Installing an Expansion Module in a BayStack ARN Router

Part No. 114202 Rev. A
November 1996

Bay Networks

Bay Networks

4401 Great America Parkway
Santa Clara, CA 95054

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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 débranchment 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

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Notes explicatives du ministère des Communications: limites visant les accessoires

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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.

Réglement 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 Réglement sur le brouillage radioélectrique du ministère des Communications du Canada.

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About This Guide

If you are responsible for installing Bay Networks™ hardware, read this guide to learn how to install any of the following expansion modules in a BayStack™ Advanced Remote Node™ (ARN™) router:

- Ethernet
- Token Ring
- Tri-Serial
- Ethernet/Tri-Serial
- Token Ring/Tri-Serial

Use these instructions to upgrade the ARN or to replace a failed expansion module.

Before You Begin

Make sure that you are running the latest version of Bay Networks Site Manager and router software. The ARN requires Router Software Version 11.00 Rev. 4n or later.

Conventions

italic text	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

AUI	Attachment Unit Interface
STP	shielded twisted-pair
UTP	unshielded twisted-pair

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Latin America	(407) 997-1713	(407) 997-1714

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- 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.

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Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Chapter 1
Installing the Expansion Module

Complete the steps in this chapter to install any of the following expansion modules in an ARN:

- Ethernet
- Token Ring
- Tri-Serial
- Ethernet/Tri-Serial
- Token Ring/Tri-Serial

Although each expansion module type looks slightly different, you install them identically onto the ARN base module, as follows:

1. Open the ARN enclosure to access the component tray.
2. Attach an antistatic wrist strap.

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

3. Remove the expansion slot filler panel; or, if present, remove an existing expansion module.
4. Install the new expansion module on the ARN base module.
5. Close the ARN.
6. Connect network cabling.
7. Proceed to software configuration tasks.

Opening the ARN

To open the enclosure and expose the base module:

1. **Be sure that power is turned off (0).**
2. **Unplug the power cable from the wall receptacle and from the ARN (Figure 1-1).**
3. **If present, unplug the redundant power supply cable from the ARN (Figure 1-1).**
4. **Remove all back panel console port cables.**

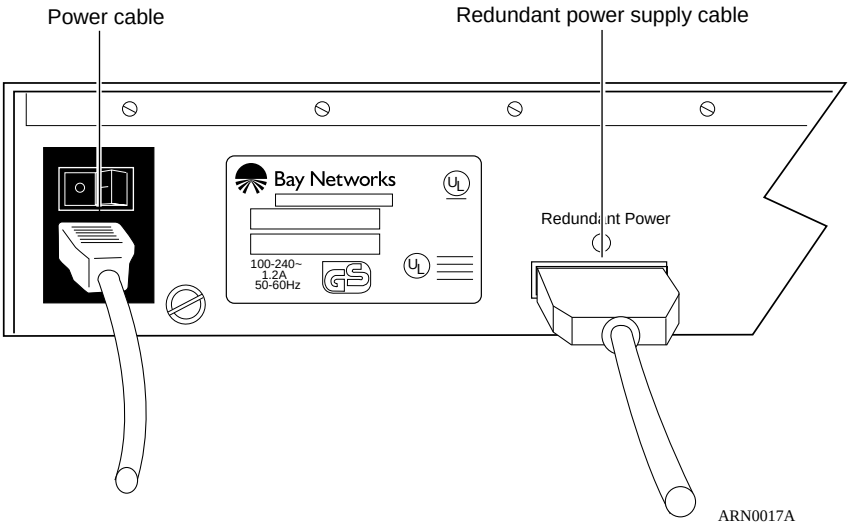


Figure 1-1. ARN Power Switch (Off) and Power Cables

5. **Remove all front panel network cables.**
6. **Loosen the two captive screws that secure the top cover to the ARN enclosure (Figure 1-2).**

   Be sure to loosen these screws all the way.
7. **Place the ARN tray on a table or other work surface.**

