmer `<marcel.ebmer@chello.at>`

- Do NOT bother using dhcpcd or pump!
- In case you don't know, ask the provider for your IP−address, which is static, for the DNSs, the Gateway and use linuxconf to configure the network. For Vienna: 960 60 333 is the helpdesk's telephone number They officially do not support linux, but you need not mention you are running linux.
- Choose a unique name for your PC....not "localhost"

Information about Telekabel can be found at http://www.telekabel.at/.

3.14. Shaw Cable, Canada

According to Peng F. Mok `<pmok@shaw.wave.ca>`:

I recently signed up for a cable modem service from Shaw Cable here in Canada, which runs under Shaw@Home brand. Shaw has been upgrading their cable network for about a year and a half now, and now offer cable−modem service to a number of locations across Canada. Information about the `Shaw@Home' service can be found at http://shaw.home.com General information about Shaw Cable can be found at http://www.shaw.ca.

I thought I'd just drop you a line to inform you that your DHCP mini−HOWTO, was very useful in helping me set up Linux to work with my cable−modem service, and that you might want to add `Shaw@Home' to your Cable−Modem mini−HOWTO as another entry. I don't have specific information on the `Shaw@Home' service yet, but from conversations I've had with Shaw technical support it seems that `Shaw@Home' is a partnership with *@Home* and involves the same features and setup procedure as that already described for *@Home* in the Cable−Modem mini−HOWTO document.

In both services Shaw Cable techs will come over and bring you two pieces of hardware −− a Motorola

CyberSURFR cable−modem and either a 3Com EtherLink III 16−Bit ISA 3C509B−TPO NIC or an EtherLink XL PCI 3C900−TPO NIC. You have your choice of either an ISA or a PCI card depending on your needs, and these models only have the RJ−45 (UTP) connectors. The ISA cards come with PnP−mode enabled by default, so it may be necessary to boot into DOS, disable PnP operation, and configure the card to some base I/O address and IRQ setting which are available. Once this is done Linux should have no problems detecting the NIC at boot−time. I'm not sure about what needs to be done in the case of a PCI card since I don't currently have a PC which supports either PCI or PnP.

Note from another user:

Shaw now also issues SMC PCI ethernet cards. They give these out without boxes or manuals. I found out that these are the SMC EtherPower PCI RJ45 card (model 8432T). They use the DEC 21041 chip so the tulip ethernet driver is needed for it.

If you need to set up your POP3 mailboxes you can do that at following URL: https://profile.home.net/Users/menu.htm and you can login and setup the POP3 mailboxes that way.

Oh, and for the record, Shaw's technical support is horrendous. The best place to go for information is the athome.users−unix newsgroup (which is not even mentioned by any of the documentation) or please consult http://www.ee.ualberta.ca/~pmok/linux/.

3.15. Cogeco Cable, Canada

This information is provided thanks to Sean O'Grady `<sean@incisive.dhs.org>`:

I have a Cable Modem through a company called Cogeco Cable located in various parts of Canada. They are part of the "Wave" system which includes Rogers Cable and Shaw Cable. The technical setup is different for each provider though. They supplied me with a D−Link ethernet card (the version of that has changed since then but I believe are still using D−Link) and a Zenith modem. The Ip setup is easy since they use DHCP so all I did was install the DHCP daemon and that was that. If you like you can list my e−mail address `<togrady@cgocable.net>` for anyone with questions.

I contacted you awhile ago with information regarding setting up a cable modem under Cogeco (the mail came from togrady@cgocable.net). Well I have some updates to give you. Cogeco has now joined the @HOME network although I haven't seen anything good come out of yet. The modems have changed as well, instead of the old Zenith modems we now are using a Samsung InfoRanger SCM−100R modem. The modem changed has not affected the ease of setting up Linux with the cable modem. All that is still required is a functioning network card and working DHCP client and you will be able to get the network functioning quickly. Many people send questions to me regarding various cable modem/dhcp/networking issues and as a result I have started to put together some help pages. The are located at http://incisive.dhs.org.

Additional info has been provided Craig Kossowski:

Cogeco seems to be slowly getting themselves sorted out wrt cable modems and is now part of the set of Canadian cable companies that have cooperated on the @Home network. A network card is provided as part of their large (but currently waived) hookup fee; the D−Link 528CT for PCI capable systems, and, I believe, D−Link 220T for ISA systems (and possibly PCI capable computers that will accept the ISA card, they tried it in my roommate's system first, only when that didn't work did they put in the PCI 528CT). I'd recommend asking for the PCI if you have the choice, as I know that setup can work with Linux from my experience.

Both of these are NE2000 boards to the best of my knowledge. I got the PCI D−Link 528CT which uses the RealTek 8029 chipset, and Linux can deal with easily. I just recompiled the kernel, and after a little hiccup due to RedHat 5.2's lilo default not looking for the kernel at /vmlinuz, I was up and running. DHCP (with a 24 hour lease lifetime) is used for IP resolution and everything worked automaticaly (I had selected a DHCP config when I installed Linux, others may need to do slightly more configuration, but it doesn't require anything non−standard). The 528 is supposedly plug & play, but I had no problems using it in my Linux box (2.0.34). Note that you need to compile in (either built in or module, I used built in) the PCI NE2k code, and unlike what is implied in the Ethernet HOWTO, you don't need to also include the ISA NE2000 code to use this chipset. I don't have experience with the ISA D−Link 220T, but I would assume it's just as easy to set up, it's listed as a supported card in the Ethernet HOWTO.

The Cable modem I got was a great heavy thing that looks like a heatsink for a small nuclear reactor. Nearly a square foot in desk space, made by LANcity, and I believe rated for 10Mbps shared bandwidth on the cable subset side of things, it has a reasonably good set of LEDs to show you what it's doing once you figure out what each one is. While throughput will obviously vary, I see transfer rates around 10kB/s (80kbit/s) and up during the day, to 50−60kB/s at night, when presumably thinks are quieter on the backbone. Subjectively, it's very fast, and beats even fast modems hands down. I haven't had it long enough to determine uptime yet, so I can't comment there.

At the time of this writing (Jan 99), Cogeco's service runs $150 for installation, including the card, and $39.99 a month for the service. They're currently waiving the modem rental fee "until they are available for purchase" but the information there is mixed from 15.04/month as of early 1999 (from the web page) to "not for some time" from their phone staff. Included with this is up to five email addresses, and 5MB of Web space. They also say there is a 1GB/month limit, though I'm told (by their tech support people) that this isn't strictly enforced, and is more to discourage ftp sites with high traffic bogging down the subnets, and to provide them with an avenue to prevent such. Although their literature doesn't say so, additional computers are an extra 10.70 a month, though unsupported, and you have to provide the hub, wiring and additional ethercards if you do this, they're basicly charging the extra for the lease of an additional IP as far as I can tell from their information.

3.16. Optimum Online, New York and Connecticut

This information is provided by Seth Greenfield <islesfan@nassau.cv.net>:

Optimum Online uses DHCP, and rrclientd in Linux, by John Clark. Check out http://www.netaxis.com/~wharris/optimum/index.html for instructions on how to set up your service with Linux.

Tell people who had private ips who have public ips now to change their /etc/resolv.conf to look like this...

```
domain nassau.cv.net (or optonline.net depenind on the users mood)
nameserver 167.206.112.3
nameserver 167.206.112.4
```

Other Than that its the same setup procedure note: the rrclientd software will work if you tell it dce−server and you specify the domain as optonline.net

3.17. Singapore Cable Vision, Singapore

This information is provided by Jieyao <jieyao@letterbox.com>:

SCV provides Motorola Cybersurfer modem connected to the network card via UTP cable. The IP setup is easy since they use DHCP so all you need to do is install the dhcp daemon. If you can't make access the first time, turn the modem off then on again.

3.18. Cable Wanadoo, France and Netherlands (formerly Casema)

This information is provided by Jerome Sautret <Jerome.Sautret@wanadoo.fr> and it applies to Wanadoo's French customers:

I just read your Cable Modem HOWTO. I live in France, and I use Cable Wanadoo, the cable service of France Telecom, which is the main telecom operator in France. It is available in a few cities in France at the moment, like Angers and Metz. This service provides a dynamic IP address via DHCP. It uses a COM 21 modem plugged in a 10BaseT Ethernet card. The IP setup is easy just read the DHCP mini HOWTO.

