DSL Turbo 258E /
DSL TurboRouter 258E

ADSL Bridge Modem - DSL258E(B)

ADSL Bridge & Router Modem - DSL258E(R)

User's Guide

Version 1.0

Safety Guidelines

Adhere to the following safety guidelines when using your unit to reduce the risk of fire, electric shock and injury.

(!) Understand all instructions in the manual. Follow all instruction labels found on the unit.

(!) Except for the power adapter supplied, the unit should not be connected to other adapters/power supplies.

(!) Never spill liquid of any kind on the unit.

(!) Do not place the unit on an unstable stand or table. The unit may drop and become damaged.

(!) Do not expose the unit to direct sunlight.

(!) Do not put any hot devices close to the unit as it may degrade or cause damage to it.

(!) Do not place any heavy object on top of the unit

(!) Do not use liquid cleaners or aerosol cleaners. Use a soft, dry cloth for cleaning.

Product warranty does not apply to damage caused by lightning, power surges or wrong voltage usage.

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Chapter...1

Introducing DSL258E

This section gives a brief introduction of DSL258E features and its specifications.

Congratulations on your purchase of the DSL Turbo 258E / DSL TurboRouter 258E ADSL Bridge & Router Modem !

ADSL, which stands for **Asymmetric Digital Subscriber Line**, is the latest communication technology that offers faster and uninterrupted Internet access. Its always-on, real-time, interactive and broadcast-quality is ideal for services such as video-on-demand, collaborative computing and distance learning.

The DSL258E(B) (DSL Turbo 258E) and DSL258E(R) (DSL TurboRouter 258E) are Controller-based External ADSL over ISDN G.dmt Annex B Bridge modem/ Router with Ethernet Interface respectively.

DSL258E is capable of data rate in Full-Rate, **at up to 8 Mbps downstream** and **640 Kbps upstream**.

Both use Analog Device AD20MSP930 (ADI930) for the ADSL physical layer and Virata's Helium for layer 2 and layer 3 processing. Both also have an in-built ISDN splitter for ease of usage and less cumbersome installation.

DSL258E is an embedded solution that is OS independent. It can be connected to any computer with an Ethernet card.

To ensure the broadest customer reach, the DSL258E features multiple data encapsulation formats for DSL transport over ATM PVCs, including the widely supported ADSL protocols **RFC 1483 (MPoA)**, **RFC 1577 (IPoA)** and **RFC 2364 (PPPoA)**.

Fully compliant with ITU-T G.992.1 (G.dmt) Annex B standard, the DSL258E further guarantees interoperability with network providers worldwide.

DSL Telco/Service Providers can provide Business DSL services to a multi-user environment (for example, SOHO environment) with the DSL258E(R) router with support for both Static and Dynamic IP Routing, Network Port Address Translation and Dynamic Host Configuration Protocol Server.

1.1   Documentation

DSL 258E User's Guide   (READ THIS GUIDE FIRST!)

This User's Guide is a printed guide that is included with your DSL258E package. You may refer to it for **setting up and connecting your modem.** It also contains the sections on **Frequently Asked Questions** and **Troubleshooting Guide**.

As this user's guide is written for two models – DSL Turbo 258E [model name: DSL258E(B)] and DSL TurboRouter 258E [model name: DSL258E(R)] – some sections are only applicable to one of the models. Where there is such an occurrence, it will be appropriately highlighted.

DSL Router Commander for DSL TurboRouter 258E Software Manual [1]

The software manual is a softcopy guide that contains information on **DSL Router Commander**, a User Interface (UI) that provides a simple way of configuring your network.

DSL TurboRouter 258E Technical Manual [1]

The technical manual is a softcopy guide that contains **console commands and advanced router configurations** that are mostly intended for experienced users.

ATMOS Command Reference [1]

The reference manual is a softcopy guide that contains most of the **console commands and its functions**. For advance configurations, you may refer to it for their descriptions.

