

Installing an Adapter Module in a BayStack AN or ANH Router

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Electromagnetic Emissions

Meets requirements of:

FCC Part 15, Class A

EN 55 022 (CISPR 22:1985), Class A <and Class B>

VCCI Class 1 ITE

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Notes explicatives du ministère des Communications: limites visant les accessoires

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

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Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

FCC Part 68 Compliance Statement

This equipment complies with Part 68 of FCC Rules. Please note the following:

1. You are required to request service from the telephone company before you connect the CSU to a network. When you request service, you must provide the telephone company with the following data.

- When you request T1 Service, you must provide the telephone company with
 - The Facility Interface Code

Provide the telephone company with both codes below:

- 04DU9-B (1.544 MB D4 framing format)
- 04DU9-C (1.544 MB ESF format)

The telephone company will select the code it has available.

- The Service Order Code(s) (SOC): 6.0F
- The required Universal Service Order Code (USOC) jack: RJ 48C
- The make, model number, and FCC Registration number of the CSU
- When you request 56k/64k Service, you must provide the telephone company with
 - The Facility Interface Code: 04DU5-56/64
 - The Service Order Code(s) (SOC): 6.0F
 - The required Universal Service Order Code (USOC) jack: RJ 48S
 - The make, model number, Ringer Equivalence Number (REN), and FCC Registration number of the CSU

The REN helps you determine the number of devices you can connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you can connect to your line, you should call your local telephone company to determine the maximum REN for your calling area.

- When you request V.34 Service, you must provide the telephone company with
 - The required Universal Service Order Code (USOC) jack: RJ 11C
 - The make, model number, Ringer Equivalence Number (REN), and FCC Registration number of the CSU

The REN helps you determine the number of devices you can connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you can connect to your line, you should call your local telephone company to determine the maximum REN for your calling area.

- When you request ISDN “U” Interface Service, you must provide the telephone company with
 - The Facility Interface Code: 02IS5
 - The Service Order Code(s) (SOC): 6.0F
 - The required Universal Service Order Code (USOC) jack: RJ 49C
 - The make, model number, and FCC Registration number of the CSU
- When you request ISDN “S/T” Interface Service, you must provide the telephone company with
 - The Service Order Code(s) (SOC): 6.0N
 - The make, model number, and FCC Registration number of the CSU

NOTE: ISDN S/T cannot be directly connected to the network.

- When you request ISDN Primary Rate Service, you must provide the telephone company with
 - The Facility Interface Code: 04DU9-1SN
 - The Service Order Code(s) (SOC): 6.0F
 - The required Universal Service Order Code (USOC) jack: RJ 48C
 - The make, model number, and FCC Registration number of the CSU
- 2. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. The telephone company will notify you in advance of such changes to give you an opportunity to maintain uninterrupted telephone service.
- 3. If your CSU causes harm to the telephone network, the telephone company may temporarily discontinue your service. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible and will be informed of your right to file a complaint with the FCC.
- 4. If you experience trouble with the CSU, please contact Bay Networks Technical Response Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Bay Networks, Inc.

United States	1-800-2LAN-WAN
Valbonne, France	(33) 04-92-968-968
Sydney, Australia	(612) 9927-8800
Tokyo, Japan	(81) 3-5402-0180
- 5. You are required to notify the telephone company when you disconnect the CSU from the network.

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About This Guide

If you are responsible for installing Bay Networks® hardware, read this guide to learn how to physically install an adapter module in a BayStack™ Access Node (AN™) or Access Node Hub (ANH™) router:

Use these instructions to upgrade the AN/ANH or to replace a failed adapter module.

Be aware that adding software for your particular module may increase the router's memory requirements beyond its current capacity. If the AN/ANH experiences a memory problem, see the “Memory or Buffer Problem” section in the *Troubleshooting Routers* guide. See *Modifying Software Images for Routers* for information about changing the router image.

Conventions

<i>italic text</i>	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.

Acronyms

BRI	Basic Rate Interface
ISDN	Integrated Services Digital Network
PROM	Programmable read-only memory

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To ensure comprehensive network support to our customers and partners worldwide, Bay Networks Customer Service has Technical Response Centers in key locations around the globe:

- Billerica, Massachusetts
- Santa Clara, California
- Sydney, Australia
- Tokyo, Japan
- Valbonne, France

The Technical Response Centers are connected via a redundant Frame Relay Network to a Common Problem Resolution system, enabling them to transmit and share information, and to provide live, around-the-clock support 365 days a year.

Bay Networks Information Services complement the Bay Networks Service program portfolio by giving customers and partners access to the most current technical and support information through a choice of access/retrieval means. These include the World Wide Web, CompuServe, Support Source CD, Customer Support FTP, and InfoFACTS document fax service.

Bay Networks Customer Service

If you purchased your Bay Networks product from a distributor or authorized reseller, contact that distributor's or reseller's technical support staff for assistance with installation, configuration, troubleshooting, or integration issues.

Customers can also purchase direct support from Bay Networks through a variety of service programs. As part of our PhonePlus™ program, Bay Networks Service sets the industry standard, with 24-hour, 7-days-a-week telephone support available worldwide at no extra cost. Our complete range of contract and noncontract services also includes equipment staging and integration, installation support, on-site services, and replacement parts delivery -- within approximately 4 hours.

To purchase any of the Bay Networks support programs, or if you have questions on program features, use the following numbers:

Region	Telephone Number	Fax Number
United States and Canada	1-800-2LANWAN; enter Express Routing Code (ERC) 290 when prompted (508) 436-8880 (direct)	(508) 670-8766
Europe	(33) 04-92-968-300	(33) 04-92-968-301
Asia/Pacific Region	(612) 9927-8800	(612) 9927-8811
Latin America	(407) 997-1713	(407) 997-1714

In addition, you can receive information on support programs from your local Bay Networks field sales office, or purchase Bay Networks support directly from your authorized partner.

Bay Networks Information Services

Bay Networks Information Services provide up-to-date support information as a first-line resource for network administration, expansion, and maintenance. This information is available from a variety of sources.

World Wide Web

The Bay Networks Customer Support Web Server offers a diverse library of technical documents, software agents, and other important technical information to Bay Networks customers and partners.

A special benefit for contracted customers and resellers is the ability to access the Web Server to perform Case Management. This feature enables your support staff to interact directly with the network experts in our worldwide Technical Response Centers. A registered contact with a valid Site ID can

- View a listing of support cases and determine the current status of any open case. Case history data includes severity designation, and telephone, e-mail, or other logs associated with the case.
- Customize the listing of cases according to a variety of criteria, including date, severity, status, and case ID.
- Log notes to existing open cases.
- Create new cases for rapid, efficient handling of noncritical network situations.
- Communicate directly via e-mail with the specific technical resources assigned to your case.

The Bay Networks URL is *<http://www.baynetworks.com>*. Customer Service is a menu item on that home page.

Customer Service FTP

Accessible via URL *<ftp://support.baynetworks.com>* (134.177.3.26), this site combines and organizes support files and documentation from across the Bay Networks product suite, including switching products from our Centillion™ and Xylogics® business units. Central management and sponsorship of this FTP site lets you quickly locate information on any of your Bay Networks products.

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This CD-ROM -- sent quarterly to all contracted customers -- is a complete Bay Networks Service troubleshooting knowledge database with an intelligent text search engine.

The Support Source CD contains extracts from our problem-tracking database; information from the Bay Networks Forum on CompuServe; comprehensive technical documentation, such as Customer Support Bulletins, Release Notes, software patches and fixes; and complete information on all Bay Networks Service programs.

You can run a single version on Macintosh Windows 3.1, Windows 95, Windows NT, DOS, or UNIX computing platforms. A Web links feature enables you to go directly from the CD to various Bay Networks Web pages.

CompuServe

For assistance with noncritical network support issues, Bay Networks Information Services maintain an active forum on CompuServe, a global bulletin-board system. This forum provides file services, technology conferences, and a message section to get assistance from other users.

The message section is monitored by Bay Networks engineers, who provide assistance wherever possible. Customers and resellers holding Bay Networks service contracts also have access to special libraries for advanced levels of support documentation and software. To take advantage of CompuServe's recently enhanced menu options, the Bay Networks Forum has been re-engineered to allow links to our Web sites and FTP sites.

We recommend the use of CompuServe Information Manager software to access these Bay Networks Information Services resources. To open an account and receive a local dial-up number in the United States, call CompuServe at 1-800-524-3388. Outside the United States, call 1-614-529-1349, or your nearest CompuServe office. Ask for Representative No. 591. When you are on line with your CompuServe account, you can reach us with the command **GO BAYNET**.

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To use InfoFACTS in the United States or Canada, call toll-free 1-800-786-3228. Outside North America, toll calls can be made to 1-408-764-1002. In Europe, toll-free numbers are also available for contacting both InfoFACTS and CompuServe. Please check our Web page for the listing in your country.

