**ANALOG
DEVICES**

Eagle™ and Eagle II™
USB ADSL External Modem Installation Guide

Operating System: Macintosh® OS 8 / OS 9

For use with:

NRE-EAGLE-USB-EV1
NRE-EAGLE-USB-EV2
NRE-EAGLE2-USB-EV1
NRE-EAGLE2-USB-EV2

Analog Devices Inc. Proprietary Information
Copying and Usage are Subject to Company Instructions.
All specifications are subject to change without notice.

Document Number 0053
Rev 1.0

Table of Contents

ABOUT THIS EVALUATION PACKAGE

This Evaluation Package contains:
- USB ADSL Modem product brief

Either
- *Eagle*™ chipset data sheets
  - AD6484 ADSL Digital Data Pump with USB
  - AD6480 ADSL Codec IC/Analog Front End

Or
- *Eagle II*™ chipset data sheets
  - AD6485 Digital Data Pump with USB and Ethernet
  - AD6480 Codec IC/Analog Front End (AFE)

And
- USB ADSL External Modem reference design
  - Schematics
  - Bill of Materials
  - Layout (Gerber) files
- USB Modem reference board with 6' Type A-to-B USB Cable
  - Annex A (ADSL over POTS) board, version 1.3 or later
  - Or
  - Annex B (ADSL over ISDN) board, version 1.3 or later
- Device drivers software and product documentation path to an internal ADI website
  Contact your ADI Sales or FAE to obtain the current release for the following:
  - NDISLAN Driver (PPP over Ethernet) for Macintosh® OS X
  - NDISWAN Driver (PPP over ATM) for Macintosh® OS X Utility software
- Utility software
  - ADSL Monitor – Graphical User Interface (for monitoring and configuration)
- *Eagle*™ and *Eagle II*™ USB ADSL External Modems Installation Guide
- Performance reports

THE *EAGLE*™ AND *EAGLE II*™ USB ADSL EXTERNAL MODEMS

This modem features:
- Plug and Play USB 1.1-specification interface
- Bus-powered USB ADSL modem, which eliminates external power supply requirements
- Rate-adaptive ADSL technology that adapts to your phone line conditions
- Receive-line rate of up to 12Mbps; transmit-line rate of up to 1 Mbps

THE CO BOARD FOR CENTRAL OFFICE SIMULATION

For full-product evaluation purposes, an emulated single-channel PCI ADSL Internal NIC CO (Central Office) card is available (part number: NRE20msp930EVC-PCI) to simulate an ADSL Central Office. You will need to use a separate and different PC than that used for ADSL RT/CPE. We recommend that you install the PCI CO card drivers on a Windows® NT4 Server or Windows® 2000 Server environment that provides built-in server dial-up services and higher-performance file transfer.

THE GUIDE

This guide has been designed as part of a total evaluation package to help you through the hardware plug-in and software installation for you to evaluate the USB ADSL External Modem.

THE DEVICE DRIVERS SOFTWARE

The supplied device drivers support the Macintosh® OS 8 / OS 9 Operating Systems.

SYSTEM REQUIREMENTS

To use the USB Modem reference board, your MAC machine must have:

- OS 8.6 minimum Operating System
- 32MB system memory or more
- 10MB free space on your hard drive
- 256-color VGA or higher resolution
- CD-ROM drive
- One available USB port and one USB cable (supplied)
- Telephone cable with RJ-11 connectors
- Macintosh® OS 8 / OS 9 Operating System disks (supplied by Apple®)
- Available ADSL service or connection to DSLAM or ADSL service emulator

ANNOTATIONS

⚠ **WARNING!**

ⓘ Special Note
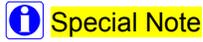
COPYRIGHT INFORMATION

© 2002 Analog Devices Inc., ALL RIGHTS RESERVED. This document may not be reproduced in any form without prior, express written consent from Analog Devices Inc.

Apple® and Macintosh® are registered trademarks of Apple Computer, Inc.
Stuffit® is a trademark of Aladdin System, Inc.

DISCLAIMER

Analog Devices Inc., reserves the right to change this product without prior notice. Information furnished by Analog Devices Inc, is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices Inc. for its use; nor for any infringement of patents or rights of third parties, which may result from its use. No license is granted by implication or otherwise under the patent rights of Analog Devices, Inc.

DOCUMENT REVISION HISTORY

Revision	Date	Summary of Changes	Author	Editor
1.0	12-16-02	Initial Release	M. A.	S.K.

HARDWARE

THE USB ADSL EXTERNAL MODEM REFERENCE BOARD

DESCRIPTION

The USB ADSL External Modem reference board comes with one RJ-11 phone jack and one USB connector (type B) – see below. POTS splitters or microfilters may be required to work concurrently with conventional POTS equipment such as phone, fax and V.90 modem.