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1 *These manuals are only for DSL258E(R) and can be found on your* **DSL258E(R) CD-ROM** *that is included with your router package.*

1.2   Minimum System Requirements

- Pentium® MMX 233MHz (or above) with Ethernet card (installed with TCP/IP Protocol)

- 32MB RAM

- 10MB of free hard disk space

- A Serial Port

- A CD-ROM Drive

- For Multiple PCs [2]
  - Ethernet Hub/Switch with Crossover/Straight Ethernet cables
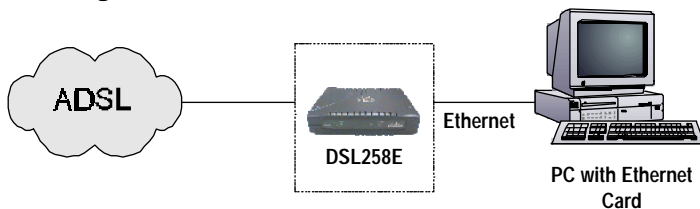
  For Single PC
  - Straight Ethernet Cable

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*2 Applicable for **DSL258E(R)** only*

1.3   Network Connections

DSL258E(R) may operate as a **Bridge modem** or **Router**, connecting to a single computing device or multiple computing devices via a hub/switch.

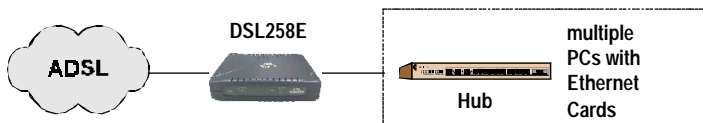## 1.3.1 Bridge Modem

Connection to single PC

ADSL — DSL258E — Ethernet — PC with Ethernet Card

1.3.2 Router

Connection to multiple PCs in a LAN

ADSL — DSL258E — Hub — multiple PCs with Ethernet Cards

Chapter...2

Before You Begin

This chapter contains information that you need to know before setting up DSL258E. It is important that you go through them.

2.1   Package

Ensure that you have the following items in your DSL258E package. For any missing items, please contact your dealer immediately.

DSL258E CD
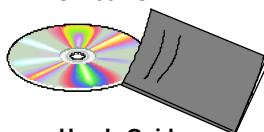
UTP Straight/Crossover Ethernet cable (RJ-45)

User's Guide

DSL258E

Power adapter

Power cable [3]   **Telephone cable(s)**

The types of cables bundled vary according to countries and may look different as shown here.

3 *The DSL258E is packaged with a certified IEC320 standard power cord (10A 250V)*