How to Get Help

Use the following numbers to reach your Bay Networks Technical Response Center:

Technical Response Center	Telephone Number	Fax Number
Billerica, MA	1-800-2LANWAN	(508) 670-8765
Santa Clara, CA	1-800-2LANWAN	(408) 764-1188
Valbonne, France	(33) 04-92-968-968	(33) 04-92-966-998
Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Chapter 1

Preparing for Installation

Table 1-1. Minimum Requirements for AN and ANH Upgrades

Adapter Module	AN/ANH Model and Bay Networks Order No.	Hardware Requirements	Software Requirements
Second Ethernet	All BayStack AN and ANH models * (AE1001005, AE1001006, AE1001007, AE1001008, AE1101001, AE1101002, AE1101003, AE1101004, AE1101005, AE1101006, AE1101007, AE1101008, AE1101013, AE1101014, AE1101015, AE1101016, AE1001009, AE1001010, AE1001011, AE1001012, AE1001037, AE1001038, AE1001039, AE1001040, AE1001041, AE1001042, AE1001043, AE1001044)	None	Router Software Version 8.12; Boot code V9.00; Diagnostic code V7.20. ↑
	1 Ethernet x 2 Synchronous AN (20002, 20003, and 20004)	Base Board Hardware Revision 15	Router Software Version 8.12; Boot code V9.00; Diagnostic code V7.20. ↑
	12-Port Ethernet x 2 Synchronous ANH (23002, 23003, and 23004)	Base Board Hardware Revision 14	Router Software Version 8.12; Boot code V9.00; Diagnostic code V7.20. ↑
	1 Token Ring x 2 Synchronous and 1 Ethernet x 1 Token Ring x 2 Synchronous (21002, 21003, 21004, 22002, 22003, and 22004)	Not supported	Not supported
DSU/CSU	All BayStack AN and ANH models * (AE1001005, AE1001006, AE1001007, AE1001008, AE1101001, AE1101002, AE1101003, AE1101004, AE1101005, AE1101006, AE1101007, AE1101008, AE1101013, AE1101014, AE1101015, AE1101016, AE1001009, AE1001010, AE1001011, AE1001012, AE1001037, AE1001038, AE1001039, AE1001040, AE1001041, AE1001042, AE1001043, AE1001044)	None	Version 11.01 Router Software; V9.00 Boot code; V7.24 Diagnostic code ↑
	Non-BayStack models (20002, 20003, 20004, 21002, 21003, 21004, 22002, 22003, 22004, 23002, 23003, and 23004)	Base Board Hardware Revision 15	Version 11.01 Router Software; V9.00 Boot code; V7.24 Diagnostic code. ↑

(continued)

Table 1-1. Minimum Requirements for AN and ANH Upgrades *(continued)*

Adapter Module	AN/ANH Model and Bay Networks Order No.	Hardware Requirements	Software Requirements
Serial (Third Synchronous)	All BayStack AN and ANH models * (AE1001005, AE1001006, AE1001007, AE1001008, AE1101001, AE1101002, AE1101003, AE1101004, AE1101005, AE1101006, AE1101007, AE1101008, AE1101013, AE1101014, AE1101015, AE1101016, AE1001009, AE1001010, AE1001011, AE1001012, AE1001037, AE1001038, AE1001039, AE1001040, AE1001041, AE1001042, AE1001043, AE1001044)	None	Version 8.12 Router Software; V8.12 Boot code; V5.31 Diagnostic code. †
	1 Ethernet x 2 Synchronous AN (20002, 20003, and 20004)	Base Board Hardware Revision 15	Version 8.12 Router Software
	1 Token Ring x 2 Synchronous (21002, 21003, and 21004)	Base Board Revision 12; PROM component upgrade †	Version 8.12 Router Software
	1 Ethernet x 1 Token Ring x 2 Synchronous AN (22002, 22003, and 22004)	Base Board Revision 11; PROM component upgrade †	Version 8.12 Router Software
	12-Port Ethernet hub x 2 Synchronous ANH (23002, 23003, and 23004)	Base Board Revision 11; PROM component upgrade †	Version 8.12 Router Software

Table 1-1. Minimum Requirements for AN and ANH Upgrades *(continued)*

Adapter Module	AN/ANH Model and Bay Networks Order No.	Hardware Requirements	Software Requirements
ISDN BRI	All BayStack AN and ANH models * (AE1001005, AE1001006, AE1001007, AE1001008, AE1101001, AE1101002, AE1101003, AE1101004, AE1101005, AE1101006, AE1101007, AE1101008, AE1101013, AE1101014, AE1101015, AE1101016, AE1001009, AE1001010, AE1001011, AE1001012, AE1001037, AE1001038, AE1001039, AE1001040, AE1001041, AE1001042, AE1001043, AE1001044)	None	Router Software Version 8.12; Boot code V8.10; Diagnostic code V5.31. †
	Any model with Base Board Hardware Revision 6 through 13 (20002, 20003, 20004, 21002, 21003, 21004, 22002, 22003, 22004, 23002, 23003, and 23004)	PROM component upgrade †	Router Software Version 8.12
	1 Ethernet x 2 Synchronous AN (20002, 20003, and 20004)	Base Board Hardware Revision 15	Router Software Version 8.12; Boot code V8.10; Diagnostic V5.31 †
	1 Token Ring x 2 Synchronous (21002, 21003, and 21004)	Base Board Hardware Revision 14	Router Software Version 8.12; Boot code V8.10; Diagnostic V5.31 †

*. Due to high-energy hazards, only qualified service personnel are permitted to install adapter modules in AN/DC and ANH/DC models.

†. Refer to "[Updating System Software in PROM](#)," later in this chapter.

Opening the AN and 12-Port ANH

To remove the router enclosure and expose the AN base board:



Danger: Due to high-energy hazards, only qualified service personnel are permitted to open AN/DC and ANH/DC models.

1. Turn the AN power off.



Note: Some earlier AN models do not have a power switch.

2. **Unplug the AN power cable from the wall receptacle.**
3. **Disconnect all cables from the back panel.**
4. **Attach an antistatic wrist strap.**

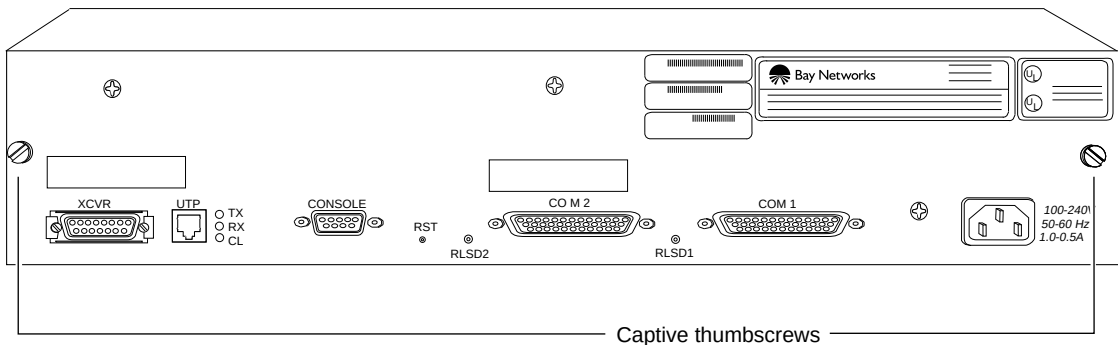
You receive an antistatic wrist strap with the upgrade module shipment and with the AN system. Refer to the instructions in the wrist strap bag.



Caution: Electrostatic discharge can damage hardware. You must wear the antistatic strap whenever you remove, install, or handle printed circuit boards.

5. **Use a straight screwdriver or similar tool to loosen the two captive thumbscrews on the back panel of the router (Figure 1-1).**

Unscrew the thumbscrews until they are no longer attached to the router component tray.



AN0099A

Figure 1-1. Back Panel of AN

6. **Pull out the component tray until you can see the entire AN base board.**
7. **If applicable, use the PROM upgrade kit to update the router PROMs.**

See the last section of this chapter, "[Updating System Software in PROM.](#)"

Opening the 8-Port ANH

You need a Phillips screwdriver to open the 8-port ANH. To remove the router chassis cover and expose the 8-port ANH base board:



Danger: Due to high-energy hazards, only qualified service personnel are permitted to open ANH/DC models.

1. **Turn the ANH power off.**
2. **Unplug the ANH power cable from the wall receptacle.**
3. **Attach an antistatic wrist strap.**

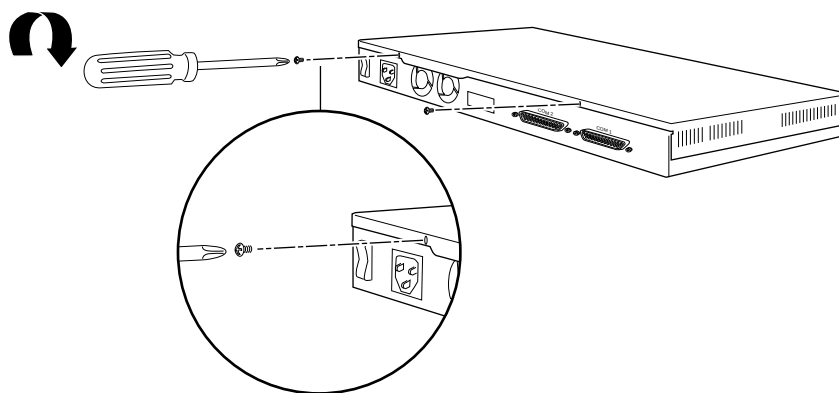
You receive an antistatic wrist strap with the upgrade module shipment and with the ANH system. Refer to the instructions in the wrist strap bag.



Caution: Electrostatic discharge can damage hardware. You must wear the antistatic strap whenever you remove, install, or handle printed circuit boards.