Information about Netherlands is provided by Costyn van Dongen <cvd@casema.net>:

The current Casema cable modems operate via the serial port, acting like normal modems, answering AT commands like phone modems. The setup is really very easy, because all the chat script needs to do is dial ATDT4. (this is in ppp−on−dialer). Hence it uses PPP, which is unusual for most cable modems.

Relevant files are included `/etc/ppp/ppp-on`

```
DIALER_SCRIPT=/etc/ppp/ppp-on-dialer
exec /usr/sbin/pppd -detach /dev/ttyS0 115200 connect $DIALER_SCRIPT 38;
```

`/etc/ppp/ppp-on-dialer`

```
exec /usr/sbin/chat -e '' AT '' ATDT4
```

`/etc/ppp/ppp-off`

```
#!/bin/sh
######################################################################
#
# Determine the device to be terminated.
#

sleep 5

if [ "$1" = "" ]; then
        DEVICE=ppp0
else
        DEVICE=$1
fi
#
######################################################################
```

```
#
# If the ppp0 pid file is present then the program is running. Stop it.
if [ -r /var/run/$DEVICE.pid ]; then
        kill -INT `cat /var/run/$DEVICE.pid`
#
# If the kill did not work then there is no process running for this
# pid. It may also mean that the lock file will be left. You may wish
# to delete the lock file at the same time.
        if [ ! "$?" = "0" ]; then
                rm -f /var/run/$DEVICE.pid
                echo "ERROR: Removed stale pid file"
                exit 1
        fi
#
# Success. Let pppd clean up its own junk.
        echo "PPP link to $DEVICE terminated."
        exit 0
fi
#
# The ppp process is not running for ppp0
echo "ERROR: PPP link is not active on $DEVICE"
exit 1
```

`/etc/ppp/keepalive.sh`

```
#!/bin/sh

# keepalive.sh

# This is a keepalive script for the Casema cable modems. This script was
# lifted from the /usr/doc/HOWTO/unmaintained/mini/Dynamic-IP-Hacks
# document. There should be an entry in your crontab looking like:
# */2 * * * * /etc/ppp/keepalive.sh
# to run this script every 2 minutes to see if your connection is still
# up, if not, gracefully kill the pppd process and remake it.
# Modify paths as necessary.


if [ -f /var/run/ppp0.pid ]; then
 ping -c4 -l3 195.96.96.97 2>38;1 | grep "0 packets" > /dev/null 38;38; \
 { /etc/ppp/ppp-off > /dev/null 2>38;1 ; sleep 2 ; /etc/ppp/ppp-on }
else
 /etc/ppp/ppp-on
fi
```

`/etc/resolv.conf`

```
search dynip.com
nameserver 195.96.96.97
nameserver 195.96.96.33
```

`/etc/sysconfig/network` (this file applies only to RedHat and Mandrake distributions, adapt accordingly for other distributions)

```
GATEWAYDEV=ppp0
GATEWAY=195.96.96.97
```

I've documented some things in the files themselves. The ppp−on script is called during boot time from `/etc/rc.d/init.d/ppp` and the `ppp-off` script during shutdown. The `ppp-on-dialer` is called from the `ppp-on` script. The keepalive script for keeping the connection alive as long as the computer is on (might as well, right?) is called from `crontab` (see the keepalive file for details). The `/etc/sysconfig/network` file specifies the default gateway for routing. The `resolv.conf` tells the computer which IP of casema.net to send DNS queries to (this is pretty standard across all unixes, I believe).

I've forgotten to include the `/etc/ppp/pap-secrets` which should be the same as the *ExpressNet, Maryland*, Maryland. There's also the question of the `ip-up`, `ip-down`. These however, didn't need to be changed. I've also included the `options.ttyS0` file, which should be in `/etc/ppp/ppp-on`. It is read by the pppd daemon as it logs on. There are a couple options like defaultrouteadd that should be on. ttyS0 is the port where you install your modem mine is on COM1 == ttyS0. Change accordingly.

`/etc/ppp/options.ttyS0`

```
asyncmap 0
crtscts
defaultroute
lock
modem
name cvd
```

I received notice from Casema a couple days ago that they will be changing their name to wanadoo.nl. So you might, in your document, refer to both: "wanadoo.nl (formerly casema.net)" This will be happening as of Sept. 20th.

I will be happy to provide you with information and answer any more questions. I my explanations aren't Red Hat only. I haven't used other systems, so I can't judge. I hope this is useful to you.

3.19. Prime Cable Expressnet, Las Vegas, NV

This information is provided by jedi <`jedi@penguin.lcvm.com`>:

They use the Com21 which can either be connected directly to your 10baseT input or inserted into the downlink input on your router. Static IPs are available for $10 per month and the usual address assignment is through DHCP (http://www.oswg.org/oswg−nightly/DHCP.html)

More information can be obtained from http://penguin.lvcm.com.

3.20. Chello Belgium, formerly TVD, Belgium

This information is provided by Pierre−Yves Keldermans <`pykeldermans@usa.net`>:

At home, my cable−TV company is "TVD", it is the first company to offer internet on the cable in Belgium.

- Hardware : LanCity cable modem & 10−Base−T NIC (DLink ISA if you buy it from TVD)
- Config : DHCP (http://www.oswg.org/oswg−nightly/DHCP.html)
- Prices :
    - Cheap : for home use, real IP address but dynamic, DHCP expires every 10 min, 1 user only

(theorically ...), no problem with firewall, the web server on my computer is even reachable from outside..., full speed FROM internet, small speed TO internet.
- ♦ Not so cheap : for small office use, same as 1) but not limited to 1 user and more speed TO internet.
- ♦ Expensive : for WWW servers & ... , Static IP addresses and reserved bandwidth TO internet following price.

- Speed :
    - ♦ From TVD's mirror site : up to 30Kbytes/sec, very nice (and YES, they have some Linux mirrors like redhat ... :−))
    - ♦ From internet : variable but rather good if the remote server isn't overloaded.
- For more info : http://www.chello.be and http://www.upcbelgium.be/.

Note from another user:

TVD gives you an IP via DHCP and when it is activated they log the MAC−Address. So if you want to connect to the internet via another computer with another ethernetcard it won't work. You have to change your MAC−Address to the 1 that can connect. I just put somewhere in a startupscript :

```
ifconfig eth0 hw ether 00:23:56:74:25:12
```

This was not all, TVD gives some problems with pump in RedHat 6.2 but with DHCPcd 1.3 it works like a charm. (that dhcpcd is on the install cd in Redhat/rpms)

3.21. Telenet Vlaanderen, Belgium

This information provided by Karel Goderis <karel.goderis@pandora.be> and Kris Carlier <kris@iguana.be>:

- Operator: Telenet Vlaanderen − Operatial in flemish speaking (northern) part of Belgium
- Hardware: Motorola CyberSURFR Wave Cable Modem using an RJ−45 Ethernet straight cable to a PC
- Software: Standard config is Windoze + Modified Netscape for newbie installations, although Linux i386 support is there under the form of mirrored redhat.com software on the internal ftp servers. A dedicated linux newsgroup is available for support. Most users depend on ipchains/ipfwadm in 2.2.x, or have a "Linux Router"−project implementation.
- IP Setup: DHCP address assignment, single address only. Outgoing : all ports accepted, except mandatory use of Netscape Proxy on port 8080, and thus port 80 blocked. Incoming : ports 0−1024 blocked, but re−allocation of ports on Linux works fine.
- Pricing: Installation is 8000,− BFr (~200US$), warranty of 2000,− BFr for the cablemodem (50$). They ask 50$ for a NIC if you don't have any, which is of course a ripoff, as you get them almost for free if you buy a hamburger these days. Monthly fee still is 1500,− BFr (37,5$)

  Optional: Telenet Internet + : here, you can install a HUB (which they'll sell you for 50$ if you don't have any). This way you can hook up up to 4 PC's to your connection. Higher installation price and about 1000,− BFr per PC per month extra.

  Telenet XL: standard, you can download up to 10 GB per month, 20% of that may be upload traffic. The XL costs 3500,− per month (88$), and you get 15 GB download. 2000,− BFr (50$) per extra 5

GB.

- Services: redhat.com netscape.com mirrors, quake I and II servers, proxy (5 NetCAcHe proxies proxy[1−5].pandora.be:8080), mail relay and pop account with 10 MB mailbox (5 aliases) and the other usual stuff you need to survive on the net.
- Caveats: Telenet states that you can download 300Mbytes/month, but this rule is not enforced unless there is a obvious abuse (i.e. you download 300Mbytes/*day* ;−)).