Five LEDs show DSL Status (See Table 1.)
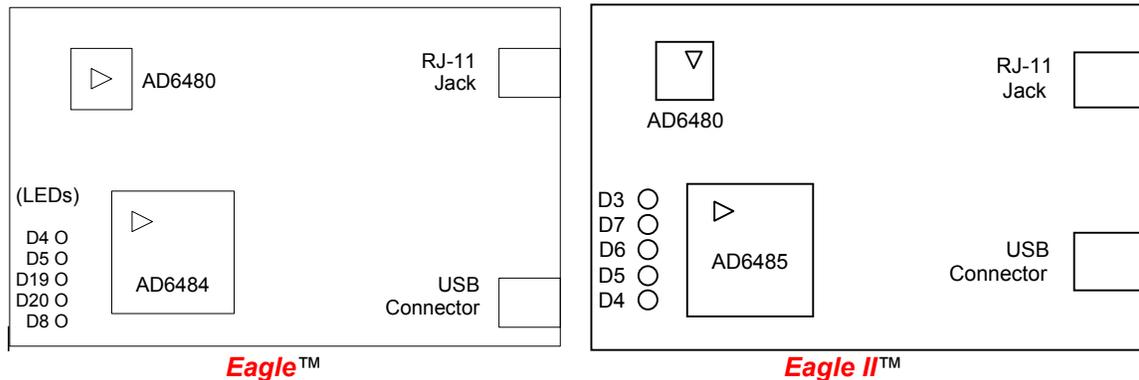
Eagle™   *Eagle II*™

Table 1. LED Functions

EAGLE™	*EAGLE II™*	DSL Status
D4	D3	Modem Connect or Detect / Connect (default). Blinking indicates Modem Detect. ON indicates Modem Connect.
D5	D7	ADSL Line CRC Error
D19	D6	USB Board Power
D20	D5	Network Transmit Data
D8	D4	Network Receive Data

MODEM INSTALLATION

To physically connect the modem, see the Installation of The Modem section on page 9.

SOFTWARE

⚠️**It is critical that you read through the entire set of installation instructions before beginning the installation process itself because performing a step out of sequence could result in a failed installation.**

## DRIVERS FOR MACINTOSH® OS 8 / OS 9

DESCRIPTION

The driver exports a standard Ethernet interface to the Macintosh® OS 8 / OS 9 operating system and binds with Apple® protocols that communicate with NDIS 3 or with third-party PPPoE client software (provided by your ADSL service provider) running under Macintosh® OS 8 / OS 9. Consult your service provider for the appropriate PPPoE client software and related documentation. VPI, VCI, and other specifications, can be configured via ADSL Monitor.

SOFTWARE INSTALLATION

1. Copy the software package from ADI's FTP site, and place the Stuffit® file onto the Desktop. (The ADSL USB Drivers.hqx icon will appear on the Desktop.)


Double-click the **ADSL USB Drivers.hqx** icon.
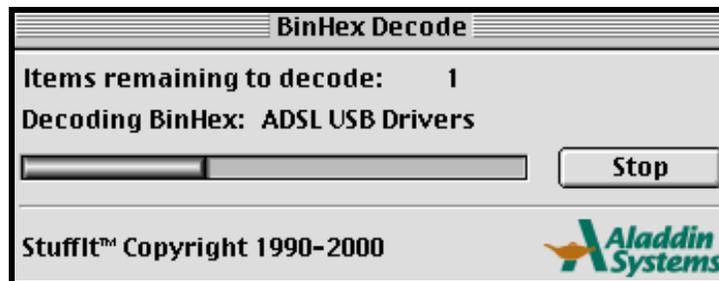
Temporary screen

2. Double-click the **ADSL USB Drivers** icon.
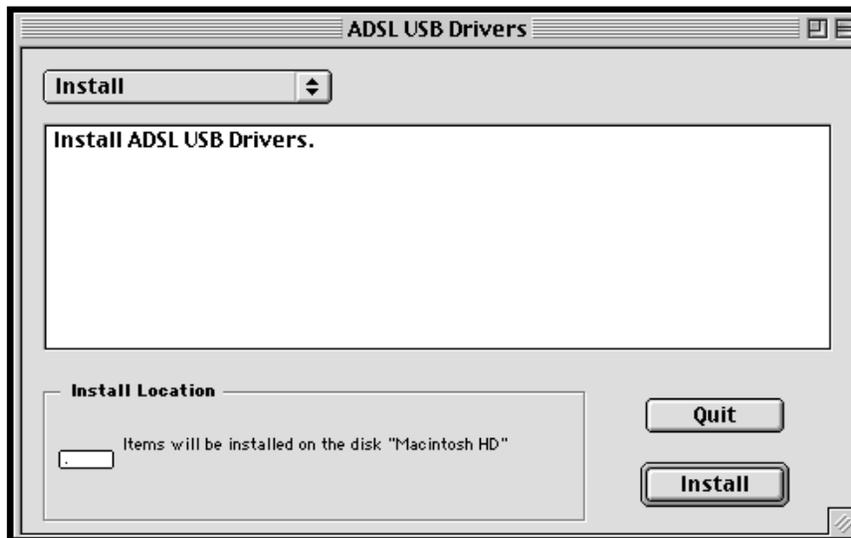
3. Click **Install**.
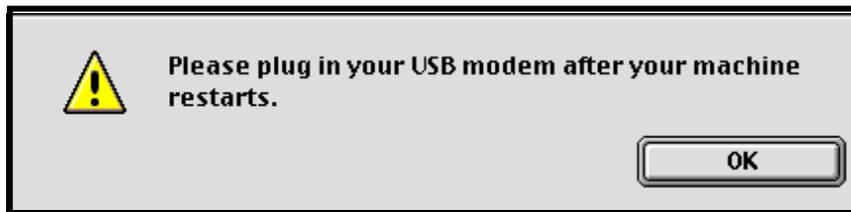
4. Click **OK**. Do not plug in the USB modem until the machine has rebooted.
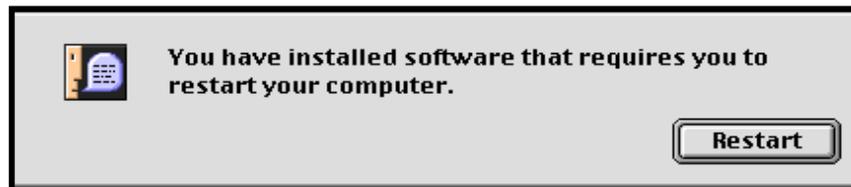
5. Click **Restart**.
6. Plug in the modem after the machine reboots.
   (Please refer to the **Installation of The Modem** section on page 9.)
7. Verify Installation of the modem. (See page 10.)