4. **Using a Phillips screwdriver, remove the two screws that secure the top cover to the ANH enclosure ([Figure 1-2](#)).**

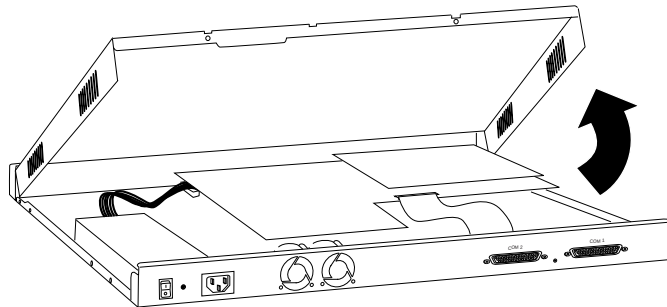
Set the screws aside in a safe place.



AN0100A

Figure 1-2. Removing the ANH Cover Screws

5. Lift off the ANH cover ([Figure 1-3](#)).



AN0101A

Figure 1-3. Removing the ANH Cover

Updating System Software in PROM

This section provides instructions for

- [Determining PROM Versions](#)
- [Downloading New Boot and Diagnostic Code](#)

How you update the system software in your router's programmable read-only memory (PROM) depends on the revision level of the AN/ANH base board. Refer to [Table 1-2](#) to determine which upgrade procedure to use.

Table 1-2. PROM Upgrade Method

AN or ANH Model	PROM Upgrade Method
AN with Base Board Hardware revisions earlier than Revision 14	Replace the PROM component. See <i>Installing Boot and Diagnostic PROMs in an AN Router</i> (contained in the PROM upgrade kit).
AN with Revision 14 and later base board hardware (SIMM Flash file system) or any BayStack AN/ANH (PCMCIA Flash file system)	Download code from release software to Flash file system, and then to router PROM. See " Downloading New Boot and Diagnostic Code " later in this chapter.



Caution: Installing the PROM component upgrade in an AN with a PCMCIA-based Flash file system or base board revision 14 and later could disable the router.

Determining PROM Versions

Labels on the back of your AN may indicate

- The version number of the installed Boot and Diagnostic code
- The version number of any previously installed PROM upgrade

If the label is missing, or potentially outdated, you can determine the version of Boot and Diagnostic code using the Technician Interface.

Working from a local console, a Telnet session, or a modem, enter the following commands at the Technician Interface prompt to determine the versions of Boot code (*anboot.exe*) and Diagnostic code (*anddiag.exe*). Refer to *Using Technician Interface Software* for more information.

1. To obtain the version of Boot code, enter

get wfHwEntry.16.*

Information similar to the following appears:

```
wfHwEntry.wfHwBootPromSource.1 = "rel/11.02/anboot.exe"
```

The release directory (11.02 in this example) in the pathname indicates the Boot code version.

2. To obtain the version of Diagnostic code, enter

get wfHwEntry.19.*

Information similar to the following appears:

```
wfHwEntry.wfHwDiagPromSource.1 =  
    "release/anddiag_v7.24/project/access_node/build/anddiag.exe"
```

The version number within the directory path listed (7.24 in this example) indicates the Diagnostic code version.

Downloading New Boot and Diagnostic Code

Revision 14 and later AN base boards and all Baystack AN and ANH base boards use Flash memory to store system software (*anboot.exe* and *anddiag.exe*).

If [Table 1-1](#) indicates that you need to upgrade the router's system software, first download the new code over the network to the router's Flash file system. Then use the Technician Interface **prom** command to copy the code to PROM.

Router Software release media includes the latest Boot and Diagnostic code, but you must manually download new code to the router PROM. For instructions, refer to the *Upgrading* guide and Release Notes that came with your Router Software release.

Chapter 2

Installing an AN or 12-Port ANH Adapter Module

Complete the steps in this chapter to install an adapter module in an AN or 12-port ANH router.



Note: Be sure to complete the steps in Chapter 1 before proceeding with this chapter.

Although there are differences in the appearance of each adapter module, you install them identically on the AN base board. The steps in this chapter describe the procedure using an example module in illustrations.

Complete the steps in this chapter as follows:

- To replace an existing adapter module, begin with the next section, “[Removing a Previously Installed Adapter Module](#).”
- To install an adapter module in an empty slot, proceed to “[Installing the New Module](#).”

Removing a Previously Installed Adapter Module

To remove an adapter module from the AN:

1. Using a Phillips screwdriver, remove the screw that secures the adapter module to the AN back panel ([Figure 2-1](#)).
2. If the adapter module interface label is attached to the AN back panel, remove the label ([Figure 2-1](#)).

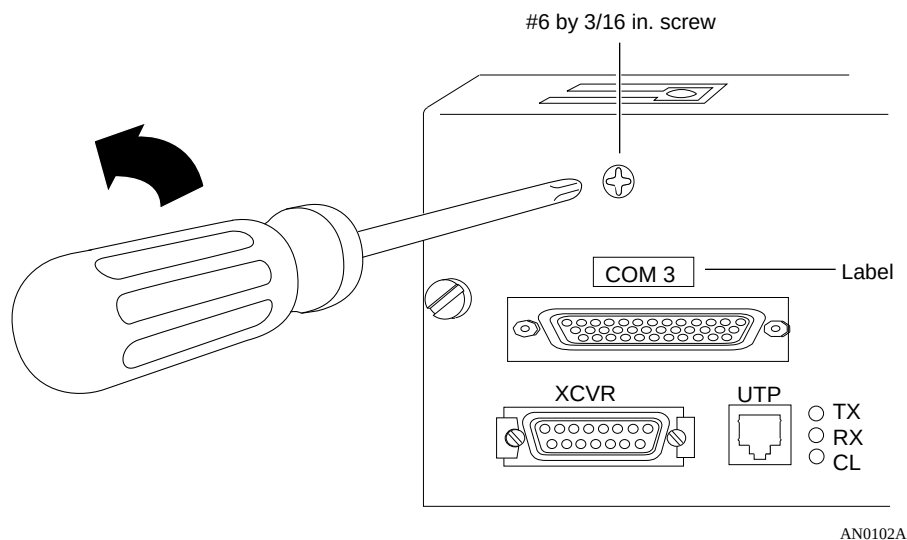
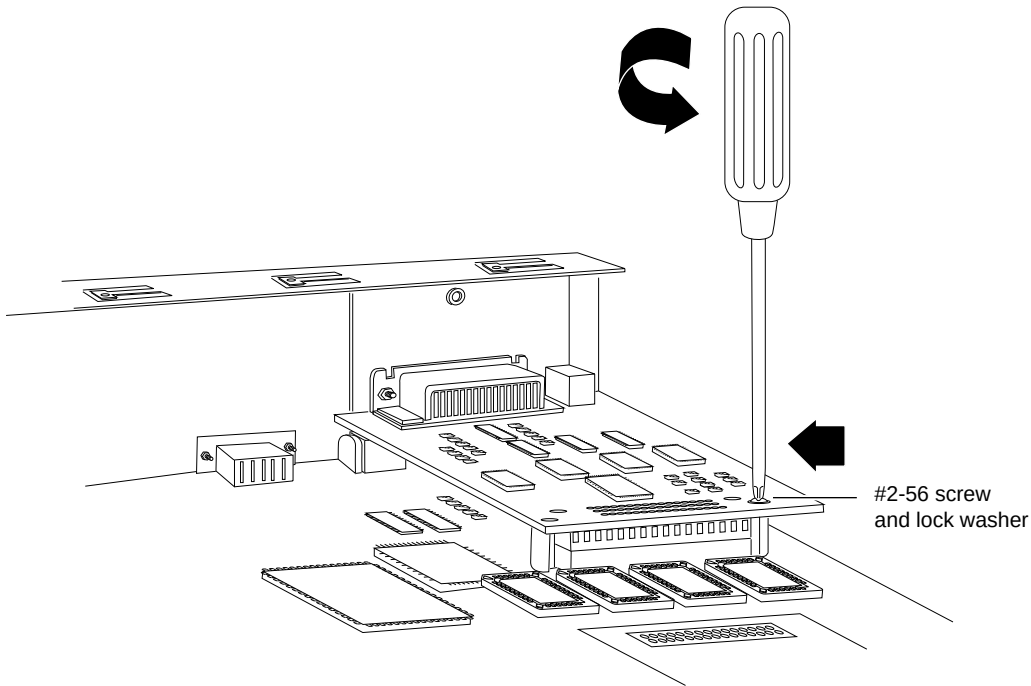


Figure 2-1. Removing the Adapter Module Screw

3. Locate the installed adapter module on the AN base board.

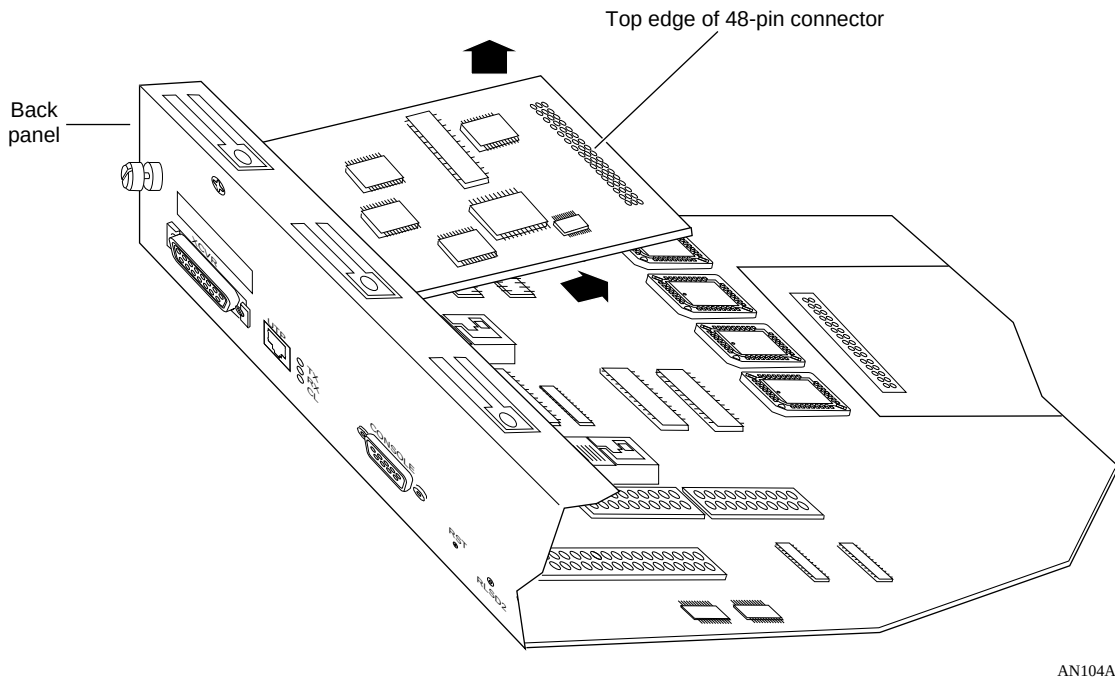
4. Using a Phillips screwdriver, remove the two #2-56 screws and lock washers from the standoff holes on either side of the module's 48-pin connector ([Figure 2-2](#)).