  Till 2 weeks ago, the limits were only for external traffic. As they have mirrors of all kinds of things (tucows, freebsd, freethemes, allmacintosh, suse,...), and a proxy, the 2 GB per week they had before, counted only for external traffic, was OK. Now EVERYTHING is counted, including DHCP−traffic (30' leases), ARP, IGMP (they are experimenting with it so every 2' you get some traffic from them...)

  Blocked outgoing ports: apart from what Karel specified, 25 is also blocked, you have to use their mailserver. From time to time this beast seams to be pretty overloaded.

More info at http://www.pandora.be/ or http://www.telenet.be/.

3.22. Total−Web, United States

This information is provided by iota `<iota@inaxx.net>`:

I work for Convergence.com, a cable internet company who provides the network monitoring, technical support, and advice to cable providers (who, in turn, provide the internet service to their customers). Most of our markets are through Cablevision, one of the more popular cable providers in the eastern US. The service name that they operate their cable internet service under is "Total−Web". Customers are provided with a static IP; simply set this up like you would any other ethernet device under Linux. The modems we use are LanCity LCP's and COM21 ComPort's, but these devices should be transparent to your computer.

Total−Web is available in limited areas, including: Miami Beach, FL; Gwinnett County and Roswell, GA; Cookeville, Lebanon, and Columbia, TN; and many other test markets.

3.23. CyberCable, Paris, France

This information is provided by David Monniaux:

CyberCable gives you an ethernet card if you need one. It is a cheap NE2000 clone, ISA−Pnp or PCI I think. They only know how to set up the stuff for Windows, but reports from other people say that they let you use their access with other systems, provided you do the software setup yourself.

They use DHCP (DHCPcd) in RedHat and it worked immediately. In RedHat's **netcfg**, this means selecting "DHCP configuration". There are still some problems sometimes: DHCP outputs some error messages, but things still work afterwards generally (?). This seems related to rebooting; it looks like the cable system doesn't reallocate the line for one minute after reboot.

CyberCable's web site is at http://www.cybercable.fr/.

3.24. Chello (UPC) Stockholm, Sweden (formerly StjärnTV)

This information is provided by `<dinky@chello.se>`:

UPC are providing their customers with SURFboard SB31000 Cable Modems, and if needed a NetGear Network card(ISA or PCI) can be purchased for an additional 300 swedish crows.

They offer 2 different services: Chello: 1 IP 512kbit downstream 128 upstream Chello Maestero: 4 IPs, 640kbit downstream, 128kbit upstream

DHCP is used to configure the network interface (dhcpcd).

More info about their services can be found at http://www.chello.se/ and http://www.upc.se/.

3.25. GCI.Net, Alaska

This information is provided by GCI Tech Support `<support@gci.net>`:

GCI provides CableModem services in Alaska, currently in Anchorage, Juneau, and Fairbanks. GCI uses Com21 which can either be connected directly to your 10baseT input or inserted into the downlink input on your router. Static IPs are available for $10 per month and the usual address assignment is through DHCP. More information can be obtained from http://www.gci.net.

3.26. Saturn Communication NZ Ltd, New Zealand

This information is provided by Nigel Win `<nigelwin@the.net.nz>` and David Sims `<david.sims@paradise.net.nz>`:

This was tested on Debian 2.1 (Slink) Using Kernel 2.0.34 and 2.2.17

First of all you need to get the following information to fill in the gaps

IPADDR –> This is the IP Address Saturn have given you eg IPADDR=203.79.92.214

NETWORK –> This is the first 3 Decimal places of your IP Address and then 0 at the end eg NETWORK=203.79.92.0

BROADCAST –> This is the first 3 Decimal places of your IP Address and then 255 at the end eg BROADCAST=203.79.92.255

GATEWAY –> This is the first 3 Decimal places of your IP Address and then 1 at the end eg GATEWAY=203.79.92.1

Edit the file /etc/init.d/network and put this in to setup your cable modem.

```
#! /bin/sh
ifconfig lo 127.0.0.1
```

```
route add -net 127.0.0.0
IPADDR=
NETMASK=255.255.255.0
NETWORK=
BROADCAST=
GATEWAY=
ifconfig eth0 ${IPADDR} netmask ${NETMASK} broadcast
${BROADCAST}
route add -net ${NETWORK}
[ "${GATEWAY}" ] 38;38; route add default gw ${GATEWAY} metric 1
```

This is what my /etc/init.d/network file would look like

```
#! /bin/sh
ifconfig lo 127.0.0.1
route add -net 127.0.0.0
IPADDR=203.79.92.214
NETMASK=255.255.255.0
NETWORK=203.79.92.0
BROADCAST=203.79.92.255
GATEWAY=203.79.92.1
ifconfig eth0 ${IPADDR} netmask ${NETMASK} broadcast
${BROADCAST}
route add -net ${NETWORK}
[ "${GATEWAY}" ] 38;38; route add default gw ${GATEWAY} metric
1
```

They use Com21 Cable Modem http://www.com21.com and provide free D−Link PCI or ISA network card if you require. The monthly fee already includes Cable Modem rental and they offer 2 connection speed plans (512k/128k and 2Mbps/256K). But they charge you on how much traffic you transfer :). The speed is not bad since I am getting around 90K for download speed at peak time.

More info about Saturn is available at http://www.saturn.co.nz.

3.27. Chello, Netherlands

This information is provided by Jaco de Groot `<jaco@dynasol.com>`:

I'm from The Netherlands and use a Terayon cable modem under Red Hat 6.0. My provider is Chello. I have installation instructions in Dutch on my homepage http://www.dynasol.nl/~jaco/redhat6.0/install.html. Chello has replaced all LAN−City modem in my city with Terayon modems (configuration remains the same because it uses the same network card).

If you are not using RedHat check out the DHCP mini−HOWTO on instructions how you can get your computer to connect to Chello network.

Notes from Henkjan Huisman `<henkjan@m14-017.azn.nl>`

Got my RH6.1 box on the net by installing dhcp3.0 (ftp://ftp.isc.org/isc/dhcp/dhcp−3.0b2pl6.tar.gz), and produce an EMPTY /etc/dhclient.conf. Change /sbin/ifup where it says:

if /sbin/pump $PUMPARGS −i $DEVICE ; then

to:

if /sbin/dhclient $DEVICE ; then

Info about Chello can be found at http://www.chello.nl/

3.28. Adelphia Powerlink, USA

This information is provided by Kevin Pfohl <kspfohl@adelphia.net>:

If you have a Adelphia service with a two way modem connection (e.g. you don't need a regular phone modem to dial in) all you have to do is install Linux and use DHCP to get your network connection going. If you have a one−way modem please read info on *Adelphia Powerlink, USA*.

3.29. 21st Century Telecom, Chicago, IL, USA

This information is provided by Jens B. Jorgensen <jjorgens@bdsinc.com>:

21st Century uses a "Regular" cable modem, that is up−stream and down−stream are both over the cable connection. The equipment is made by Zenith. The installer will bring along a NIC with them, (mine was an OEM Intel EtherExpress Pro 10/100) which is connected via a 10−base−T cable (crossover?) directly to the cable modem. All 21st Century customers are assigned a static IP address. Just make sure your kernel is configured to support this card or insmod the module for it a configure the IP. You'll also be provided with a gateway address which you'll need to set the default route to. Be mindful of the netmask (255.255.0.0 for me) on the ether interface. Also note that the cable modem seems to 'learn' the ethernet address of the adapter you're provided with and will only work wit that adapter. I don't know if reseting the cable modem would cause it to relearn the address or not. I didn't feel the need to try the cable modem with another adapter.

Additional notes by Mark Howard <mark@xanderbelly.com>

Please note that this service has been changed; they now only use Nortel cable modems and everyone is assigned a dynamic IP address now. Also, my Nortel cable modem does not seem to care which machine or MAC address is connected to it; I have set up multiple machines on it and they all worked fine. In fact, if you hang a hub directly off the cable modem, you can get multiple valid IP adresses assigned through DHCP! I wouldn't recommend this, however, as a long term solution. I have a RH box set up as a firewall doing NAT for me on the one address, and it works just great. This service is particularly good − I consistently get 95−100KBps, or just about a 1Mbps rate. I also live in a coach house rental here in Chicago, and although they wanted to run new cable in the apartment, I told them to use the old cable because it was not my place. They said they could not guarantee that the service would work, but of course it does work just fine! So don't let them talk you into running new cable if you can avoid it.