INSTALLATION OF THE MODEM

1. Plug one end of the provided RJ11 telephone cable into the ADSL wall connector or the ADSL splitter box provided by your ADSL provider.

2. Plug the other end of the RJ11 telephone cable into the LINE port (phone jack receptacle) of the USB modem reference board.
3. Plug one end of the provided flat USB cable into an available USB port on your Macintosh.

4. Plug the other end of the flat USB cable into the USB port of the modem on your reference board.

ⓘ Your Macintosh® computer will now detect the modem and load the installed software, enabling you to use your new high-speed ADSL Internet service.

ⓘ Before you configure your modem (Configuration section is on page 14), be sure to verify your modem installation.

VERIFY INSTALLATION OF THE MODEM

1. At the Desktop, Locate the **ADSL Monitor** icon.

2. Double-click the *ADI ADSL USB Monitor* icon.
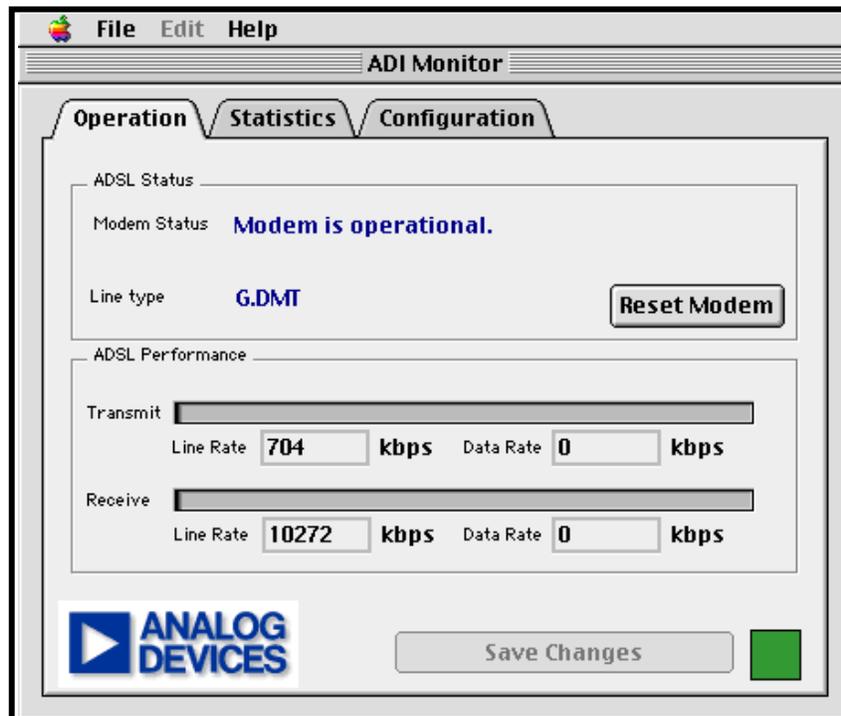
3. Navigate through the Operation, Statistics, and Configuration pages, as desired. (Change settings only on the **Configuration** page.)
4. If you wish to leave this screen, you have the option to:
   - Click the **Statistics** tab:
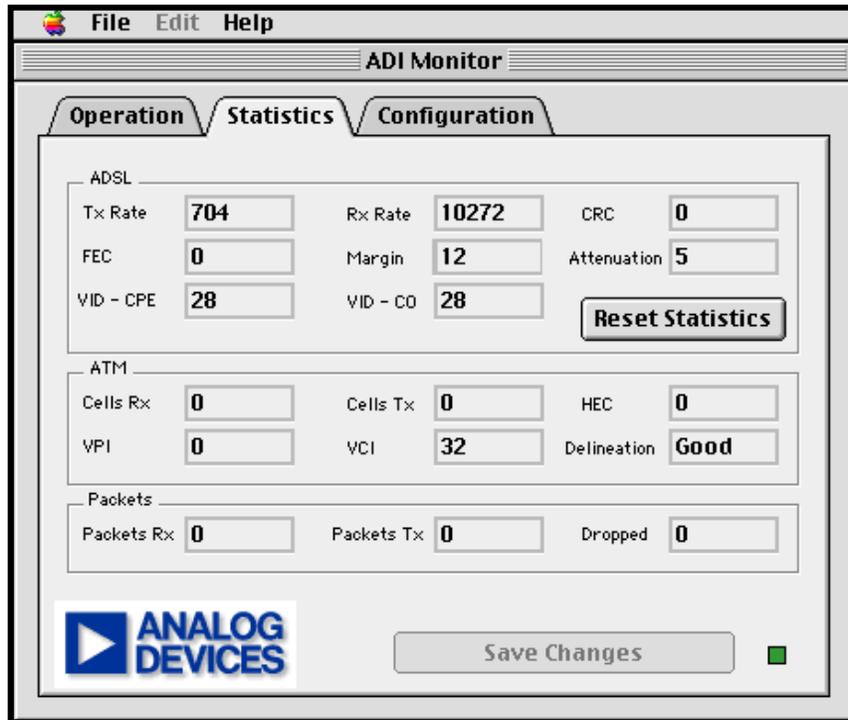
- Select the Configuration tab (You will do that in the Configuration section).