2.2 Overview for DSL258E

2.2.1 Front View – LED Indicators
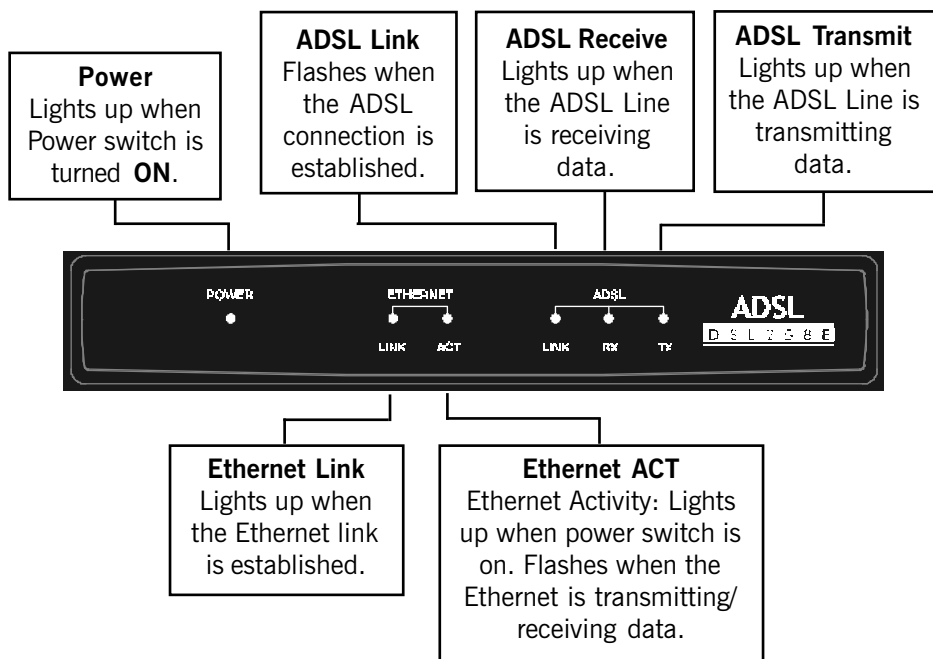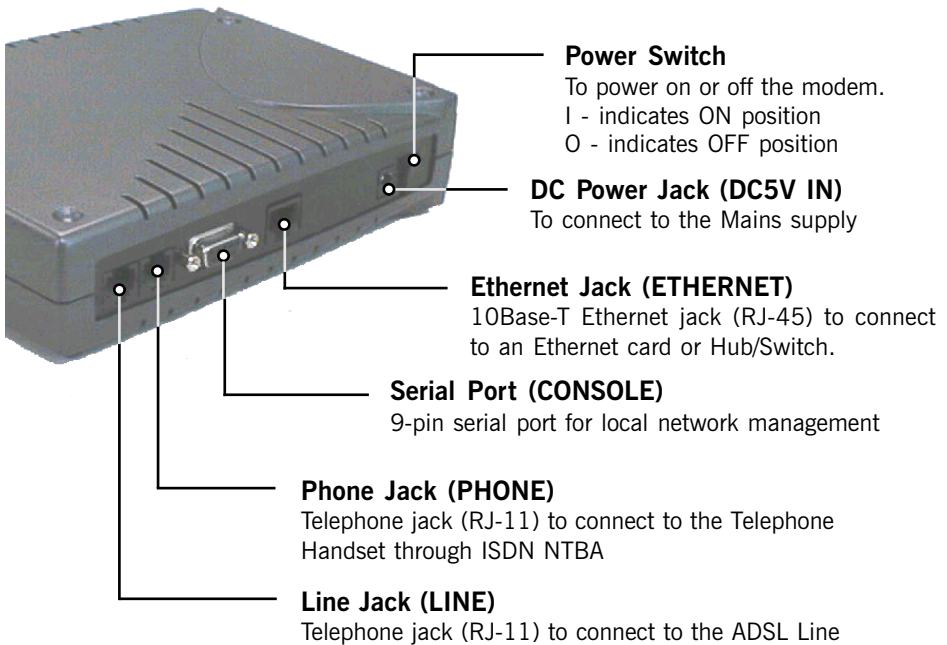
Power
Lights up when Power switch is turned **ON**.

ADSL Link
Flashes when the ADSL connection is established.

ADSL Receive
Lights up when the ADSL Line is receiving data.

ADSL Transmit
Lights up when the ADSL Line is transmitting data.

POWER   ETHERNET   ADSL   ADSL
         LINK ACT   LINK RX TX   D S L 2 5 8 E

Ethernet Link
Lights up when the Ethernet link is established.

Ethernet ACT
Ethernet Activity: Lights up when power switch is on. Flashes when the Ethernet is transmitting/ receiving data.

When the **Power Switch** is on, the **Power LED** will light up. Once the modem is initialized, the **ADSL Link LED** will light up, attempting to establish a connection. Upon successful connection, the **ADSL Link LED** will start blinking.

2.2.2 Rear View

Power Switch
To power on or off the modem.
I - indicates ON position
O - indicates OFF position

DC Power Jack (DC5V IN)
To connect to the Mains supply

Ethernet Jack (ETHERNET)
10Base-T Ethernet jack (RJ-45) to connect
to an Ethernet card or Hub/Switch.