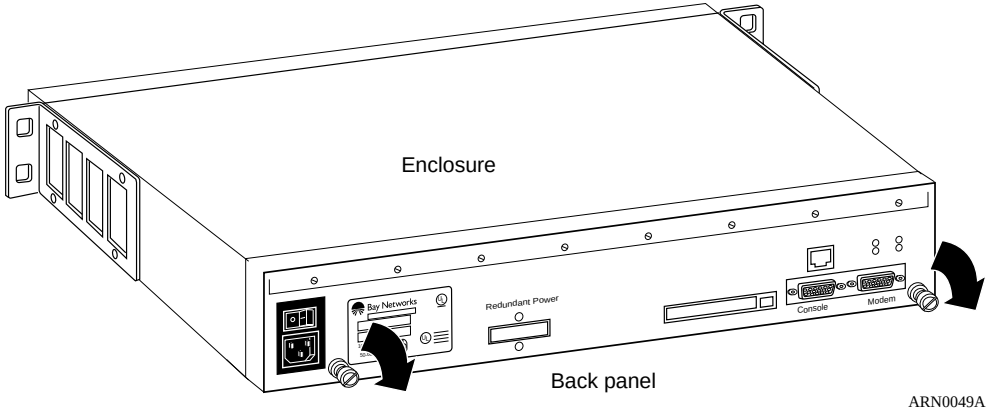


Figure 1-2. Loosening the Captive Screws

8. **Holding the ARN front panel so it does not move, slide the enclosure away from the component tray (Figure 1-3).**

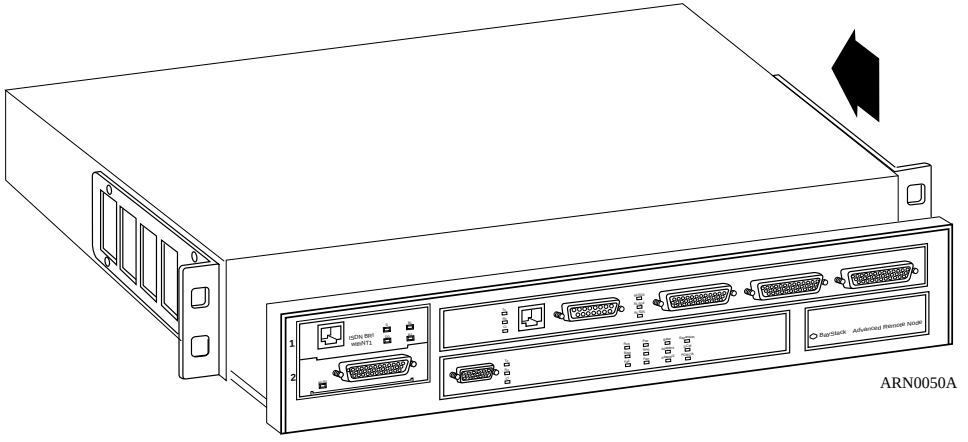


Figure 1-3. Removing the ARN Enclosure

9. **Attach an antistatic wrist strap.**

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

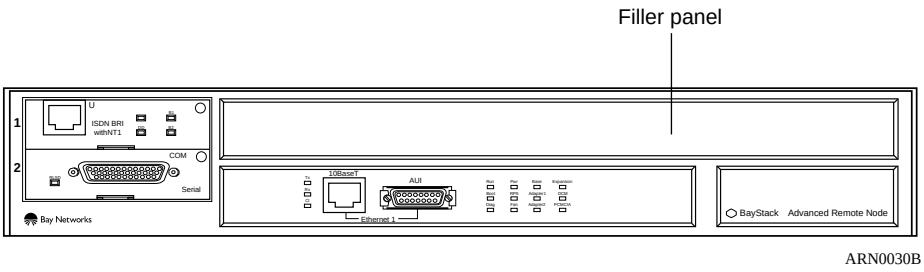
The antistatic wrist strap directs the discharge of static electricity from your body to the router chassis, thereby avoiding discharge to sensitive electronic components.

10. **Continue with the instructions for removing either the expansion slot filler panel or an existing expansion module.**

    - To upgrade the ARN, proceed with "Removing the Filler Panel."
    - To replace an expansion module, proceed with "Removing an Installed Expansion Module."