- Click the apple icon 🍎 to display the About Analog Devices Monitor screen.
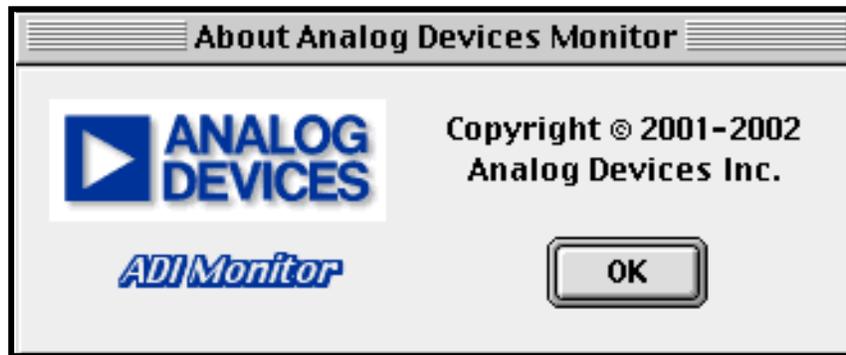
- Click **OK** to return to the **ADI Monitor** screen.
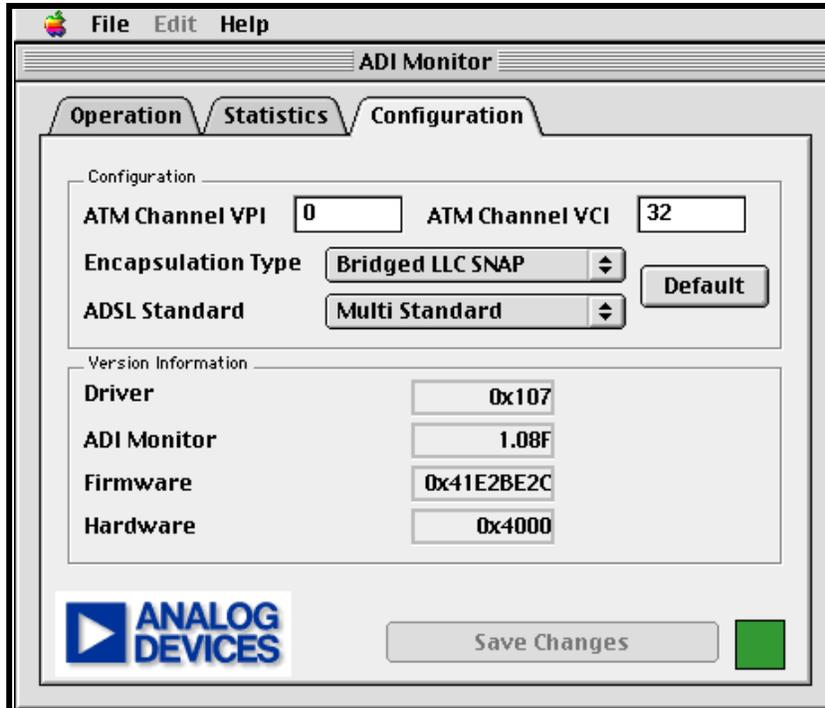
5. Click **File** > Quit or apple key-Q to exit the ADI Monitor.

## UNINSTALL THE MODEM

1. Double-click the **ADSL USB Drivers** icon.
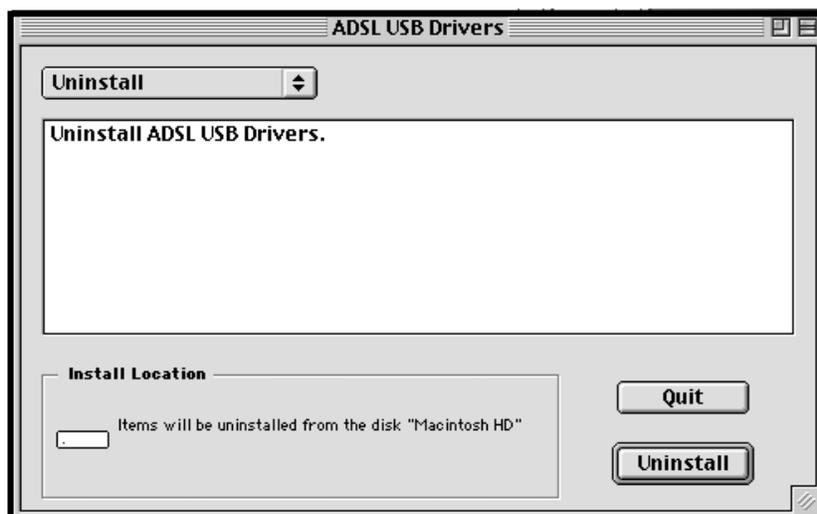
2. Choose **Uninstall** in the menu at the top left and then click **Uninstall** at the bottom right.