AN0103A

Figure 2-2. Removing the Adapter Module Screws

5. **Lift the module straight up to detach it from the base module connector, and then slide the module bracket away from the AN back panel ([Figure 2-3](#)).**



AN104A

Figure 2-3. Removing the Adapter Module

6. **Place the removed adapter module in an antistatic bag.**
7. **Proceed to [Step 3](#) in the next section to install the replacement adapter module.**

Installing the New Module

To install an adapter module in an empty slot:

1. **Locate the 48-pin adapter module connector on the base board** ([Figure 2-4](#)).

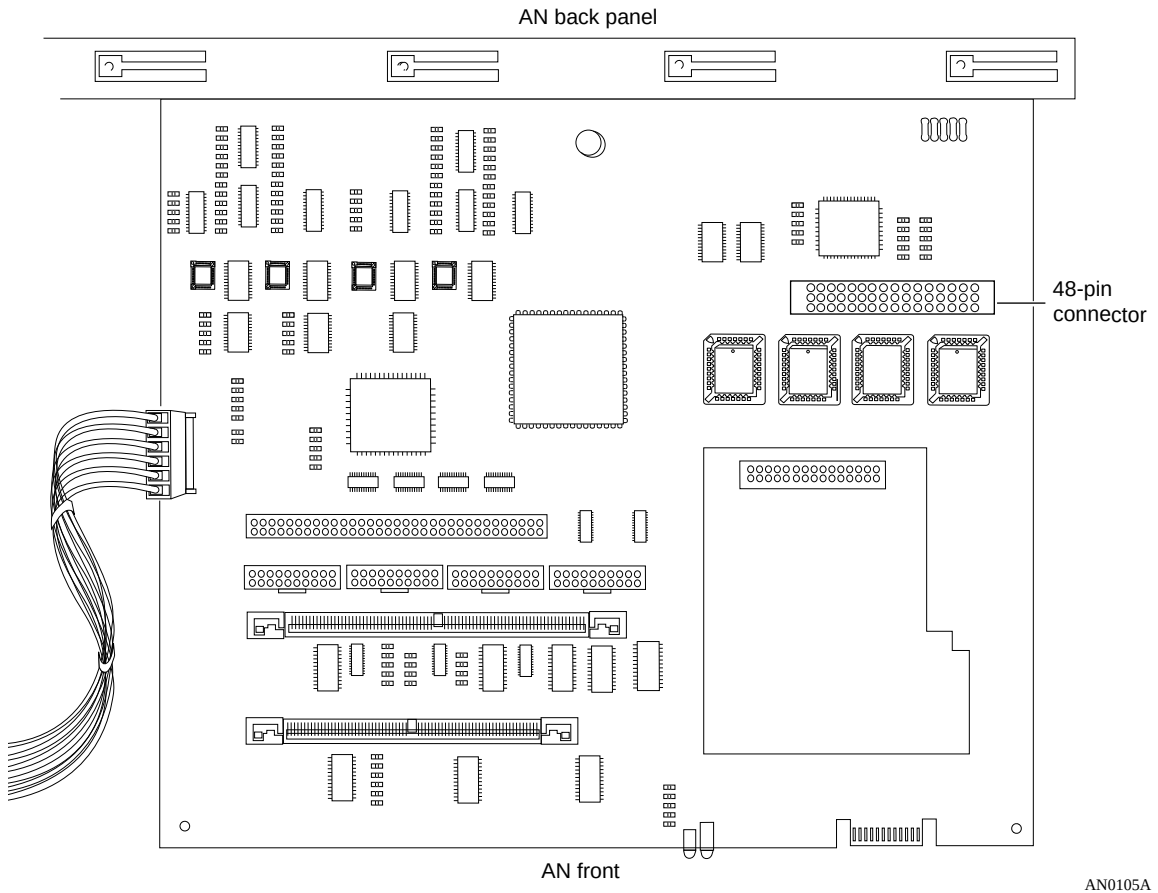


Figure 2-4. AN Base Board Location of 48-Pin Connector for Adapter Modules

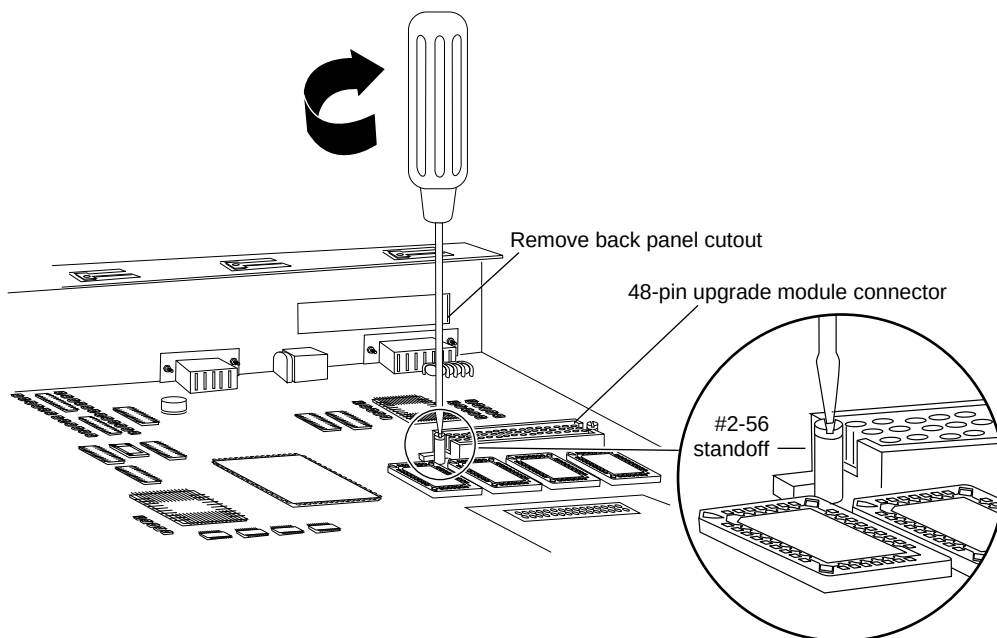
2. Use your fingers to pop out and discard the blank panel covering the leftmost cutout on the back of the AN [\(Figure 2-5\)](#).



Note: You must reinstall the blank panel if you ever operate the AN without an installed adapter module.

3. For a Third Synchronous module only, insert two #2-56 screw standoffs in the holes to the left and right of the connector [\(Figure 2-5\)](#).

Tighten the standoffs, using a straight screwdriver.



AN0106A

Figure 2-5. Inserting and Tightening the #2-56 Standoffs for Synchronous Adapter Module

4. **Align the module's 48-pin connector with the base board connector socket, and the module bracket with the back center panel cutout** ([Figure 2-6](#)).

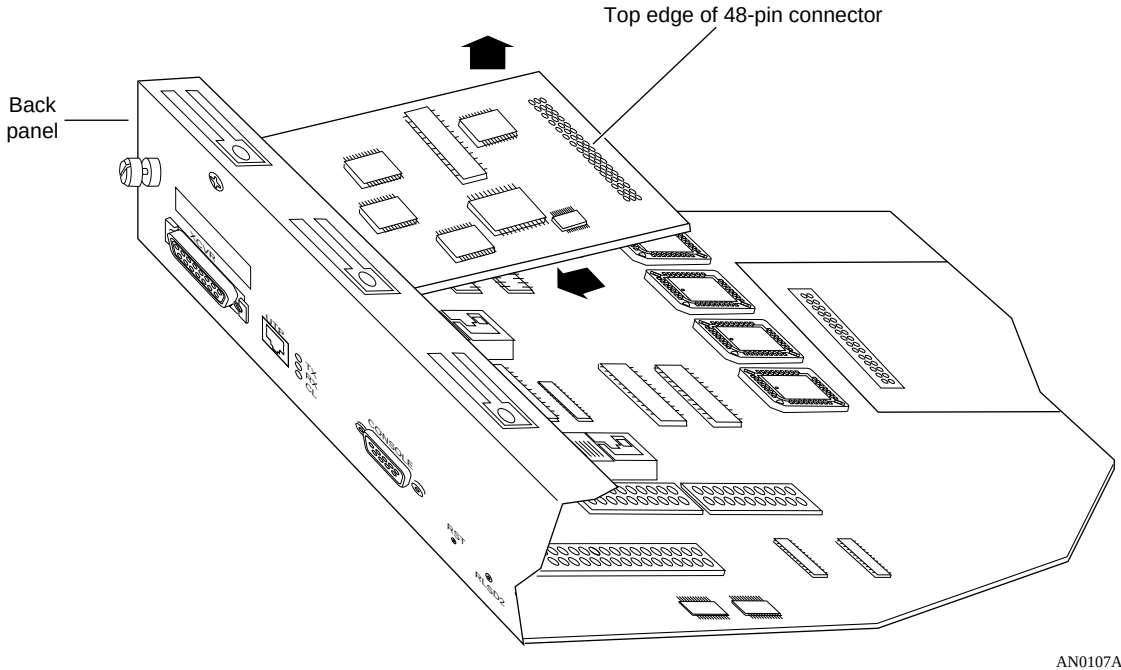


Figure 2-6. Inserting the Adapter Module

5. **Using your thumbs, press down on either side of the module connector until the module slides completely into the connector on the base board.**

6. Insert two #2-56 screws and lock washers in the standoff holes on either side of the module's 48-pin connector ([Figure 2-7](#)).
7. Align the screw hole in the back panel of the AN with the screw hole in the module mounting bracket.