Removing the Filler Panel

To remove the expansion slot filler panel (Figure 1-4):



ARN0030B

Figure 1-4. Filler Panel Covering Expansion Module Slot

1. **From inside the unit, locate the three locking tabs that secure the filler panel to the expansion slot (Figure 1-5).**
2. **Insert a flathead screwdriver beneath each tab and pull up to loosen the tabs (Figure 1-5).**

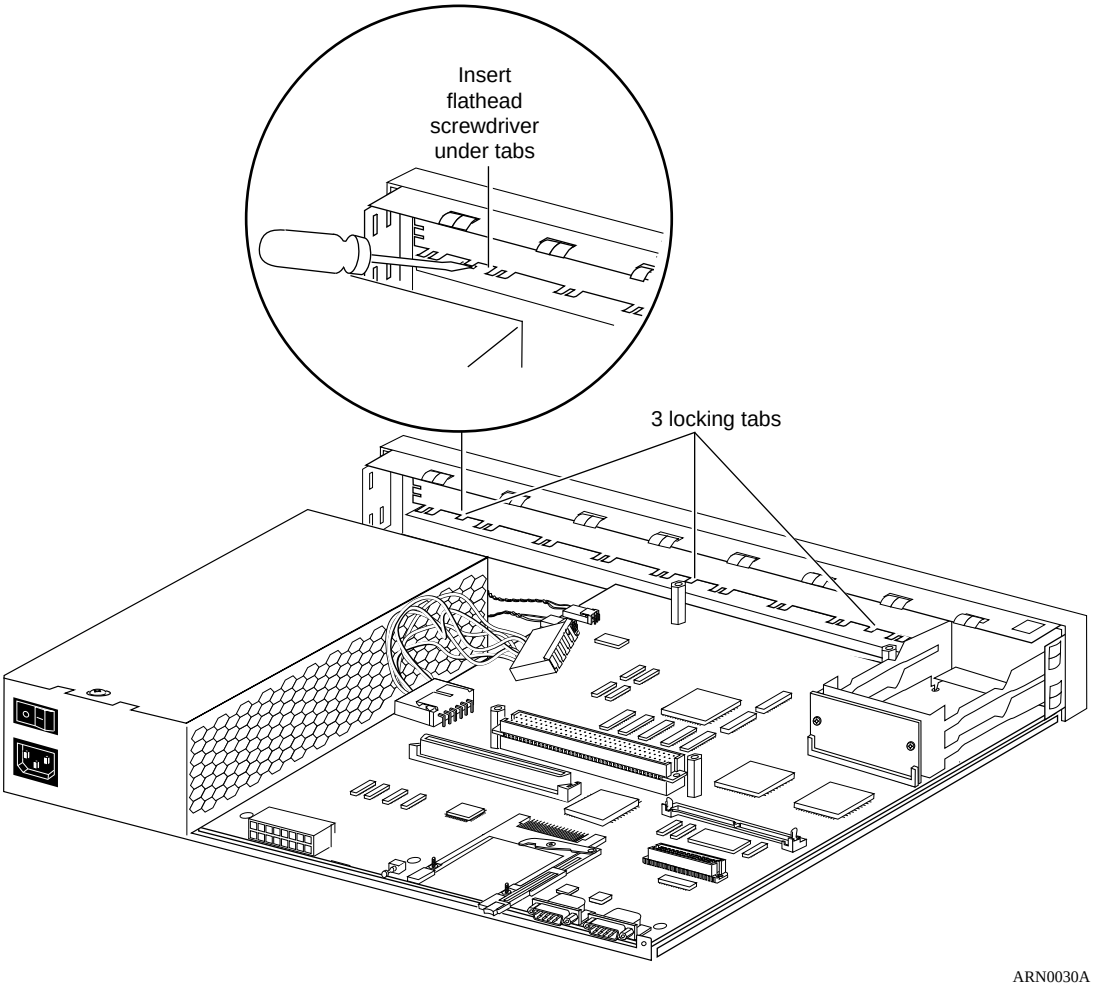


Figure 1-5. Removing the Blank Panel From the Expansion Module Slot

3. **With the locking tabs clear of their slots, push the filler panel in toward the component tray until you can remove the panel.**

Warning: The expansion slot filler panel has sharp, metallic edges; to avoid cutting your hand or fingers, handle the panel only on its surfaces, not edges.

4. **Set the filler panel aside.**

   To operate the ARN without the expansion module in the future, you must reinstall the filler panel.