Also, if you want to set up your own web server from home, I used a great service called EasyDNS.com where you pay them $25 per year per domain and you can control your DNS settings (even SOA, TTL, etc...) 24/7/265 through a web based (PHP no less) interface. So if I ever need to reboot my Linux box (which I never do really) I can go in and update the IP address that my web server www.xanderbelly.com and mail server

Additional notes:

The terms and conditions of 21st Century cable modem contains the following statement:

Distributing unsolicited information in any manner is prohibited on 21st Century's network and will result in termination of 21st Century service. (I.e. junk email, etc...) Any use of a server type application or service on a computer system connected to 21st Century Cable Modem Service is prohibited and may result in termination of 21st Century Cable Modem Service (i.e. web, ftp, or game servers, etc...). 21st Century Cable Modem Service is for client type applications ONLY.

Also, technically, each additional dynamic IP address beyond the first one carries a $4.95 monthly charge.

3.30. HTVi, Helsinki, Finland

This information is provided by Markku Immonen `<wired.poet@sci.fi>`:

HTV is the local cable TV company. Their Internet product is called HTVi. They issue a Motorola CYBERSURFR Wave cable modem for all customers. It plugs into an ethernet card using a 10BaseT (RJ−45) cable. Customers have two options: DHCP or a static IP address. The DHCP (dynamic IP address) option is 50 Finnish marks cheaper; in October 1999 the prices were 245 FIM per month for a dynamic address and 295 FIM for a static one.

I opted for a static IP. Configuration was incredibly easy. They give you a couple of info brochures which contain the necessary IP and networking information.

About speed: it varies but is generally acceptable, from 30 kbytes/sec to 200 kbytes/sec. Your best bet is the early morning hours. The fastest download speed so far was 470 kbytes/sec from a Finnish Linuxberg mirror.

More information about HTVi can be found at http://www.htvi.net/.

3.31. Garden State Cable, New Jersey

This information is provided by Denis Voitenko `<denis@o3m.com>`:

In New Jersey Garden State Cable offers @Home. They give you a 3Com CMX series cable modem and a SMC PCI NIC with the DIGITAL chip. It works just perfect with the Tulip driver. They assign static IP addresses.

One more interesting thing. Unlike in most places, upstream speed is not limited to 128kbs.

Garden State cable web pages are located at http://www.gardenstatecable.com/.

3.32. Zoom Internet, Butler County, PA

This information is provided by Jim Garrison `<garrison@olga.net>`:

Zoom internet http://www.zoominternet.net/ is a cable ISP. They provide a Bay Networks cable modem, which connects to a 10−Base−T ethernet card. The only thing required to set it up is to enable DHCP.

Note: They provide the cable modem, but you must have your ethernet card working properly with DHCP before the installation guys come.

3.33. Charter Pipeline, St. Louis Metro Area

This information is provided by Chris Weiss <chris@free−source.com>:

Charter gave me a 3Com cable modem that uses DHCP. I simply followed the DHCP mini−HOWTO and my 256Kbps connection was running at over 350Kbps!

3.34. Netcabo, TV Cabo, Portugal

This information is provided by Marco Soeima <msoeima@netcabo.pt>:

It's a Portuguese ISP and it's available through TV Cabo. The hardware consists of a RealTek ethernet card (just use the rtl8139.o module) and a 3Com U.S. Robotics CMX cable modem. The only thing required to get one's cable access up and running is configure the ethernet card and install DHCP. After that it works like a charm!

More information about Netcabo can be found at http://www.netcabo.pt.

3.35. Supercable, Spain

This information is provided by Mario Galan <galan@arquired.es>:

The setup isn't so much different than other Cable providers. They offer a SMC (I think) network card but you can use yours if you want. They then install a cable modem made by com21 (http://www.com21.com). IP setup is easy since it uses DHCP so I don't think you should have any problems under a modern linux distribution.

For more information check out Mario's web page at http://www.supercable.es/%7Egabu/.

Last thing worth to be said is that Supercable doesn't provide support for Linux but you can always ask your questions in news.supercable.es in the Linux area. Their web page is located at http://www.supercable.es/ (WARNING: get ready to download an almost 1MB of useless Macromedia's Flash garbage).

3.36. NTL, United Kingdom

This information is provided by cogNiTioN <cog−cablemodem@cognite.net>:

This assumes that you've spoken to NTL, you have the cable modem, the cable line installed and your network card installed and recognised. You should also have you MAC address registered with NTL. (NTL contact: http://www.ntl.com/cablemodems/)

Now all you have to do is connect your cable modem to your network card and run the DHCP client. I've found that you have to specify the username you supplied during the registration process, on the command line: e.g. root # dhcpcd −h cognition (substitute cognition for your user name.). For any other problems with DHCP please check out the DHCP mini−HOWTO.

I've also found that occasionally the 3COM CMX modem used needs to be rebooted (power off, press the reset button on the back, power on) if left connected 24/7.

Nameservers used by NTL are: 194.168.4.100 and 194.168.8.100, so those should be added to your /etc/resolv.conf.

I've found NTL's tech support to be close to useless, most the time and they don't officially support Linux, so you're probably better off contacting your local LUG (http://www.lug.org.uk/), or you could even try mailing me direct (but I don't promise to be able to respond).

3.37. Virtua, São Paulo, Brazil

This information is provided by Thiago Macieira `<thiagom@mail.com>`:

IP is assigned dynamically via DHCP. Just run dhcpcd or pump to get the IP and you're done. For more detailed instructions on how to get DHCP running read the DHCP mini−HOWTO.

Notes: operator blocks incoming connections to ports below 1024

3.38. Hathway, Bombay, India

This information is provided by Rishi Gangoly `<rishi@w-o-i.com>`:

The tech support guys at Hathway were not Linux Savvy at all, but I must say were quite helpful. They even referred me to another customer who got Linux to work with it. However, that person was only able to get it to work on Linux as a stand−alone workstation and not as a gateway (as a router) for his entire network.

Since I was not even able to get it to work as a stand−alone workstation I knew I had a long way to go. The Windows 98 Workstation configuration was a Celeron Workstation and it had a 10/100 D−Link Lan Card Chipset RTL 8139 . The IP address was manually entered, so I knew that there was no DHCP Client required etc.

Even the DNS and Gateway address was manually entered.

I was able to do a ping without any problem in Windows to any site and things were just happening. However, I had no luck with it in Linux. I installed Linux on the same machine (Dual Boot) to make sure there was any Hardware compatibility problems.

I even got the workstation to hook up on the LAN successfully in Linux. So I knew that the Lan Card was working.

I noticed that when I connected the Cable Modem to the LAN card I was not able to see any of the Link LED light up on the LAN Card. So I figured that could be part of the problem. I booted the PC in DOS and ran the DIAG DOS based utility to check the configuration of the Card. I just decided to take a chance and re−configured the LAN Card. I configured it to operate in 10 MBPS Half Duplex Mode instead of Auto Sense.

.... Guess what..... The problem got solved ;−)

Even the lights (LED Link indicators) started to work, so all was good. ;−) At the end of everything it all worked out. I plugged that lan card into the linux server (since I knew it worked) and got it to work as a router / gateway too. I still wonder why the other customer was not able to get the Linux Box to work as a gateway for the rest of his network. That was no big deal at all. It just worked. The Cable Modem that was used (provided by Hathway) was a SurfBoard 3100

3.39. Siti Cable, Bangalore, India

This information is provided by Vinay Avasthi `<vinay@avasthi.com>`:

Zee Telefilms has partnered with Siti Cable in Bangalore, India to provide cable modem service. I subscribed to this service and it kind of worked out of the box from linux.

I am using Redhat 6.1 on a IBM Thinkpad 600 with Xircom Realport Ethernet card. On autodetect links mentions that the card will be used in 10MB/s only.

Only problem that I faced was on shutdown, the system will hang while shutting down pump. To temporarily fix the problem I just put that particular like in rc−scripts to background.

The steps that one needs to perform are as follows.

- – Need to have an ethernet card that works with Linux.
- – Enable DHCP by using pump. For some reason dhcpd does not seem to work.

Only thing that I would suggest is to be careful regarding support since the tech support do not seem to know much about software.