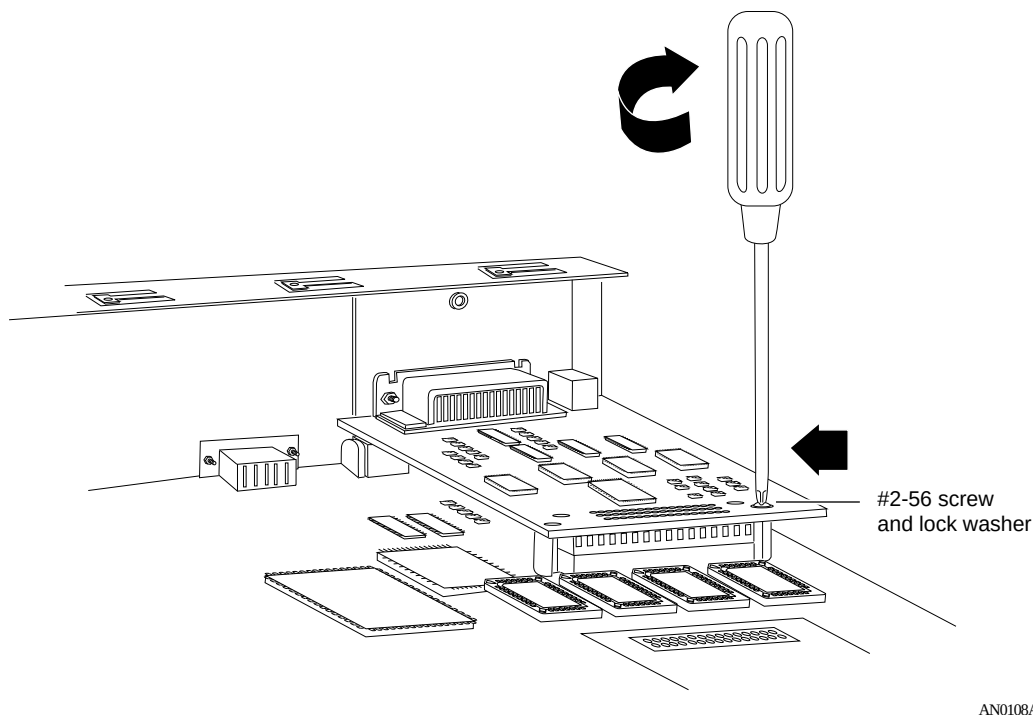


Figure 2-7. Fastening the Adapter Module

8. Using a Phillips screwdriver, secure the two screws.

9. Insert a #6 by 3/16-in. screw into the screw hole in the AN back panel and through the module mounting bracket ([Figure 2-8](#)).
10. Tighten the screw, using a Phillips screwdriver.

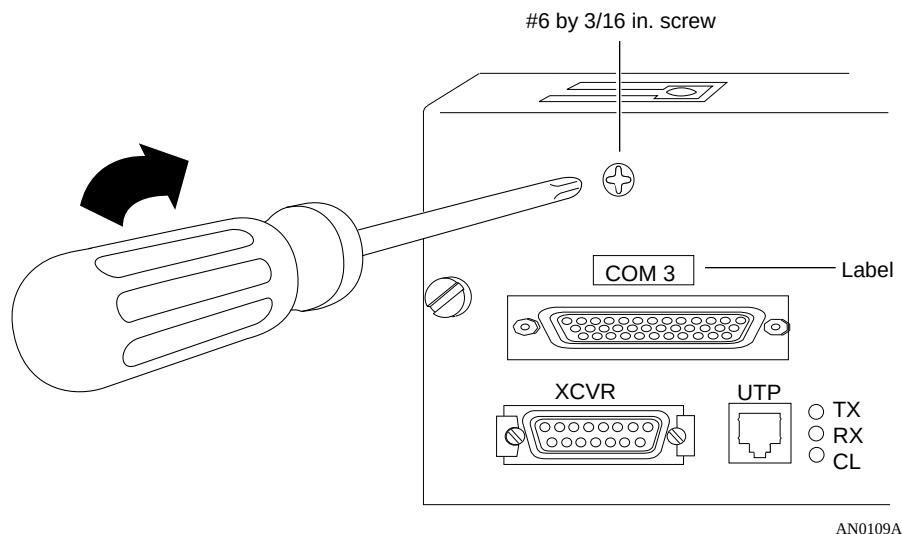


Figure 2-8. Securing the Adapter Module to the AN Back Panel

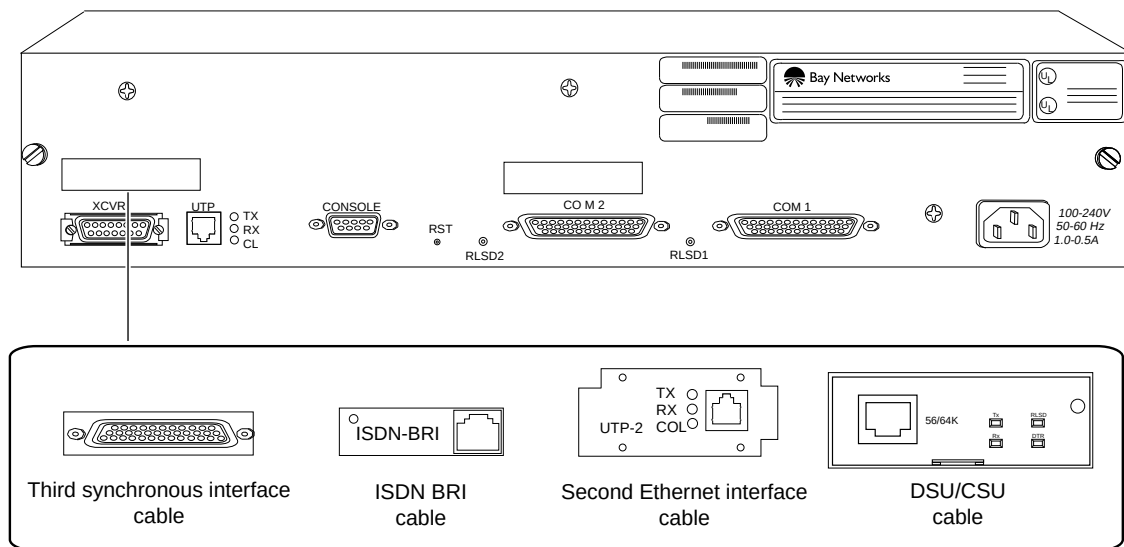
11. If the module upgrade kit included a label, remove the paper backing and apply the label on the back panel surface, above the interface connector.

Reassembling the AN

To replace the AN component tray after installing the adapter module:

1. Slide the component tray into the AN sheet metal enclosure.
2. Tighten the captive thumbscrews on the back panel (refer to [Figure 1-1](#)).
3. Reconnect any cables that you disconnected from the back panel.
4. Connect the appropriate cabling to the new interface ([Figure 2-9](#)).

Refer to the *Cable Guide* for the cables available from Bay Networks.



AN0119A

Figure 2-9. AN Back Panel Cable Connectors

5. Plug in the power cord.



Note: Some earlier AN models do not have a power switch; the AN powers on when you plug in the power cord.

6. Reconnect the AN to the network.

You must follow the appropriate initial installation procedure to reconnect the AN to the network. Before turning the router power on, refer to Chapter 4 for information about

- Completing software configuration
- Viewing hardware diagnostic tests to verify the installation

Chapter 3

Installing an 8-Port ANH Adapter Module

Complete the steps in this chapter to install an adapter module in an 8-port ANH router.



Note: Be sure to complete the steps in Chapter 1 before proceeding with this chapter.

Although there are differences in the appearance of each adapter module, you install them identically on the ANH base board. The steps in this chapter describe the procedure using an example module in illustrations.

Complete the steps in this chapter as follows:

- To replace an existing adapter module, begin with the next section, “[Removing a Previously Installed Adapter Module](#).”
- To install an adapter module in an empty slot, proceed to “[Installing the New Module](#).”