Serial Port (CONSOLE)
9-pin serial port for local network management

Phone Jack (PHONE)
Telephone jack (RJ-11) to connect to the Telephone
Handset through ISDN NTBA

Line Jack (LINE)
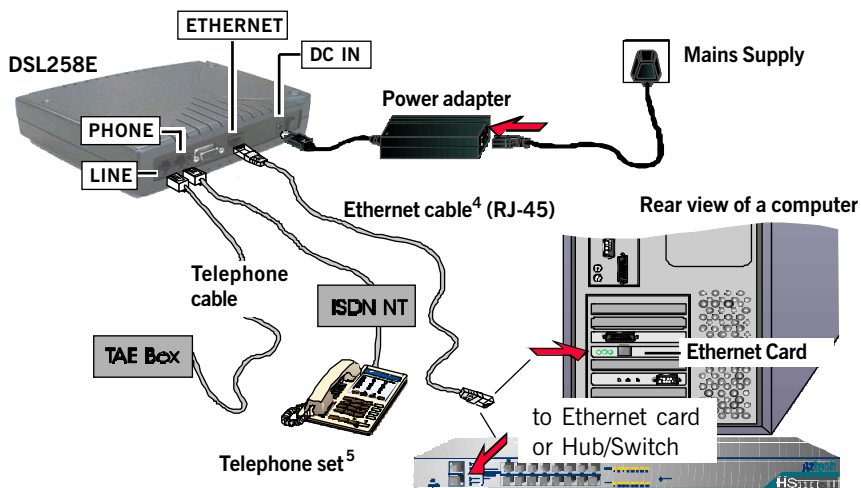Telephone jack (RJ-11) to connect to the ADSL Line

Chapter...3

Connecting DSL258E

This chapter contains information on the hardware setup of DSL258E

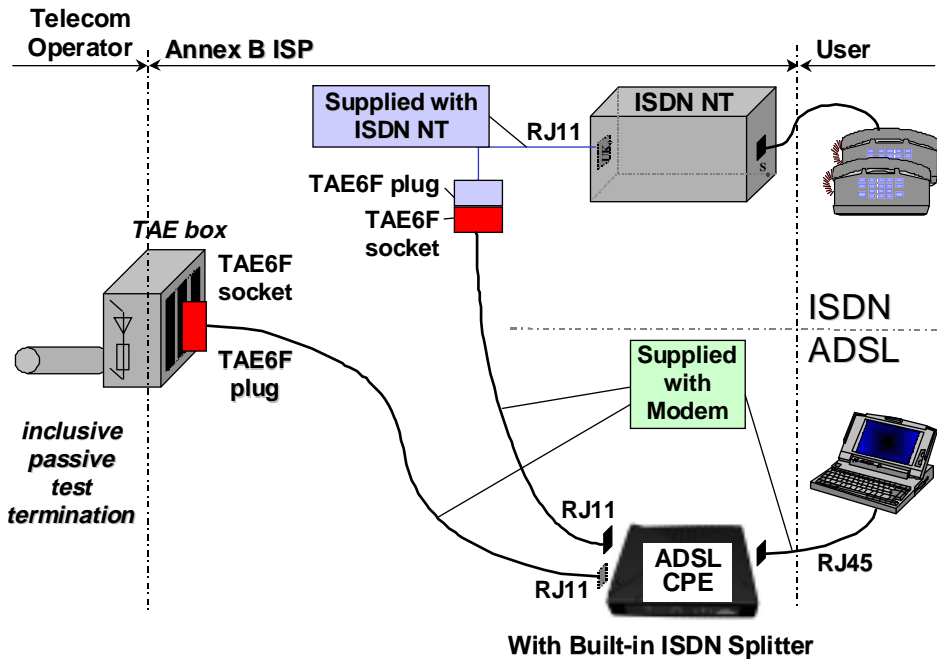**Power off your computer and any connected devices before connecting!**

The following illustrates how to connect various devices to the modem:

4 Use only UTP Category 5 Straight Ethernet cable to connect to an Ethernet card.
For DSL258E(R) only: Use only UTP Category 5 Cross Ethernet cable to connect to the MDI-X port of a Hub/Switch OR a Straight Ethernet cable to connect to the MDI port.