3.40. Com Hem, Sweden

This information is provided by Zoltan Arpadffy `<arpadffy@altavista.net>`:

com hem http://www.comhem.se/ is a Swedish cable TV/Internet provider, a sub−company of Telia http://www.telia.com/ the biggest Scandinavian carrier. com hem does not support any other OS but Windows and Mac−OS (as com hem support claims), but it is not so complicate to set up on Linux as well.

com hem sells NetGame's cable modem (NeMo) http://www.ngcable.com/nemo.shtml. It is a very fast and flexible 2−way cable modem with initial speed of 512 kb/s but it can be set up to 10Mb/s by the cable provider. You can order it with or without Ethernet card. com hem Internet service is available in the bigger cities all over Sweden.

3.40.1. 1. Setting up a single node

- set up your network card to work properly (Ethernet HOWTO)
- configure DHCP to that card (DHCP mini−HOWTO)
- try to ping login1.telia.com (10.0.0.6)
- you need a browser what supports Java−script (Netscape or Mozilla) and go to the login site http://login1.telia.com/
- − fill in your user−name and password (provided by com hem) ... and you're there.

```
Network what you'd become a member is:
        IP address: Assigned by com hem
        Subnet mask: 255.255.255.0
        Default GW: Assigned by com hem
        Hostname: Assigned by com hem
        Domain name: telia.com
        Primary DNS server (nameserver): 10.0.0.1
        Secondary DNS server (nameserver): 10.0.0.2
```

3.40.2. 2. Connecting your home LAN (if you have more than one machine)

We have to turn one computer to gateway (I did it with an old Pentium 66MHz/16M)

- install two network cards in your gateway NET3−4 HOWTO
- first set up (and connect) to your LAN
- second network card have to use DHCP (DHCP mini−HOWTO)
- enable ip forwarding

  ```
  net.ipv4.ip_forward = 1 in /etc/sysctl.conf or
  set FORWARD_IPV4 to true in /etc/sysconfig/network (RedHat or Mandrake) or by
  echo "1" > /proc/sys/net/ipv4/ip_forwarding
  ```
- set up IP masquerade (IP Masquerade mini−HOWTO)

  ```
  ipchains -P forward DENY
  ipchains -A forward -s your_network_here/24 -j MASQ
  ```

  (for me it was ipchains −A forward −s 192.168.10.0/24 −j MASQ) check your routing table with route command... it should be something like below:

  ```
  Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
  gate.polarfox.h *               255.255.255.255 UH    0      0        0 eth0
  telia-net       *               255.255.255.0   U     0      0        0 eth1
  polarfox-net    *               255.255.255.0   U     0      0        0 eth0
  127.0.0.0       *               255.0.0.0       U     0      0        0 lo
  default         h2n5fdt22o429.t 0.0.0.0         UG    0      0        0 eth1
  ```

  Useful literature for security issues is Linux IPCHAINS HOWTO
- configure default gateway for all other hosts in your LAN. On unix nodes it should look something like:

  ```
  Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
  sea.polarfox.ho *               255.255.255.255 UH    0      0        0 eth0
  polarfox-net    *               255.255.255.0   U     0      0        0 eth0
  127.0.0.0       *               255.0.0.0       U     0      0        0 lo
  ```

```
default         gate.polarfox.h 0.0.0.0         UG    0      0         0 eth0
```

Default gateway setup for other OSs you can find a very nice description in IP Masquerade mini−HOWTO

- configure name server on your gateway DNS HOWTO or just set up your hosts to use Telia's name server (10.0.0.1)
- log in from any host http://login1.telia.com/ and you're on the road with all your LAN.

3.40.3. You from the internet

There are no limitations in traffic, protocols or ports so far from com hem side, So you can easily set up your web, irc or ftp server at home or in the office. But is very uncomfortable to use URL like http://h2n5fdt22o429.telia.com. You probably need a new usable domain name, but there is a problem with DHCP. Anyhow there is one solution.

- Find one independent DNS server
- Buy your desired domain name
- Set up the DNS server as a forwarder to you DHCP address

if the DNS server is running on Unix probably add to /etc/named.conf

```
zone "private.net"{
        type forward;
        forward only;
        forwarders{
                YOUR.DHCP.ADDRESS;
        };
};
```

Set up your own DNS server to be master for your domain

```
zone "private.net"{
        type master;
        file "private.net-ZONE-FILE";
        notify no;
};
```

- Edit the zone file as it has been written in DNS−HOWTO
- Add your name server to etc/resolv.conf

```
search private.net telia.com
nameserver 127.0.0.1
nameserver 10.0.0.1
```

- ... and your domain is alive
- If your IP address is changing it is enough to re−set the forwarder DNS server and after few hours your server will be visible as usual, so far you are keeping your line alive

---

3.40.4. Problems:

- If you don't use browser with Java−script support, you can not log in. Solution: there is no elegant solution. Without it you can not log in and open the connection.

- After some network inactivity period (10−15 minutes) your connection will be terminated and you have to log in again... meanwhile your gateway and all your inner services will be unreachable from outside as well (if you're running some web server at home etc). Solution: start one ping process or even more elegant solution is to submit one cron job for every 5−10 minutes on the gateway, to "do something" through the network.

  I did it with /etc/cron.d/keep−alive file when contains:

  ```
  # fake connection in order to keep line alive
  # every 5 minutes send some packages
  MAILTO=""
  */5 * * * * ping −f −c 5 ftp.sunet.se
  ```

- Security: your computer or whole LAN is on the Internet now without any protection against attacks from outside.

  Solution: []Security−HOWTO can help you to set up your system quite safe. This is an important issue, you should not just bypass it. Your gateway should be your firewall as well.

- Applications: If you have LAN at home you have to face IP masquerade problem with some applications as ftp, irc, Quake or RealAudio.

  Solution: You have to load necessary modules for proper work.

  ```
  /sbin/depmod −a
  /sbin/modprobe ip_masq_autofw
  /sbin/modprobe ip_masq_ftp
  /sbin/modprobe ip_masq_raudio
  /sbin/modprobe ip_masq_irc
  /sbin/modprobe ip_masq_mfw
  /sbin/modprobe ip_masq_user
  /sbin/modprobe ip_masq_cuseeme
  /sbin/modprobe ip_masq_portfw
  /sbin/modprobe ip_masq_vdolive
  /sbin/modprobe ip_masq_quake
  ```

- DNS problem: Periodically DHCP configuration of your network interface will be reload (pumpd) and it will overwrite your own DNS setup in /etc/resolv.conf. To avoid this behavior of pump daemon add to /etc/pump.conf file:

  ```
  device eth1 {
      nodns
  }
  ```

- Windows install: even if you are running Windows on your computer, DO NOT install com hem from the provided CD, because the configuration on Internet Explorer are permanent and even the com hem support can not help you to de−install :−). The problem is not serious, but you have to dig deep with regedit.

  Solution: In control panel/network set up your network card to and eventually DNS server to 10.0.0.1. Reboot (as usual) and log in. It's so easy without any complications.

- Cable modem: You have to be aware that your cable modem is a peripheral of your computer and not a standalone network unit. So you should not expect that your network will survive the "modem reboot". The order is always: first modem and after the computer. Note: if the modem is on, you may reboot or switch off/on your computer without any problem.

3.41. SwissOnLine HiSpeed Internet, Switzerland

This information is provided by Nick Barnes <nick@debau.ch>:

This assumes that you have registered (either on−line or via snail mail) with SwissOnLine and you have received your cable modem, have plugged it in and ensured that it boots correctly as per the installation instructions.

At the time of speaking, SwissOnLine HiSpeed provide COM−21 modems (http://www.com21.com) complete with two different kinds of Antanae leads and an antenna splitter.

You will require a standard 10BaseT ethernet cable to plug the modem into either a network card installed in a PC or the uplink port of a 10BaseT hub. To plug the modem into a normal hub port, you will require a crossover cable.

All information is provided to the host via DHCP, with no special parameters needed in the call. The modem is not locked down by MAC address.

Providing it is not rebooted, the modem appears to grant the same IP address to the host. While this is not guaranteed with anything other than the static IP address option on the business account, I have not seen my address change in the time I have had the modem.

Be wary of any device on your local ethernet which makes DHCP requests. The modem is not fussy which devices it allocates addresses to and it appears to offer the same IP address to _any_ machine which makes a DHCP request.