3. Choose whether to Cancel before returning to this step or click **Continue**.
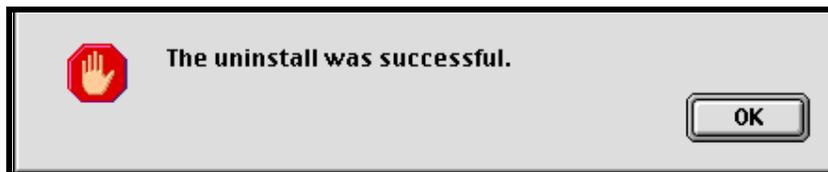
4. Click **OK**.
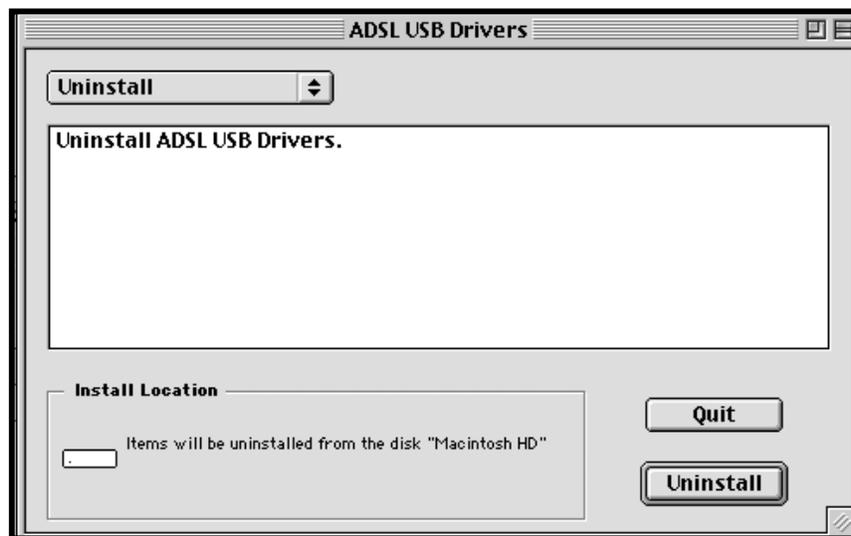
5.   Click **Quit**.

CONFIGURATION

In most cases, you will not have to change the ADSL-specific configuration parameters for your modem. Your ADSL provider will have customized the software so that it installs with the provider's defaults, which are required for connecting to the provider's own equipment.

ADSL

ADSL parameters can be changed at the Configuration page of ADI Monitor, or by manually editing the ADI USB ADSL Preferences file in the Preferences subfolder of the System folder.

ADI ADSL USB MONITOR

Each parameter setting is specific to your ADSL provider's network configuration; therefore, either keep the default settings, or obtain alternate settings from your ADSL provider.

The settings that can be changed on the Configuration page of ADSL Monitor are:
- ATM Channel VPI
- ATM Channel VCI
- Encapsulation Type

1. If you have left the ADI ADSL USB Monitor, go back to the Desktop and locate the *ADI **ADSL USB Monitor*** icon.

2. Double-click the *ADI **ADSL USB Monitor*** icon and click the **Configuration** tab.
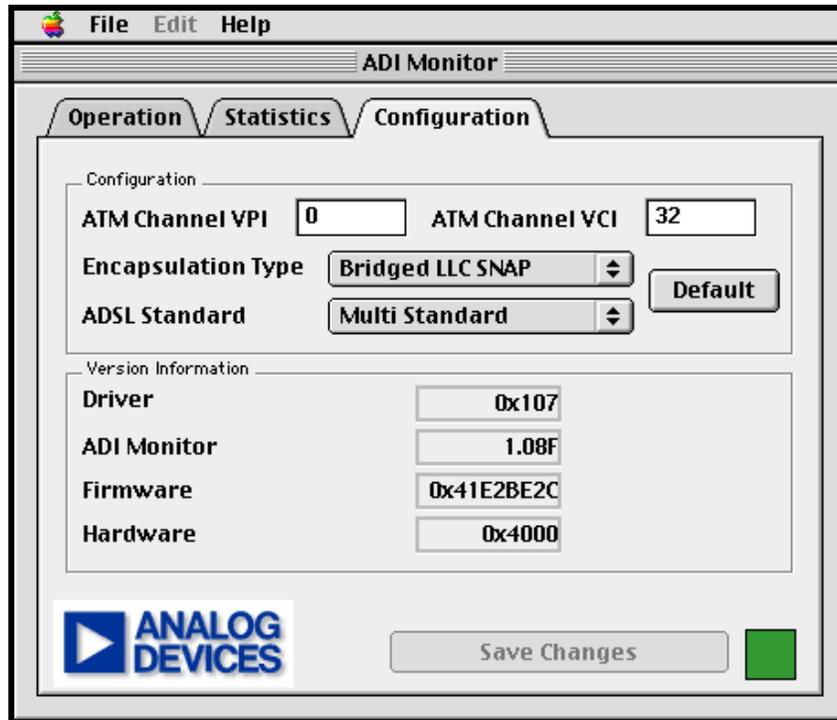
The **Configuration** page appears with Encapsulation Type Bridged LLC SNAP. The VPI and VCI options control the path of the ATM packets that are sent by the modem.