5 This optional connection provides access to your Telephone set while working near the modem.

The following shows a sample setup of the DSL258E:

Telecom Operator — Annex B ISP

Supplied with ISDN NT

RJ11

ISDN NT

User

TAE6F plug
TAE6F socket

TAE box

TAE6F socket

TAE6F plug

inclusive passive test termination

ISDN
ADSL

Supplied with Modem

RJ11

RJ11

ADSL CPE

RJ45

With Built-in ISDN Splitter

Chapter...4

Setting Up the Ethernet Card

You need to configure the Ethernet Card on your PC in order to run DSL Router Commander[6] from your PC.

> 1. **The screen shots and screens information illustrated in this manual serve only as a guide. The exact information you see on your system may vary, depending on your system configurations. For dissimilarities, follow closely to the instructions prompted on your PC screen.**
>
> 2. **All IP addresses and Subnet Mask indicated in this manual serve only as examples for your better understanding. You are required to replace these values with those given by your ADSL Service Provider/System Administrator.**

4.1 Configuring the Ethernet Card

i)   Power on your DSL258E.

ii) From your Windows desktop, right-click on the **Network Neighborhood** icon. Select **Properties**.

6 DSL Router Commander is a user friendly tool that allows you to setup your DSL258E network configurations with ease.

iii) From the **Configuration** tab, select **TCP/IP** -> **3Com EtherLink III ISA [3C509b-TPO] in PnP mode** [7] and click **Properties**.
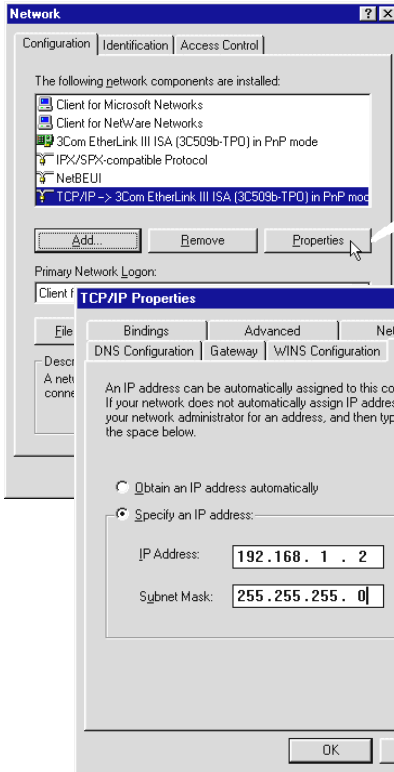
(If you do not see a TCP/IP networking protocol, re-install your Ethernet card.)

iv) Select the **IP Address** tab.

Select the option '**Specify an IP address**'.

Enter the **IP Address** and **Subnet Mask** as given by your System Administrator. Click **OK** to save the settings.
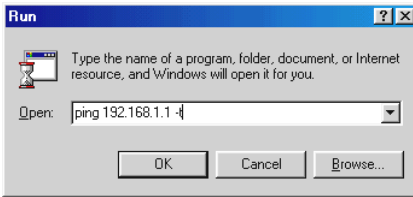
When prompted to restart, click **Yes**.

7 This guide uses **3Com EtherLink III ISA** Ethernet Card as an example.
   Select the Ethernet Card listed in your system.

4.2 Verifying the Link Between the Ethernet Card and DSL258E

i)   From your Windows taskbar, click **Start** > **Run**.

ii) In the text box, enter **ping 192.168.1.1 -t** and click **OK**.

(The factory default IP Address for DSL258E is set at **192.168.1.1**. Replace this address with the one assigned by your System Administrator, if necessary.)