SwissOnLine do not support Linux directly, but they are aware of its existance!

Notes from Thomas Holenstein <thomas@hex.ch>

I had problems installing my cable modem as well under Linux and under Win98, because the DHCP server of swiss online did not to respond. If you encounter similar problems, you may want call the hotline (0848 852 800). Hold the MAC number of your modem ready if you call, you can find it at the bottom of the modem. If you are only using linux, it might prove difficult to convince the hotline people you did things right. It was difficult with windows already. Be sure you get a number for your problem (Bearbeitungsnummer).

If you want to analyze the problems you may install a network sniffer: ethereal is available for linux and for windows. In my case, I saw that I was sending bootp packages to swissonline but did not receive bootp packages from them. However, I could get other packets.

3.42. Liwest, Austria

Information provided by Bernd Haug <haug@liwest.at>:

I'm connected through an Austrian cable provider called Liwest. The support eMail is

<helpdesk@liwest.at>, the homepage is http://www.liwest.at/.

The modem is a Terayon, the box gets connected via TP cable. The modem works great with my ethernet hardware (3com 905b, vortex driver) as well under Linux as under Windows. Macs are supported, too.

None of my Friends, who use very various hardware and/or OS(versions) have any problems with incompatibilities.

The configuration is done manually (no DHCP, but it's *really* easy since the information sheets are very compact & informative), customers get fixed IPs and DNS entries. Running servers over the cable line is forbidden, no firewall, but ports 80, 21 usw are scanned on a regular base.

Use of bandwidth is limited neither in volume nor in time.

The provider had great availability problems a while ago, but they seem more or less fixed now; I am content with the Service. Transfers go up to ~30k (intercontinental, too).

Please contact Bernd if you have additional questions. He has kindly agreed to provide assistance to any current or new Linux user.

3.43. Blueyonder from Telewest, United Kingdom

Information provided by Mike Watson <mike@prog99.com>:

Plugged in the ethernet card, booted up and turned on DHCP.

Worked first time!! Nameservers were added to resolve.conf so I had to do very little other than follow the home networking howto to get the IP masquerading working.

They also dont mind people running masq'd connections or linux but will only support a win9x setup. But when it was this easy....

3.44. CableNet, Colombia

Information provide by Marco Muskus <muskus@gamebox.net>:

CableNet uses CyberSurf from Motorola, and a 3Com 905 10Base−T Ethernet NIC. Set up is mostly done using DHCP but some people also receive static IPs.

3.45. Brutele, Belgium

Information provided by Fabrice Timmermans <Fabrice.Timmermans@ITSoftware.be>:

Operator: BRUTELE − covers part of Brussels and South of Belgium

Hardware: Teraillon Cable Modem using an RJ−45 Ethernet straight cable to a PC

Software: Standard config is Windows, although Linux i386 support is there under the form of mirrored Linuxberg on the internal servers.

IP Setup: DHCP address assignment, single address only. More available depending on subscription mode.

Pricing: one−off installation : BF 2500 (+−$ 85) + BF 5000 ($175) deposit for the cable modem. Monthly fee : BF 1500 ($40) + Modem loan BF 500 (12$)

Services: Tucows and Linuxberg mirrors, quake I and II servers, proxy, mail relay and pop account (3 aliases) and the other usual stuff you need to survive on the net.

More info at http://www.brutele.be/.

3.46. Optus @Home, Australia

Information provided by Simon Butcher `<pickle@alien.net.au>`:

For Optus @Home here in Australia (Competitor to Telstra Bigpond) − Originally they used to be running some sort of really weird DHCP server, so a mate of mine hacked a DHCP client and got it running, but recently they've fixed their problems and ordinary dhcpcd will run fine off the shelf. The trick is that Optus use your "Client ID" for authentication. Your client id is also your hostname, and if you're already running windows, your computer name. If your computer name is CO3012345−A then that's your hostname, and therefore your client id.

You feed dhcpcd this information and everything should run perfectly **dhcpcd −H CO3012345−A eth1**.

Alternatively if you would like to use pump check out the notes of user in Mobile, Alabama.

A word of warning though, Optus are very strict on running servers on their network, so before you connect linux up to Optus @Home, firewall your computer or disable running daemons.

Optus supplies a SurfBoard SB3100 cable modem and a network card. Don't say you've already got a NIC as they will insist you use it and not give you the freebie. I got an SMC EZ−10 PCMCIA card.

3.47. Destiny Cable, Philippines

Information provided by Juan Paolo L. Carballo `<jplcarballo@mydestiny.net>`:

It used to be just for our capital Manila, but has lately expanded to the province of Cebu as well. There are only three of us Destiny Cable subscribers in our local LUG and so far, no one yet in the province. Destiny Cable is not the first to offer cable internet services but is the cheapest, considering that they give a free cable TV feed in addition to unlimited Internet access. Unlike other cable internet providers, they have Linux as an OS option to choose when you fill up their application form.

There have two subscription options:

```
1. Residential
Modem: Motorola Cybersurfer Wave
```

```
NIC: Any
Connection: Dynamic IP − DHCP (DHCP mini−HOWTO)
* Free cable tv feed upon subscription.
* Free first 200 feet of cable from service point to your PC.
* Option to rent, lease−to−own or buy the cable modem.
* Minimum of one year subscription contract.
```

```
2. Corporate
Modem: No information but definitely not Motorola Cybersurfer
NIC: Any
Connection: Static IP
```

Destiny requires you to buy and install your own NIC/Lan card *before* they will setup your service line. In my case, I bought a Linksys etherfast 10/100 LNE100TX ver. 2.0 PnP card and installed it in my Mandrake 7.1 (helium) box using the tulip.c driver, version 0.91g. The NIC was recognized as: Lite−On PNIC−II rev 37 at 0x6200, IRQ 10. When the linemen arrive, they will bring with them only the cable modem, aside from the cable line to your pc. The coaxial cable plugs into the modem from the data splitter on the main line, which it shares with the cable TV. A 10BaseT Ethernet cable with RJ−45 jacks is included with the cable modem. One end plugs into the cable modem and the other end into the ethernet card. Finally, there are six LEDS, one each for POWER, CABLE, PC, TEST, RD and TD. Once the power cycle has been completed, the POWER, CABLE and PC LEDS should be on and not blinking. The TEST LED may light up for a few seconds but this should pass. When a connection is stable, the TEST LED is OFF and the RD "Receive" LED will blink every once in a while. The TD "Transmit" LED will of course light up when you send data.

4. Hybrid Cable modem ISPs

If you think you have the card recognized you have to now look at the entry for your ISP. I have sorted the information according to a provider because setups are mostly ISP specific.

This section is for people who are using so−called "hybrid" cable modems. Hybrid modems are modems that need two hookups (connections), one to the (TV) cable and one to the phone line. TV cable is used for downloading while phone line is used for uploading.

4.1. Adelphia Powerlink, USA

Instructions on how to get your Adelphia Powerlink hybrid modem running under Linux can be found at http://linuxpower.cx/~cable/

4.2. LinkExpress, Brasil

This information is provided by Rodrigo Severo `<rodrigo@who.net>`:

First of all, let me tell you that here we have the MMD Cable Modem from General Instrument. We use SurfBoard 1000 ISA board for download and a regular telephone modem for upload. I would prefer to use an external board like the SurfBoard 1200 which is available only to corporate users, i.e., willing to pay US$ 200,00 instead of the regular US$ 30,00 so I found out this driver for the internal ISA board. For home users, Linkexpress (my ISP) just installs and supports the internal ISA board − Surfboard 1000. If you want to use it, you have to install Windows 95/98 on your computer and let the guy from Linkexpress install the equipment. After that, make your Linux installation as you like.

I started from the files I downloaded from http://linuxpower.cx/~cable/.

Here is the relevant data:

- ISP: LinkExpress http://www.linkexpress.com.br
- DNS: 200.252.88.20
- Frequency: 351 MHz
- Phone number: 321 3300
- City: Brasilia
- Province: Distrito Federal
- Upload speed: regular 33.6K (just the download goes through the cable modem)

During a download from a local tucows mirror I got 70KB~300KB per second. From distant sites I managed to get 30KB/s a few times.

More information about LinkExpress can be found at http://www.linkexpress.com.br/.