Removing a Previously Installed Adapter Module

To remove an adapter module from the ANH:

1. **Remove the four screws that attach the adapter module to the ANH back panel ([Figure 3-1](#)).**

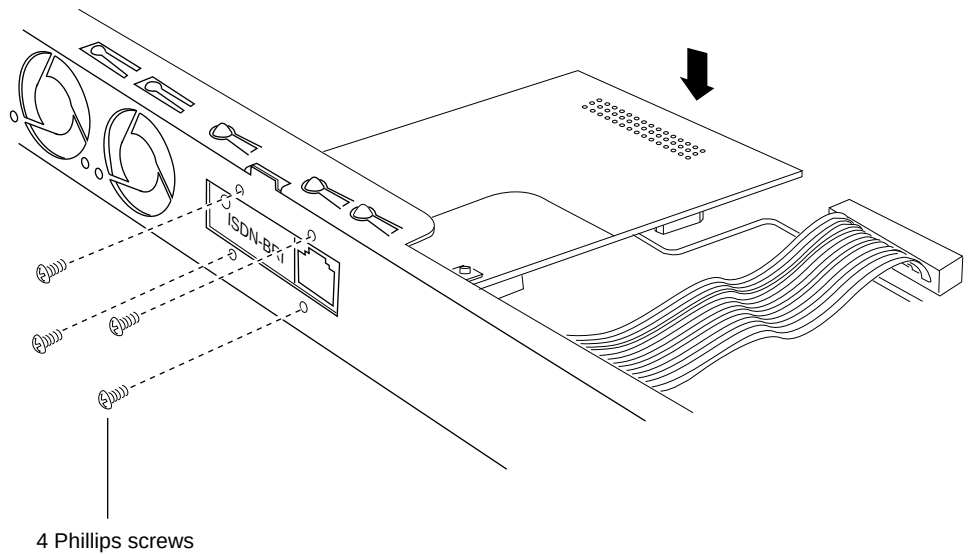
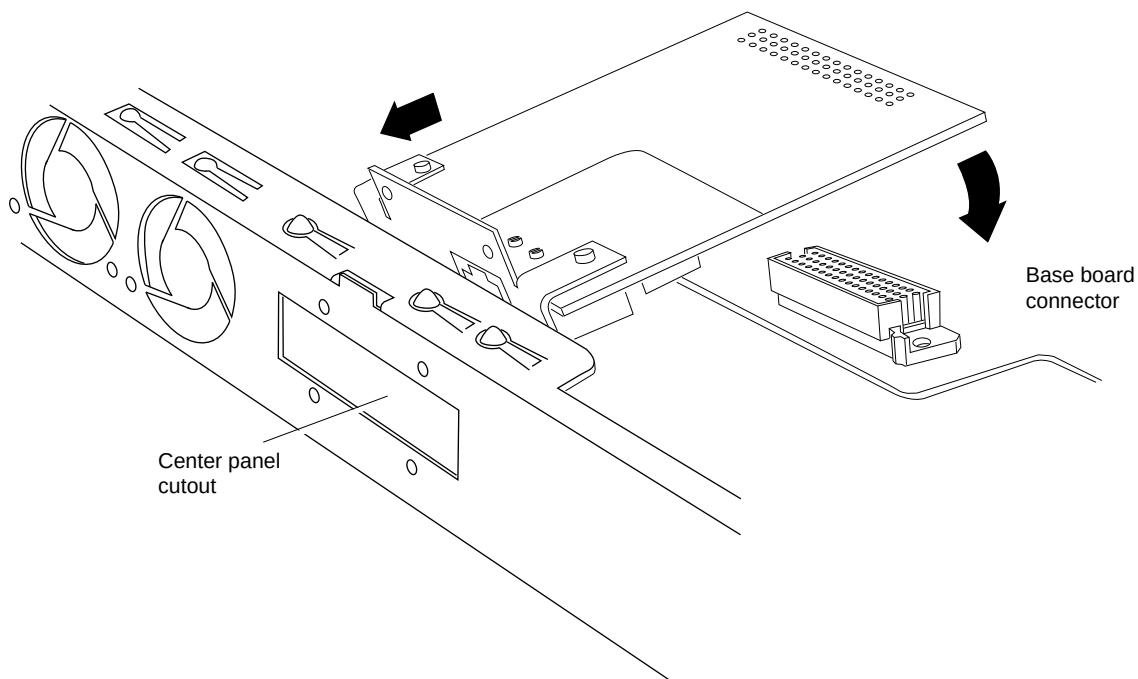


Figure 3-1. Removing the Adapter Module Back Panel Screws

- 2. Set aside the four screws. You will use them to secure the new module.**

3. **Lift the module straight up to detach it from the base module connector, and then slide the module bracket away from the ANH back panel ([Figure 3-2](#)).**



AN0116A

Figure 3-2. Removing the Adapter Module

4. **Place the removed adapter module in an antistatic bag.**
5. **Proceed to [Step 4](#) in the next section to install the replacement adapter module.**

Installing the New Module

To install an adapter module in an empty slot:

1. **Remove the four screws that attach the blank panel covering the cutout labeled COM3/Expansion** ([Figure 3-3](#)).

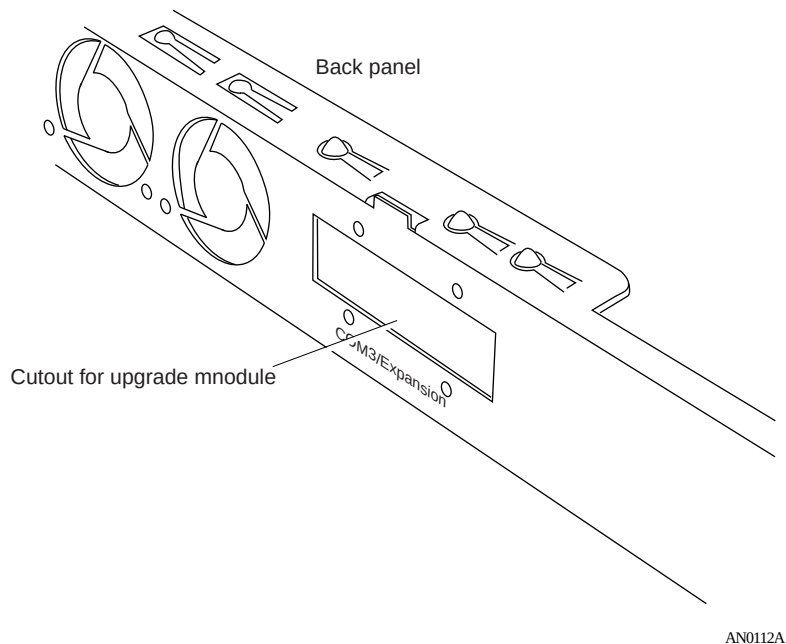


Figure 3-3. ANH-8 Back Panel Cutout with Blank Panel Removed



Note: You must reinstall the blank panel if you ever operate the ANH without an installed upgrade module.

2. **Set aside the four screws. You will use them to secure the upgrade module in Step 7.**
3. **Locate the 48-pin adapter module connector on the base board** ([Figure 3-4](#)).