The value that you choose for Encapsulation Type will determine whether your modem is exposed to the operating system as a network-type device or as a modem-type device. The choices that begin with PPP will cause the operating system to view your modem as a modem-type device, and the remaining options will cause the operating system to view your modem as an Ethernet-type device.

3.   Click the **Bridged LLC SNAP** menu.
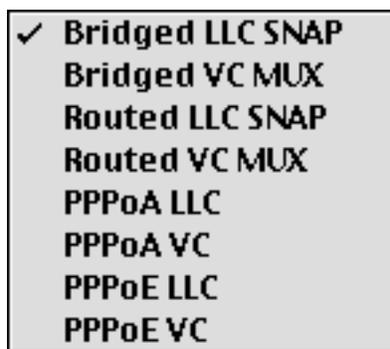
⚠️**If you change any settings on the Configuration page of the ADI Monitor, you must Save Changes. Then close the ADI Monitor, unplug the USB cable from your modem, then re-plug the USB cable into the modem;** *otherwise*, **the new settings will not take**

ADI USB ADSL PREFERENCES FILE

The ADI USB ADSL Preferences file is located in the Preferences subfolder of the System folder.

⚠️ **Because this file contains settings that enable your modem to properly connect to your ADSL provider's network, realize that changing these settings can result in your no longer being able to connect to the network.**

A sample of settings that can be found in the ADI USB ADSL Preferences file:

```
OPTN0=80020066
OPTN15=09090909
VPI=00000000
VCI=00000020
Encapsulation=00000001
Linetype=00000004
RatePollFreq=00000009
PreferredLocale=00000000
AutoConfigEnable=00000001
EnableAdmin=00000001
DefaultVPI=00000000
DefaultVCI=00000020
DefaultEncap=00000001
DefaultLinetype=00000004
DefaultOAM=00000001
```

See Table 2, Preference File Options, for a description of each option and the possible values that can be assigned to them.

Table 2. Preference File Options

Option	Description and possible values
OPTN*	The OPTN* options control settings related to the operation of the modem. You should only change these values to new values you receive from your ADSL provider.
VPI, VCI	The VPI and VCI options control the path of the ATM packets that are sent by the modem. You should only change these values to new values you receive from your ADSL provider.
Encapsulation	The encapsulation option controls how the network data from the operating system is packaged before it is sent out over the ADSL link. This option also affects how the modem is exposed to the operating system. Possible values are 1- 8, paired directly with the choices in the Encapsulation Type menu of "ADSL Monitor." ✓ Bridged LLC SNAP Bridged VC MUX Routed LLC SNAP Routed VC MUX PPPoA LLC PPPoA VCMUX PPPoE LLC PPPoE VCMUX
Linetype	The Linetype option is not currently used; therefore, you should not change this value.
RatePollFreq	The RatePollFreq option controls the rate at which the "ADSL Monitor" program queries the driver for rate information that it uses for the "ADSL Performance" pane of the Operation page. Specifying a smaller number for RatePollFreq will result in more-frequent updating of the performance numbers. The default value of 9 seems to be the best choice for RatePollFreq.
Option (continued)	Description and possible values
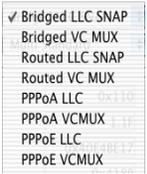
PreferredLocale	The PreferredLocale option controls what language the "ADI Monitor" program uses. The possible values are: 00000001 – English 00000004 – Italian 00000007 – Dutch 00000002 – French 00000005 – Spanish 00000003 – German 00000006 – Portuguese

AutoConfigEnable	0 = Don't configure TCP/IP, Modem and RemoteAccess on OS
	  8/9
	  Don't configure Location on OS X
	1 = Configure all items

EnableAdmin	0 = "CONFIGURATION" tab in Monitor application will be read-only 1 = "CONFIGURATION" tab in Monitor application will be accessible
DefaultVPI/VCI/Encap/LineType	The values will be set on the driver by clicking the "default" button on the "Configuration" tab.
DefaultOAM	0 = Reply to OAM every time regarding connection status, VCI, and VPI 1 = Reply to OAM cells which have the same VCI- and VPI-like driver setting 2 = Reply to OAM cells which have the same VCI- and VPI-like driver setting after making a connection

MACINTOSH® OS 8 / OS 9

⚠**Once you have properly configured your ADSL modem, the Macintosh® OS 8 / OS 9 operating system needs to know how to properly communicate with your modem's software.**
THE INSTALLER CONFIGURES THIS AUTOMATICALLY.
However, if you need to change the configuration, you should configure the system software based on whether your ADSL provider expects your modem to communicate as an Ethernet device or as a 'regular' modem.