4.3. ExpressNet, Maryland

I recently accuired an expressnet cable modem for the maryland area. it is a com21 one way modem and I had a hell a time making it work so id like to share my knowledge in your faq maybe? well heres what I learned inorder for the PPP connection to authenticate the user must be running PAP which consists of editing the `/etc/ppp/pap-secrets` file accordingly:

```
#/etc/ppp/pap-secrets
#this is the PAP secrets file for PPP
#the quotes are required on both
"username"      *       "password"
```

after that they must create a `PPP-on` script what ever name it must execute this command:

```
exec /usr/sbin/pppd debug persist /dev/ttyS1 38400 0.0.0.0:0.0.0.0 connect "chat -v TIMEOUT 3 ABORT 'BUSY' ABORT 'NOANSWER' '' ATH TIMEOUT 30 'OK' ATDTTELEPHONE CONNECT ''"
```

this must be done with no carrage returns either

next step is to modify the `/etc/ppp/ip-up.local` file if it does not exist it should be created it should read the following:

```
#!/bin/bash
#/etc/ppp/ip-up.local
#this will set up the route to the ppp device as default everytime the modem
#authenticates dont include it if you do not want this option
route add default ppp0
```

then the user must configure their ethernet card on box I have a 3c905.

I configured it the following way:

```
ifconfig eth0 up
ifconfig eth0 10.0.0.1 broadcast 10.0.0.15 netmask 255.255.255.240
```

then I added some more routes to the kernel routing table as follows:

```
route add -host 10.0.0.1 eth0
route add -net 10.0.0.0 eth0
```

all of these commands can be added into a script file as follows

```
#!/bin/bash
#This is a script file for establishing the cable modem IF device properties as
#well as the route properties
ifconfig eth0 up
ifconfig eth0 10.0.0.1 broadcast 10.0.0.15 netmask 255.255.255.240
route add -host 10.0.0.1 eth0
route add -net 10.0.0.0 eth0
```

thats all and the cable modem connection is setup fast as hell I might add.

Contributors: Chris `<chris@wrm.grdn.net>` and Mike Milbert `<mike@milbert.com>`.

4.4. Charter Pipeline, Riverside, CA

This information is provided by Gabriel Peters <gpx1@earthlink.net>:

(I have Charter Pipeline, Powered by Earthlink, Riverside, CA) The modem is a Com21 ComPORT 2000.. connected to the computer via 10 BaseT ethernet cable to a Linksys 10/100 ethernet card (Cable modem, ethernet cabling, and ethernet card supplied) The ethernet card driver that I had to compile into the kernel was for the DEC Tulip. auto−detected the card and set it up nicely.

This is the information I needed:

```
eth0 IP address − 10.0.0.1
DNS Servers − 207.217.126.81, 207.217.120.83
Subnet Mask − 255.255.255.240
Gateway: None
Your hostname should be CBL−(your username).hs.earthlink.net
```

Then you need to configure PPP to dial up your access number as normal.. What I had to do to get it to work was this: I typed **ifconfig eth0 down** to shutdown the ethernet, **ppp−go** to dial in, once it reported my IP addresses, i typed **ifconfig eth0 up** and voila, it worked perfectly.

Editor's comment:

Each time PPP link is brought up or down pppd executes scripts `/etc/ppp/ip-up` (link up) and `/etc/ppp/ip-down` (link down) so in order to have Ethernet network go up and down with PPP link simply add:

```
ifconfig eth0 up
```

before `exit 0` statement in `/etc/ppp/ip-up` and `ifconfig eth0 down` in `ip-down`.

4.5. Chambers Cable, Chico, CA / Fundy Cable, New Brunswick

This information is provided by Brian Moore <bem@cmc.net>:

For those using Chambers Cable in Chico, CA, the product is the Scientific Atlanta data Xcellerator(tm) modem. Mike Cumings of Cal State University wrote a nifty driver for it, available at http://www.ecst.csuchico.edu/~mcumings/cablemodem/. This should also work for others using the same modem, such as Fundy Cable of New Brunswick. If you encounter problems compiling the client program from the above address try a client provided by Timothy Legge <tlegge@fundy.net> at http://user.fundy.net/tlegge/DataX/cable0.99−1.tar.gz

---

4.6. Smyrna Cable, Atlanta, GA

This information is provided by Blake Sorensen <librarian@unseen.net>:

I have Smyrna Connect, supported by Smyrna Cable in Atlanta, GA. They are currently (June, 1999) using half−duplex but are scheduled to have full−duplex within six months. The Cable Modem is a ComPort Com21. Here is the configuration stuff I needed to get my linux box running as my dialup.

My eth0 device is a 3com ISA card set to IP 10.0.0.1, Bcast 10.0.0.255, Mask 255.255.255.0.

The machine is set to the hostname Smyrna418.smyrnacable.net where Smyrna418 is my username. I don't think this is that important, but I haven't fiddled with it to see if it will still work once I change the hostname.

My modem is an external 56K X2 US Robotics on `/dev/ttyS0`.

I also have eth1 (a DEC tulip based pci card) set up as 192.168.0.1 as the gateway for the rest of my network to masquerade behind.

Smyrna Connect does not give you DNS info for the cablemodem since you are supposed to use the Windows PPP feature of using the default DNS for the server you dial in to. However, they do have one that works at 209.116.152.252.

I use a ppp connection script to dial in, but the guts of it is this:

```
/usr/sbin/pppd modem /dev/ttyS0 persist mru 1000 asyncmap 0 \
-detach crtscts user Smyrna??? defaultroute connect '/usr/sbin/chat \
ABORT BUSY ABORT ERROR "" ATZ OK ATDT7704365664 CONNECT' \
57600 0.0.0.0:0.0.0.0 38;
```

I keep the persist in there since Smyrna Connect has a habit of dropping the connection every once in awhile, and this way it automatically dials back in. You will need to replace the Smyrna??? in the above command with your own username and put the line:

```
Smyrna???       Smyrna???       password
```

in the file `/etc/ppp/pap−secrets`.

4.7. Amnet de Costa Rica, Costa Rica

This information is provided by Roberto Salvatierra `<chuby@internettico.com>`:

Ok to set up a Hybrid cable modem conection using Costa Rica's Amnet Provider is not all that hard (once you get the hang of it) is like the other providers that use com21 modems, but with some minor diferences.

My Hardware is:

```
CableModem: Com21 ComPort 1000
Modem     : Rockwell 56k
Ethernet  : Ne2k PCI clone
Machine   : i386
Os        : Debian 2.1
Kernel    : either a 2.2.x or a 2.3.x*
```

The first thing I did was disable my whole networking system, mainly because i had a real mess on my routing tables, hosts, and resolv.conf files (I was using several ISP's and an intranet) so I opted for this but that was just me, I even stopped lo so I started with a clean config.

okey first of all if you have a dual system (win/linux) make sure the system is working under windows, that way we can make sure everything is up and running, after that, reboot to linux**.

If you don't have a dual system I found something interesting that MIGHT help you state if the cablemodem and the eth card are functional, first, type this on your system:

```
ifconfig eth0 up
ifconfig eth0 10.0.0.1 netmask 255.255.255.240
route add -host 10.0.0.1 eth0
```

after that look in your system log files for pings from 10.0.0.4 (I have no idea why but this machine keeps "pinging" my box ,I asked amnet's help desk what was this all about, and they didn't give me an answer I guess they do It to check the network integrity) well anyhow, if you get this pings means that amnet connection is working okey.

well after we have stated that the cable modem is up and running the rest is quite easy.

if you did the above step now lets bring eth0 down (**ifconfig eth0 down**)

first lets place amnet's DNS where it sould be in `/etc/resolv.conf` so we need to add this:

```
search amnet.co.cr
nameserver 196.40.3.10
```

okey now we need a ppp script for the modem

this one works: (we all use the same username "amnet" and password "conexion" so for this to work just cut and paste)

```
exec /usr/sbin/pppd /dev/ttyS1 57600 0.0.0.0:0.0.0.0 debug user amnet
defaultroute connect "chat -v TIMEOUT 60 ABORT 'BUSY' ABORT 'NOANSWER' ''
ATH TIMEOUT 60 'OK' ATDT2969130 CONNECT ''"
```

amnet uses PAP (password authentication protocol) to authenticate users so we need to add a line to `/etc/ppp/pap-secrets`:

```
"amnet" * "conexion"
```

okey now you need to bring ppp up so just run that script to check that it works type: **ifconfig**, now you should have something like this:

```
ppp0      Link encap:Point-to-Point Protocol
          inet addr:196.40.3.177  P-t-P:196.40.30.114  Mask:255.255.255.255
          UP POINTOPOINT RUNNING NOARP MULTICAST  MTU:1500  Metric:1
          RX packets:7 errors:1 dropped:0 overruns:0 frame:1
          TX packets:9 errors:0 dropped:0 overruns:0 carrier:0
          Collisions:0
```