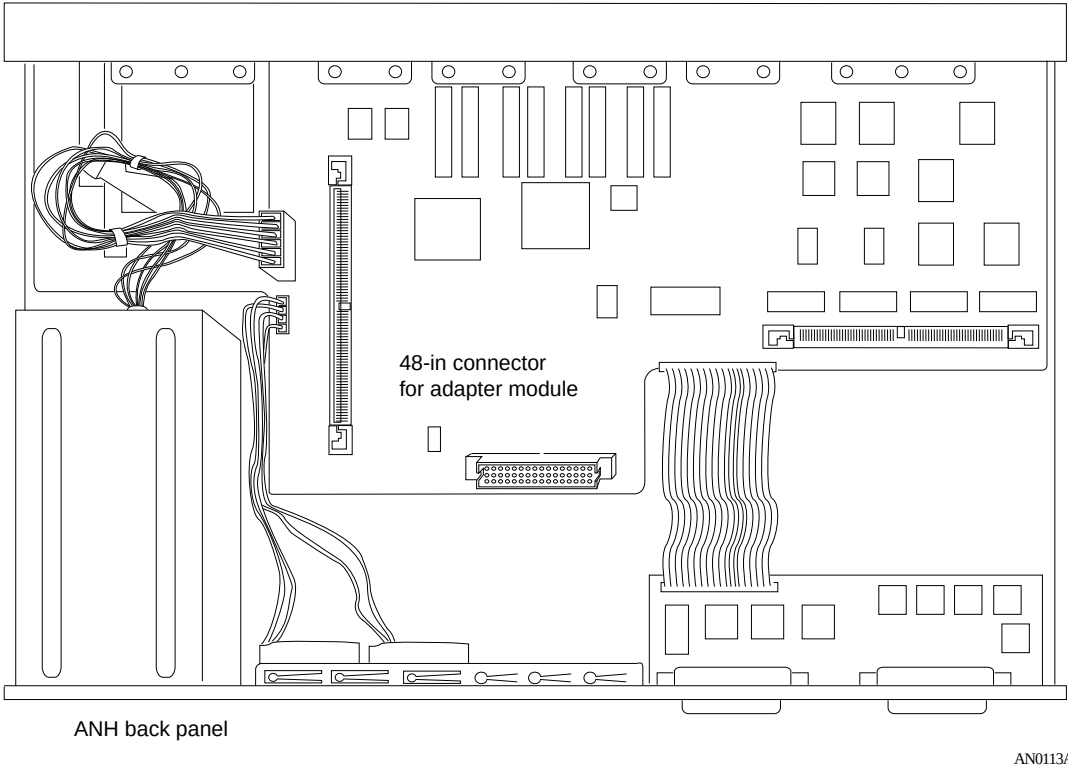


Figure 3-4. ANH-8 Base Board Location of 48-Pin Connector for Adapter Modules

4. **Hold the upgrade module with the component side down ([Figure 3-5](#)).**

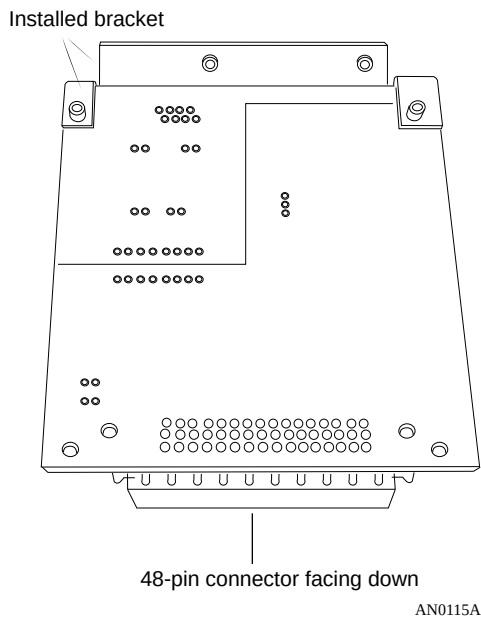
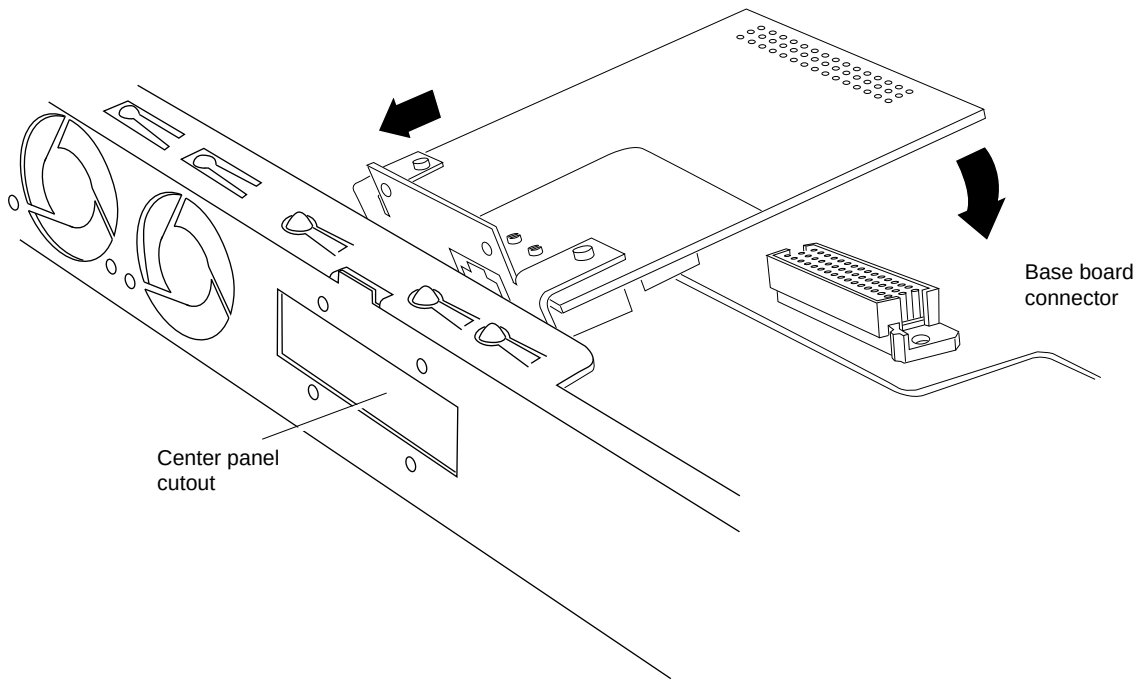


Figure 3-5. Module Ready to Be Installed

5. **Align the module's 48-pin connector with the base board connector socket, and the module bracket with the back center panel cutout ([Figure 3-6](#)).**



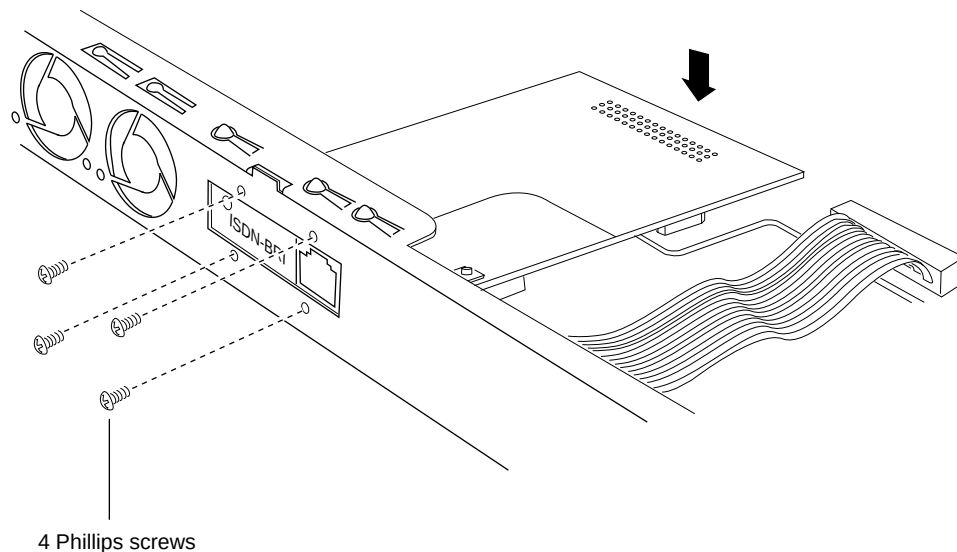
AN0116A

Figure 3-6. Aligning the Module

- 6. Using your thumbs, press down on the corners of the module on either side of the base board connector until the module slides securely into place.**

7. **Insert four screws into the back panel screw holes and through the mounting bracket ([Figure 3-7](#)).**

Use the four 1/4-inch screws you removed earlier.



AN0117A

Figure 3-7. Securing the Module Bracket to the ANH-8 Back Panel

8. **Tighten the four screws using a Phillips screwdriver.**
9. **If the module upgrade kit included a label, remove the backing from the label and apply the label on the back panel surface, near the interface connector.**

Reassembling the ANH

To replace the ANH-8 component tray after installing the adapter module:

1. **Align the two metal guides on the enclosure top with the base board component tray (Figure 3-8).**

Be sure both metal guides on the cover latch properly into place.

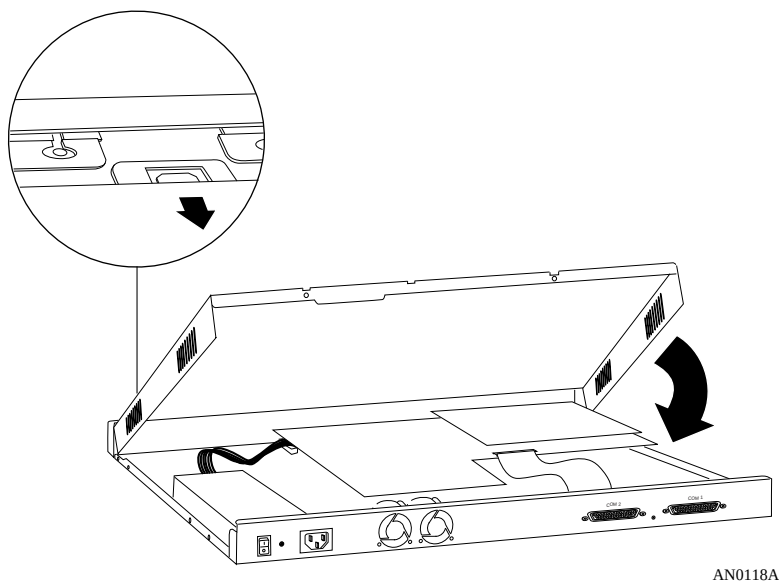
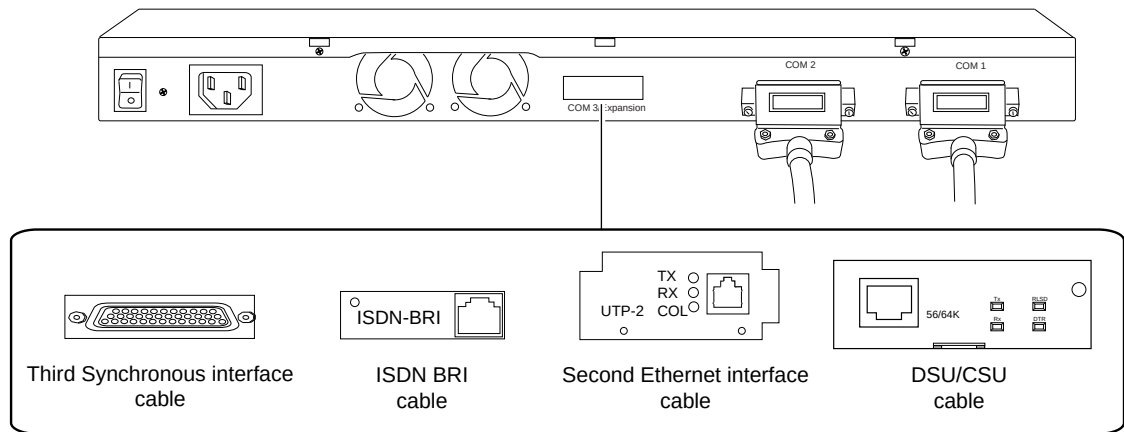


Figure 3-8. Replacing the ANH Cover

2. **Reconnect any cables that you disconnected from the back panel.**
 3. **Connect the appropriate cabling to the new interface (Figure 3-9).**
- Refer to the *Cable Guide* for the cables available from Bay Networks.