iii) If the connection between your Ethernet card and DSL258E has been established, you should see text listing similar to the following.
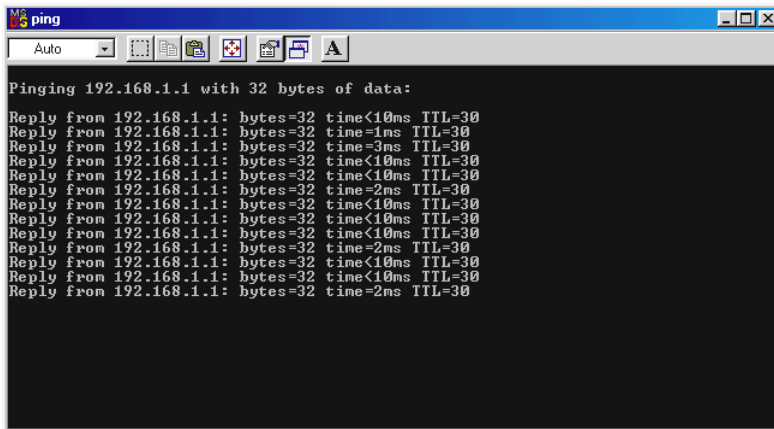
Close the window. You may now proceed to run DSL Router Commander. (If you see '**Request timed out**' listing, it means that the link between your Ethernet Card and DSL258E has not been established.   Refer to **Appendix B - Troubleshooting Guide, '*I get '*Request timed out*' response when I ping to DSL258E*'**.)

Appendix...A

Frequently Asked Questions

This section provides answers to the commonly asked questions on your ADSL modem.

Why is Asymmetric Digital Subscriber Line (ADSL) called Asymmetric?

It is called asymmetric because more bandwidth is reserved for receiving data than for sending data. This is useful because many users of the Internet receive much more data than they send.

What are the benefits of ADSL over analog modems ?

Besides the high-speed advantage, ADSL connection is always on. There is no longer a need to log on and off, no more busy signals and no more waiting for the connection to established - it is always there. On top of these, you can use the phone even when the data connection is on. You do not need to switch between surfing the Net and talking over the phone.

Will my modem constantly connect near the maximum speed ?

At ADSL speeds, the limitations depend on the performance or load of the Internet Service Provider that you are trying to reach, as well as the line condition specific to your location.

Can I use my modem during thunderstorm ?

ADSL modems can be damaged by thunderstorms. Our product warranty does not apply to damage caused by lightning. If your area is frequent in thunderstorms, you are advised to use a surge protector. Certain surge protectors have been reported to reduce download speed, so you are advised to test your speed before and after installation to make sure that it adds no problems to your line.

Do I need to install additional telephone lines in order to use ADSL?

No, you do not need to do so. ADSL and standard voice telephones operate on a different set of frequencies. The difference in frequencies allows both IP (Internet) traffic and voice traffic to co-exist on a same physical phone line.

Will my old PC be fast enough for ADSL?

Yes. But if you start to use the ADSL line to view video-on-demand or other memory- and processor-hungry functions, you may well decide that your PC is too slow. However, there are still many sites that can be accessed by slower PCs.

How can I send/receive fax as well as surf the Internet at the same time ?

To send/receive fax, you may connect your fax machine to the **PHONE** jack of your modem (same as the way you connect to the telephone set as illustrated in **Chapter 3 - Connecting DSL258E**).

Do I need to use an ISDN splitter when using ADSL ?

Your modem may or may not have a built-in ISDN splitter at the PHONE jack. Check with your Internet Service Provider.

However, if you are sharing the ADSL line with other telephone line extensions, you will need to have an ISDN splitter connected between the other telephone set and the telephone wall socket connecting to it.

Appendix...B

Troubleshooting Guide

This section provides a step-by-step solutions to problems that you may encounter when setting up or using your ADSL modem.

I am not getting any connection. The modem Power LED lights up and the ADSL Link LED remains light up.

Power off your modem and check the following:

i)   Ensure that the Power adapter is tightly fitted into the **DC IN** of your modem.

ii)   Check that the Telephone cable (RJ-11) is connected to **LINE** jack on your modem and not to the **PHONE** jack.

iii)   Power on your modem.

If the problem still persists, please check with your ADSL Service Provider.

I am getting poor ADSL speed performance from DSL258E.

i)   Ensure that the **ADSL line** is at least 10cm away from the **Power adapter** (see the following illustration).

ii) Place your modem away from devices or appliances such as monitors, exposed computer systems (with chassis covers removed) or another router which exhibit magnetic fields that may cause interferences to your ADSL line.

iii) Ensure that **ISDN splitters** are used for phone sockets that are sharing the same ADSL line.