Important: make sure at this point that you do not have eth0 up or it WILL NOT WORK

okey after you have this working type this:

```
ifconfig eth0 up
ifconfig eth0 10.0.0.1 netmask 255.255.255.240
route add -host 10.0.0.1 eth0
```

now type **ifconfig** you should have something like this:

```
eth0      Link encap:Ethernet  HWaddr 00:00:21:61:7C:F0
          inet addr:10.0.0.1  Bcast:10.255.255.255  Mask:255.255.255.240
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:5594 errors:0 dropped:0 overruns:0 frame:0
          TX packets:241 errors:0 dropped:0 overruns:0 carrier:0
          Collisions:0
          Interrupt:11 Base address:0xde00

ppp0      Link encap:Point-to-Point Protocol
          inet addr:196.40.3.142  P-t-P:196.40.30.114  Mask:255.255.255.255
          UP POINTOPOINT RUNNING NOARP MULTICAST  MTU:1500  Metric:1
          RX packets:7 errors:2 dropped:0 overruns:0 frame:0
          TX packets:65 errors:0 dropped:0 overruns:0 carrier:0
          Collisions:0
```

and voila , your conection is up and running !!

some tips:

when you are not connected your eth should be DOWN activate eth only AFTER ppp is running OR IT WILL NOT WORK.

To make this you can add the eth up and down scripts to `/etc/ppp/ip-up` and `/etc/ppp/ip-down` scripts (on debian just place them on `/etc/ppp/ip-up.d` and `/etc/ppp/ip-down.d`)

`ip-up` should contain this:

```
ifconfig eth0 up
ifconfig eth0 10.0.0.1 netmask 255.255.255.240
route add -host 10.0.0.1 eth0
```

and `ip-down` this:

```
ifconfig eth0 down
```

now here is a WORKING route table that might help you troubleshooting the system: (my HOSTN = hostname)

```
Destination     Gateway         Genmask         Flags Metric Ref    Use
Iface
HOSTN.amnet.co. *               255.255.255.255 UH    0      0        0 eth0
196.40.30.114   *               255.255.255.255 UH    0      0        0 ppp0
HOSTN.amnet.co. *               255.255.255.240 U     0      0        0 eth0
default         196.40.30.114   0.0.0.0         UG    0      0        0 ppp0
```

Relevant Information:

```
DNS      : 196.40.3.10
```

```
----- eth0 -----
IP        : 10.0.0.1
NetMask   : 255.255.255.240
Bcast     : 10.255.255.255
Gateway   : NONE
----- ppp ------
IP        : 196.40.X.X (Dhcp Pool)
NetMask   : 255.255.255.255
Bcast     : Unknown
Gateway   : Self Default
```

that's all folks !!

if you need this in spanish look for it in: http://www.internetTICO.com/cablemodem.html

Questions/comments: `<chuby@internettico.com>`. Please use the subject CABLEMODEM or I will not answer.

Biography: Linux Cable Modem mini−how−to Chapter: Hybrid cable modems sections, 4.2 and 4.4

* about using 2.3.x kernels, this are unstable as anyone knows but I found that the performace with this kernel and amnet is LOUSY (like a 14K modem) I DO NOT RECOMEND USING IT, but anyhow if you do use it and you get that your machine does not have ppp do not panic just upgrade your pppd program, 2.3.x kernels use a split async sync interface so pppd < 2.3.10 will NOT work.

** sometimes when I'm using the cable modem on windows and I reboot to linux the modem gets "stupid" so I need to turn off the modem, the machine, then turn on the modem and restart the machine after that it always work. I have no Idea why this happens but I'm guessing that the ethernet card has a different hardware address on windows and linux (wierd) and that the modem keeps this config on an memory, and that it needs to be cleand up for it to work, so if it was working on windows and you are not getting even a ping on linux try this.

More info about Amnet can be obtained at http://www.amnet.co.cr/.

4.8. Prime Cable, Chicago, IL

This information is provided by Eric Agnew <agnew@goku.dyndns.org>:

I just got a hybrid com21 setup w/ Prime Cable in Chicago, and I have a very important addition that will save other users (particularly debian users w/ newer kernels) a LOT of grief:

When I initially set everything up, I was able to establish the ppp connection just fine, but the only things coming back over eth1 were broadcast packets from an internal (10.0.0.x) network. After 3 weeks of extreme frustration, I finally found the solution in the kernel docs under Documentation/networking/README.sb1000:

Solution −− As root type:

```
echo 0 > /proc/sys/net/ipv4/conf/cm0/rp_filter'
```

so it can share the same IP address as the ppp0 interface.

The boot–time script that sets this normally on debian systems is in /etc/init.d/networking, in the 'spoofprotect_rp_filter' function. I simply added 'echo 0 > /proc/sys/net/ipv4/conf/eth1/rp_filter' after it had done everything else. To be sure, I also added it to a script I added to /etc/ppp/ip–up.d that brought eth1 up if I was using the cable connection (as opposed to my other straight–ppp connection).

4.9. Millennium Digital Media, Maryland

This information is provided by Mike Miller <CableModem@mikemiller.net>:

I live in Maryland (Anne Arundel County) where my cable company is Millennium Digital Media (http://millenniumdigitalmd.com/), which offers Cable Modem service from Cablespeed (http://cablespeed.com/). Since most areas aren't currently upgraded to 2–way digital service, for now they're giving us a General Instruments SURFboard SB2100D external (hybrid) cable modem (which includes a 33.6 modem), so you plug the cable and phone line right into the cable modem –– no need to use your own modem or set up ppp or anything. The modem uses DHCP to determine all the settings and connect to the network, so all I have to do it switch on the modem and it automatically dials up and connects to the network. To get Linux working, all I had to do was load and configure dhcpd (or dhcp–client). Since I'm using Debian, all I ran was:

```
apt-get install dhcp-client
```

and voila! I was on the net.

If you're running something other than Debian, please read DHCP mini–HOWTO at http://www.oswg.org/oswg–nightly/DHCP.html.

4.10. Rock Hill Telephone (RHTC) and Fort Mill Telephone (FMTC), South Carolina

This information is provided by Ryan T Rhea <rhear@ruby.winthrop.edu>:

Rock Hill Telephone (RHTC) and Fort Mill Telephone (FMTC) offer hybid cable modem access through a partnership with the Info Avenue ISP. The cable modem is built by Hybrid, and offers high bandwidth downstream over the cable line (I've seen 900+ kpbs), and upstream over the builtin modem (around 33.6 kbps). The cable modem connects to an ethernet 10baseT card and a regular phone line. The cable modem acts as a router from your machine to the internet.

RHTC and FMTC 's tech support is performed by Info Avenue, and they offer no support for Linux whatsover. They were unable to provide any help or documentation regarding Linux and cable modems. Luckily, I was aware through my initial Win NT setup (as I looked over the tech's shoulder) that DHCP was used to assign IP addresses and DNS information. What I had to learn the hard way was that the cable modem apparently relies on the MAC address of the NIC that it is originally installed on. In otherwords, when I went to move the cable modem from my NT machine (which was using a proxy server and a second NIC to share internet access) to my new Linux firewall, I had to move the NIC into the new Linux computer. Without the same NIC, the network link light on the back of the cable modem will never come on, and the modem will not communicate with your computer at all. I assume if you bought a new computer with a new NIC, you could call RHTC or FMTC and ask them to update your MAC, however, they would probably not know what you were talking about, and want to send a technician. When the technician gets there, expect "we do not support Linux" to be the first words out of his mouth.

Anyway, after installing the original NIC (which probably won't be a problem for most of you, because you only have 1 NIC in your computer − which the tech setup under Windows), all I had to do was configure DHCP. Considering my NIC was already working under Linux, my Mandrake Linux distribution made this especially easy. I just type 'netconf', then choose 'Basic Host Information', then enable DHCP for the NIC in question (in my case 'Adapter 1'). The program should restart the device for you, if not, you may need to reboot, or manually restart the device with ifconfig.

If you have trouble with DHCP you could check out DHCP mini−HOWTO.