ℹ️ If you are *not* going to change the configuration by going to the *apple menu > Config*, disregard the **TCP/IP** instructions and proceed to the REMOTE ACCESS section.

If your choice for the ADSL Encapsulation Type option is one of the PPP options, your ADSL provider will expect your modem to communicate as a standard modem using the PPP protocol. This will require your configuring TCP/IP *and* Remote Access.

If your Encapsulation Type is *not* one of the PPP options, your ADSL provider will expect your modem to communicate as an Ethernet device. See TCP/IP configuration in the next paragraph.

TCP/IP

The most commonly used *language*, or protocol used to communicate over the Internet is called TCP/IP (Transmission Control Protocol / Internet Protocol). You will operate your modem in either *Ethernet* mode or *Modem* mode.

⚠**Regardless of which mode your ADSL provider expects your modem to operate in, you must configure the TCP/IP settings of your system software.**

1. Go to the Control Panels submenu of the Apple® menu.

> **Sound**
> **Speech**
> **Startup Disk**
> **TCP/IP**
> **Text**
> **USB Printer Sharing**
> **Web Sharing**
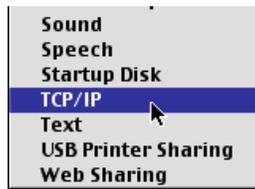
2. Select and click **TCP/IP** in the menu above to display the Connect Via pull-down menu below.

> AppleTalk (MacIP)
> **ADI ADSL Driver1**
> • Ethernet built-in
> PPP
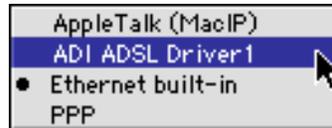
3. Select and click **ADI ADSL Driver11 (shown as ADI ADSL Driver1)** for *Ethernet* Mode (shown above), or select and click **PPP** for *Modem* Mode.

> **TCP/IP (G40ffice)**
>
> Connect via: ADI ADSL Driver1
> Setup
> Configure: Using DHCP Server
>
> DHCP Client ID:
> IP Address: < will be supplied by server >
> Subnet mask: < will be supplied by server >
> Router address: < will be supplied by server >
>
> Name server addr.: < will be supplied by server >
> Search domains:
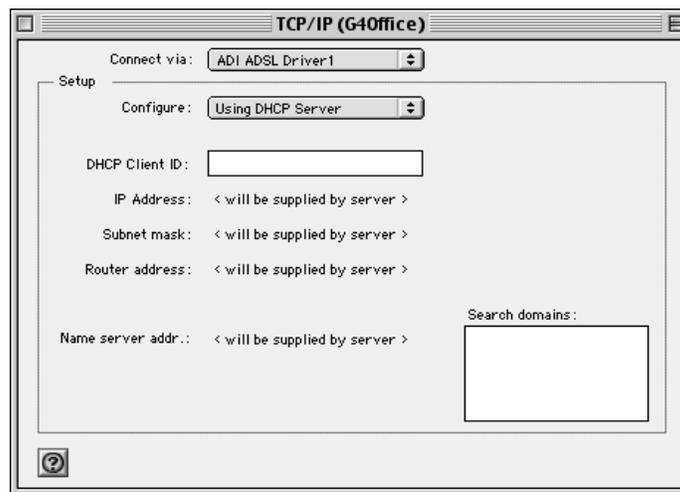
Most ADSL providers will offer DHCP (Dynamic Host Configuration Protocol) as their IP Address. DHCP will automatically set up the proper numbers when your connection is established (as shown in the *Ethernet* Mode screen above).

> ℹ️ You should choose **Using DHCP Server** if you do *not* see an IP Address in the numbering format: **192.168.1.2.** They do not appear in the example above.

4. Select **Configure: Using DHCP Server** from the drop-down menu.

> ℹ️ Some providers will want you to use specific numbers to use. In that case, select **Configure: Manually** from the drop-down menu.
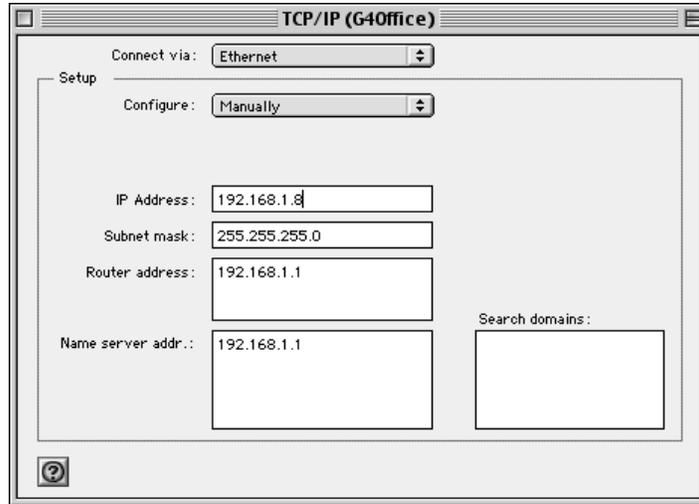
5. Select **Configure: Manually** and then enter the provider's numbers in the appropriate locations.
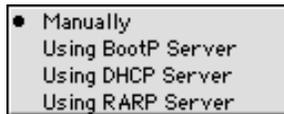
6. Select **Using DHCP Server**.