If your modem speed or performance is still unsatisfactory, please contact your Internet Service Provider.
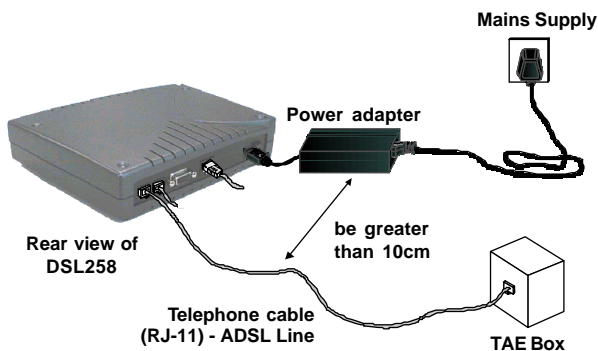
I get 'Request timed out' response when I ping to DSL258E.

Check that you have entered the correct IP Address for your Ethernet Card as specified by your System Administrator (see **Chapter 4 - Setting Up the Ethernet Card**). It should be in the same subnet as DSL258E.

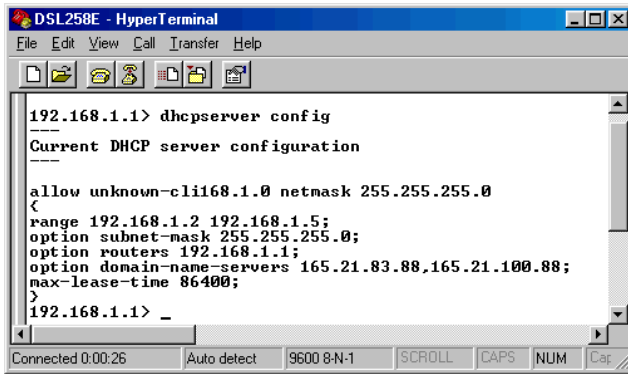Restart your system for the IP Address to take effect and try to ping again.

The following are applicable to DSL258E(R) only:

I am prompted with 'Bad configuration file, please review' error message after entering config confirm command.

The error message is prompted when the system detected some errors in commands that you have entered. To review the commands, type config . An example of the listing is as shown.

```
DSL258E - HyperTerminal                              _ □ X
File  Edit  View  Call  Transfer  Help

192.168.1.1> dhcpserver config
---
Current DHCP server configuration
---

allow unknown-cli168.1.0 netmask 255.255.255.0
{
range 192.168.1.2 192.168.1.5;
option subnet-mask 255.255.255.0;
option routers 192.168.1.1;
option domain-name-servers 165.21.83.88,165.21.100.88;
max-lease-time 86400;
}
192.168.1.1> _

Connected 0:00:26    Auto detect   9600 8-N-1   SCROLL  CAPS  NUM  Cap
```
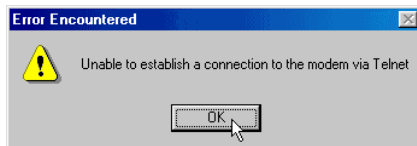
Go through the commands to locate the error(s).

To correct the error(s), you may type either `config delete` to remove the last entered command line or `config flush` to remove ALL entered command lines. Re-enter the correct commands.

Complete the configuration settings with `home`, `config save` and `restart`.

The following error message was prompted when I tried to log in to DSL Router Commander.


```
Error Encountered                    X
    ⚠   Unable to establish a connection to the modem via Telnet

              OK
```

This happens when the link between your Ethernet card and DSL258E has not been established. Please refer to **section 4.2 - Verifying the Connection Between the Ethernet Card and DSL258E**.

Appendix…C

Technical Specifications

This section contains the specifications for DSL258E.