AN0120A

Figure 3-9. ANH-8 Back Panel Cable Connections

4. **Plug in the power cord.**
5. **Reconnect the ANH to the network.**

You must follow the appropriate initial installation procedure again to reconnect the ANH to the network. Before turning on the router power, refer to Chapter 4 for information about

- Software configuration
- Hardware diagnostic tests to verify the installation

Chapter 4

Completing the Installation

This chapter provides information on

- [Ensuring a Successful Installation](#)
- [Software Configuration](#)

Ensuring a Successful Installation

You can ensure successful hardware installation by checking status indicator LEDs. To verify the operation of the AN/ANH and its newly installed adapter module:

1. Power on the router.



Note: Some earlier AN models do not have a power switch; the AN powers on when you plug in the power cord.

2. Verify that the following sequence occurs in the front-panel system LEDs:

- The POWER LED lights and remains on.
- RUN, BOOT, and DIAG LEDs light for approximately 1 second, then turn off, indicating that the router is functioning.
- The RUN LED blinks for 1 to 3 minutes, indicating that the diagnostic tests are running. (It blinks quickly during the initial 17-second memory test, then slows down during the interface tests.)
- The BOOT LED lights for 1 to 3 minutes, indicating that the diagnostic tests were successful and the router is booting.

- The RUN LED lights and the BOOT LED turns off, indicating that the router is operational.

[Figure 4-1](#) shows the location of the front-panel LEDs on an AN or 12-port ANH.

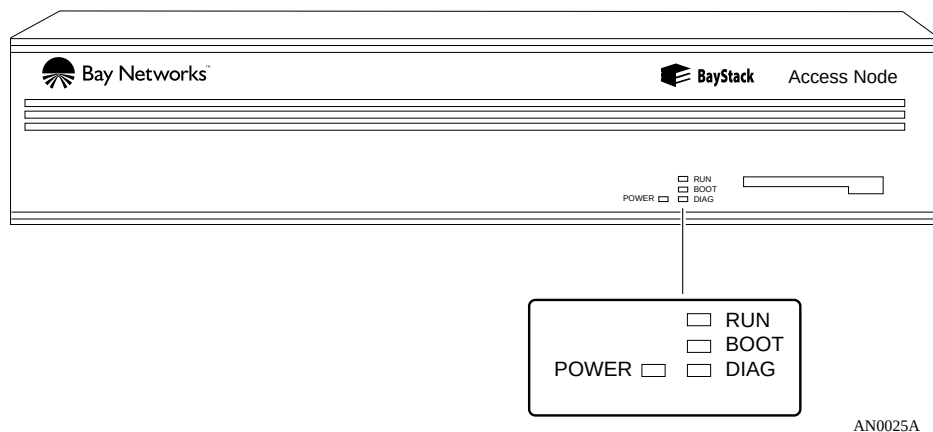


Figure 4-1. AN Front-Panel LEDs

[Figure 4-2](#) shows the location of the front-panel LEDs on an 8-port ANH.

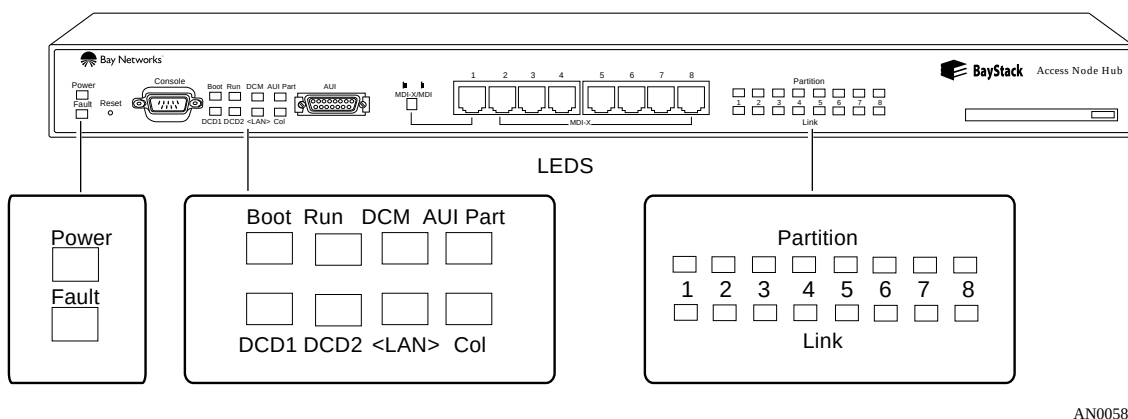


Figure 4-2. 8-Port ANH Front-Panel LEDs

If the LEDs do not light in this sequence, refer to *Configuring Remote Access* for information to help troubleshoot the problem. If you need additional assistance, contact the local Bay Networks Technical Response Center.

3. Once the AN is connected to the network, verify the status of adapter module network connections by watching back panel LEDs.



Note: Active LEDs on the AN or ANH back panel differ depending on the configuration.

[Table 4-1](#) describes the LEDs for those adapter modules equipped with indicators.

Table 4-1. Adapter Module LEDs

LED	Meaning
Second Ethernet interface (XCVR or UTP)	
TX (Transmit)	Lights when the AN/ANH is transmitting data over the network.
RX (Receive)	Lights when the AN/ANH is receiving data from the network.
CL (Collision)	Lights when the AN/ANH detects a collision on the network.
ISDN/BRI interface	
ISDN BRI	Lights when the S/T interface is active; turns off when the interface is inactive.
DSU/CSU interface	
TxD (Transmit Data)	Lights when the interface transmits data over the network.
RxD (Receive Data)	Lights when the interface receives data from the network.
CD (Carrier Detect)	Lights when the interface detects a connection to another device.
Test	Lights when the interface is in test or loopback mode.

If you need additional assistance, contact your local Bay Networks Technical Response Center.

Software Configuration

You, or your network administrator, must modify the AN/ANH configuration file to connect the new interface to the network. Refer to

- *Installing and Operating BayStack AN and ANH Routers* or *Configuring Remote Access* for instructions on using the *install.bat* Technician Interface script to configure router interfaces.
- For information about using Site Manager to configure the new router interface, refer to
 - *Configuring Routers*
 - *Configuring Ethernet, FDDI, and Token Ring Services*
 - *Configuring WAN Line Services*

[Table 4-2](#) indicates the Configuration Manager module names to use when reconfiguring the AN or ANH using Site Manager.

Table 4-2. AN and ANH Site Manager Configuration Names

Base AN Model	Adapter Module Installed	Site Manager Module Name
1 Ethernet and 2 synchronous (AE1001005, AE1001006, AE1001007, AE1001008, 20002, 20003, and 20004)	ISDN BRI	E/2S/BRI+
	ISDN BRI with installed Ethernet DCM	E/2S/BRI+/N11 DCM
	Third synchronous interface	E/3S
	Third synchronous interface with installed Ethernet DCM	E/3S/N11 DCM
	Second Ethernet interface	2E/2S
	Second Ethernet interface with installed Ethernet DCM	2E/2S/N11 DCM
	DSU/CSU	E/2S/DSUCSU
	DSU/CSU with installed Ethernet DCM	E/2S/DSUCSU/N11 DCM
1 Token Ring and 2 synchronous (AE1101001, AE1101002, AE1101003, AE1101004, 21002, 21003, and 21004)	ISDN BRI	T/2S/BRI+
	Third synchronous interface	T/3S
	DSU/CSU	T/2S/DSUCSU
	DSU/CSU with installed Ethernet DCM	T/2S/DSUCSU/N11 DCM

(continued)

Table 4-2. AN and ANH Site Manager Configuration Names *(continued)*

Base AN Model	Adapter Module Installed	Site Manager Module Name
1 Ethernet, 1 Token Ring, and 2 synchronous (AE1101005, AE1101006, AE1101007, and AE1101008, 22002, 22003, 22004)	ISDN BRI	E/T/2S/BRI+
	ISDN BRI with installed Ethernet DCM	E/T/2S/BRI+/N11 DCM
	Third synchronous interface	E/T/3S
	Third synchronous interface with installed Ethernet DCM	E/T/3S/N11 DCM
	DSU/CSU	E/T/2S/DSUCSU
	DSU/CSU with installed Ethernet DCM	E/T/2S/DSUCSU/N11 DCM
12-port Ethernet hub and 2 synchronous (AE1101013, AE1101014, AE1101015, and AE1101016, 23002, 23003, 23004)	ISDN BRI	12pt EHub/2S/BRI
	Third synchronous interface	12pt EHub/3S
	DSU/CSU	12pt EHub/2S/DSUCSU
8-port Ethernet hub and 2 synchronous (AE1001009, AE1001010, AE1001011, and AE1001012)	ISDN BRI	8pt EHub/2S/BRI
	ISDN BRI with installed Ethernet DCM	8pt EHub/2S/BRI/N11 DCM
	Third synchronous interface	8pt EHub/3S
	COM3 with installed Ethernet DCM	8pt EHub/3S/N11 DCM
	DSU/CSU	8pt EHub/2S/DSUCSU
	DSU/CSU with installed Ethernet DCM	8pt EHub/2S/DSUCSU/N11 DCM

Contact your network administrator if you need additional information.



Note: Be aware that adding software for your expansion module interfaces may increase the router's memory requirements beyond its current capacity.