ⓘ If you have chosen **PPP** to be your TCP/IP connection tool, you have the same choices as if you had chosen Ethernet plus an option called **Using PPP Server**. The choice is determined by your ADSL service provider.
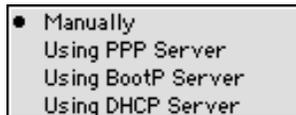

7. Select **Using PPP Server**.

When your modem is configured for *Ethernet* mode, the Macintosh® Operating System actually views your ADSL modem as if it were a regular Ethernet network adapter, which is the easiest type of configuration to use. Unfortunately, most ADSL providers do not support this type of connection.

⚠ **If your ADSL service provider does *not* support *Ethernet* mode and you are connecting to the ADSL provider via PPP protocol, you must continue on to the REMOTE ACCESS section below.**

REMOTE ACCESS

When the Macintosh® operating system is configured for *Modem* mode, it actually views your ADSL modem as a 'regular' analog modem. This does not affect the performance of your high-speed Internet connection; however, it does affect the way you configure the operating system to complete the connection. Because the operating system thinks that you have a 'regular' modem attached to your computer, you must configure the Apple® Remote Access Dialer application to connect to the Internet.

1. Click the **Remote Access** icon at your Control Panels menu.
2. Click the **Options** button to change the Remote Access options.
3. Click the **Protocol** tab and make sure that the Protocol options are configured as shown below.
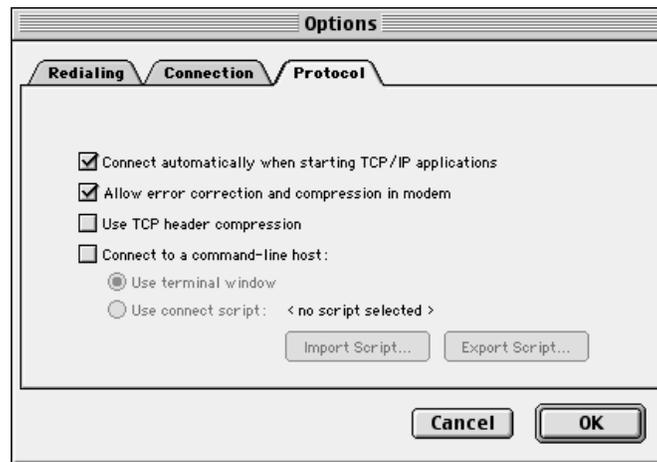
4. Click **OK** to save the options and return to the main Dialer Setup page.
5. Select the **Remote Access** menu.

6. Select and click **Modem**.
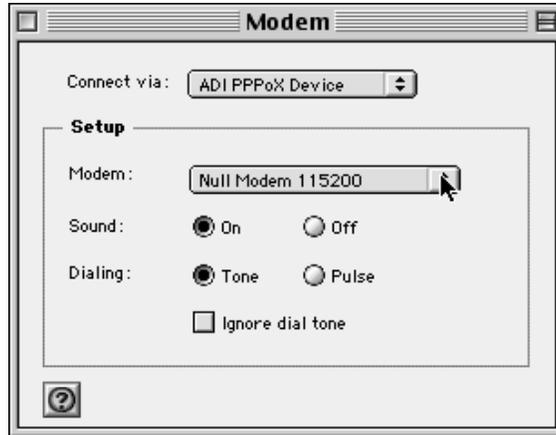
7. Select your ADSL modem (instead of an analog modem that may be either connected to, or a part of your Macintosh® computer).
   a. Select **ADI PPPoX Device** in the Connect Via: pull-down menu.
   b. Select **Null Modem 115200** in the Modem: pull-down menu.
8. Click the small square in the upper-left corner to return to the Remote Access setup screen.

9. Enter your username and password as provided by your ADSL provider.
10. Enter a **1** in the phone number box. (The driver doesn't number, but the dialer needs to see a phone number there in order for the dialing process to work really dial a phone.)
11. Once you have verified that all of the information is correct, click the square in the upper-left corner to save the configuration and close the window.

⚠ **It is critical that these settings be correct for the ADSL modem to work correctly.**

OPERATION

Your system should now be ready to connect to the Internet. If you have not already done so, please make sure that you have properly configured your ADSL settings and Macintosh system software.

ETHERNET MODE

If you are configured to operate in *Ethernet* mode, you should already be connected to the Internet.

1. Open your web browser to confirm proper network operation.

MODEM MODE – PPPoE OR PPPoA CONNECTION TYPE

As mentioned previously, when configured to operate in **Modem** mode, the system software expects you to dial a phone number to connect to your Internet provider. Because you are connecting via ADSL, no dialing actually takes place; you just have to go through the steps of dialing to get connected to the Internet.

1. To connect to your ADSL provider, select **Remote Access** from your Control Panels menu. Your Remote Access parameters should have already been configured beginning on page 14.
2. Complete any missing information on the main Remote Access setup page, then click the Connect button. The status portion of the window will give you feedback as to whether or not the connection is progressing successfully.
3. Once the status indicates that the connection is complete, you may proceed with opening your web browser and surfing the web!