C.1 MAIN FEATURES

C.1.1   ADSL/ATM Support

▸ Controller-based External ADSL over ISDN Annex B. Router

▸ UTOPIA Specifications Level I and Level II compliant

▸ ITU-T G.992.1 (G.dmt) Annex B compliant

▸ Using Discrete Multi-Tone (DMT) line encoding scheme

▸ Full Rate transmission at up to 8 Mbps downstream and 640 Kbps upstream

▸ Rate Adaptive modem at 32 Kbps steps

▸ ATM Layer with Traffic shaping (UBR/CBR/VBR-nrt)

▸ AAL ATM Attributes - AAL5

▸ VPI Range (0-4095) and VCI range (1-65535)

▸ Multiple PVC up to 8 support

‣ UNI 3.0, 3.1 and UNI 4.0 ATM Signaling (support for SVCS)

‣ Spectral compatibility with ISDN European Standard (Annex B)

‣ F4/F5 OAM Send and Receive/Loopback supported

‣ Trellis Coding and Echo Cancellation support

‣ Built in ISDN microfilter

C.1.2   Encapsulation Support

‣ RFC1483 Bridged and Routed for both LLC/VC MUX support

‣ RFC1577 Classical IP support

‣ RFC2364 PPPoA protocol stack support

‣ RFC2516 PPPoE Relay support

‣ Transparent and Spanning Bridge support

C.1.3   Network Support [DSL258E(R) only]

‣ Static IP, RIP1 and RIP2 routing support

‣ TCP/UDP Application Support

‣ Network Port Address Translation (NPAT)

‣ DHCP Server/Relay Agent

‣ DNS Relay Agent

‣ PPTP Access Concentrator Support

‣ L2TP VPN Support (Firmware Upgrade)

C.1.4   Management Support

‣ TFTP Software update support

‣ Remote management through Telnet console access

- ▸ DSL Router Commander GUI for configuration assistance [DSL258E(R) only]

- ▸ SNMP support for management functionality

- ▸ Flash ROM upgradable for future feature enhancement

- ▸ Web based Management [Firmware Upgrade DSL258E(R) only]

C.1.5   Security Support [DSL258E(R) only]

- ▸ PAP/CHAP for Password Authentication Support

- ▸ NPAT for basic Firewall support

- ▸ Packet Filtering support (Firmware Upgrade)

C.2   CHIPSET

- ▸ Virata VC8410 (Helium) – ATM Communications Controller

- ▸ Analog Device AD6449 DMT based ADSL modem and ATM framer

- ▸ Analog Device AD6440 ADSL Analog Front End

- ▸ Analog Device AD8016 ADSL Transmit Line Driver

- ▸ Analog Device AD8022 ADSL Receive Line Driver

- ▸ 8MB SDRAM [DSL258E(R)] / 4MB SDRAM [DSL258E(B)]

- ▸ 2MB [DSL258E(R)] / 1MB [DSL258E(B)] & 512KB Flash ROM

C.3   PLATFORM SUPPORT

- ▸ OS Independent

C.4   EXTERNAL CONNECTORS

- ▸ 1 x RJ11 for WAN Interface

- ▸ 1 x RJ45 for 10BaseT LAN Interface

- ▸ 1 x RJ11 for ISDN Handset Interface

▸ 1 x 5V DC Power Jack

▸ 1 x On/Off Power Switch

▸ 1 x 9 pin Serial Port for local management

C.5   LED INDICATORS

▸ 1 x Power LED

▸ 1 x Ethernet Link Status LED

▸ 1 x Ethernet Activity LED

▸ 1 x ADSL Receive LED

▸ 1 x ADSL Transmit LED

▸ 1 x ADSL Link Status LED

C.6   ENVIRONMENTAL

C.6.1   Temperature

▸ Operating : 10° to 45° Celsius

                             50° to 113° Fahrenheit

▸ Non-Operating : -25° to 70° Celsius

                             -13° to 158° Fahrenheit

C.6.2   Humidity

▸ Operating :   30% to 80% Relative Humidity (Non-Condensing)

▸ Non-Operating :   10% to 95% Relative Humidity (Non-Condensing)

C.7   SYSTEM REQUIREMENT

▸ Pentium MMX 233MHz or above) with Ethernet card

The specifications herein are subject to change without prior notifications