5. **Skip the next section and proceed to "Installing the Module."**

Removing an Installed Expansion Module

To remove an expansion module from the ARN:

1. **Remove the five screws and washers that secure the expansion module to the base module (Figure 1-6).**

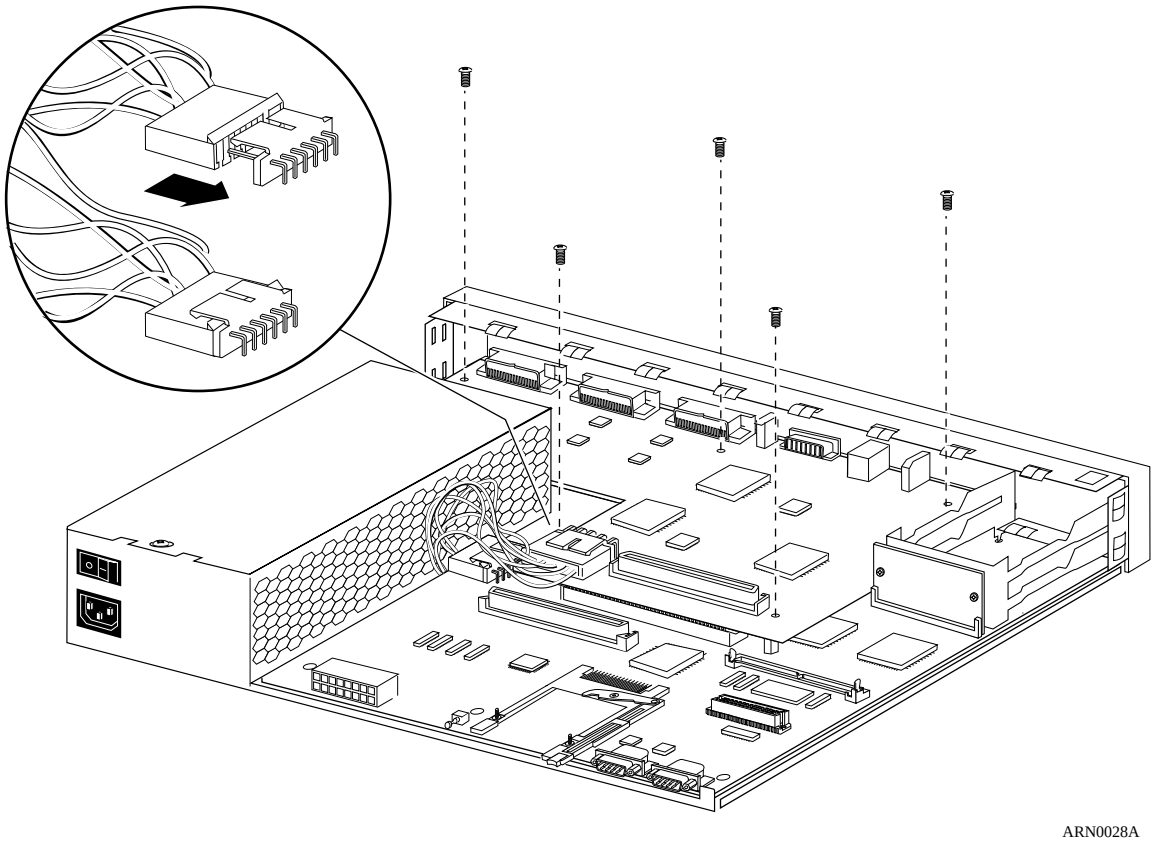


Figure 1-6. Removing the Expansion Module Power Cable and Screws

2. **Disconnect the power cable from its connector on the expansion module (refer to Figure 1-6).**

   Pull up on the white tabs in the connector to loosen the cable.

3. **Holding the expansion module at either end of its base module connector, pull straight up to detach the connector from the base module socket.**

   Be prepared to use some force at first, but stop pulling once the two connectors are free.

4. **With the interface connectors resting inside the chassis expansion slot, pull up until the module rests at a 90-degree angle to the base module.**

5. **Keeping the expansion module perpendicular to the base module, slide the interface connectors horizontally toward the rear of the chassis until the module clears the top of the tray assembly and you can remove it (Figure 1-7).**

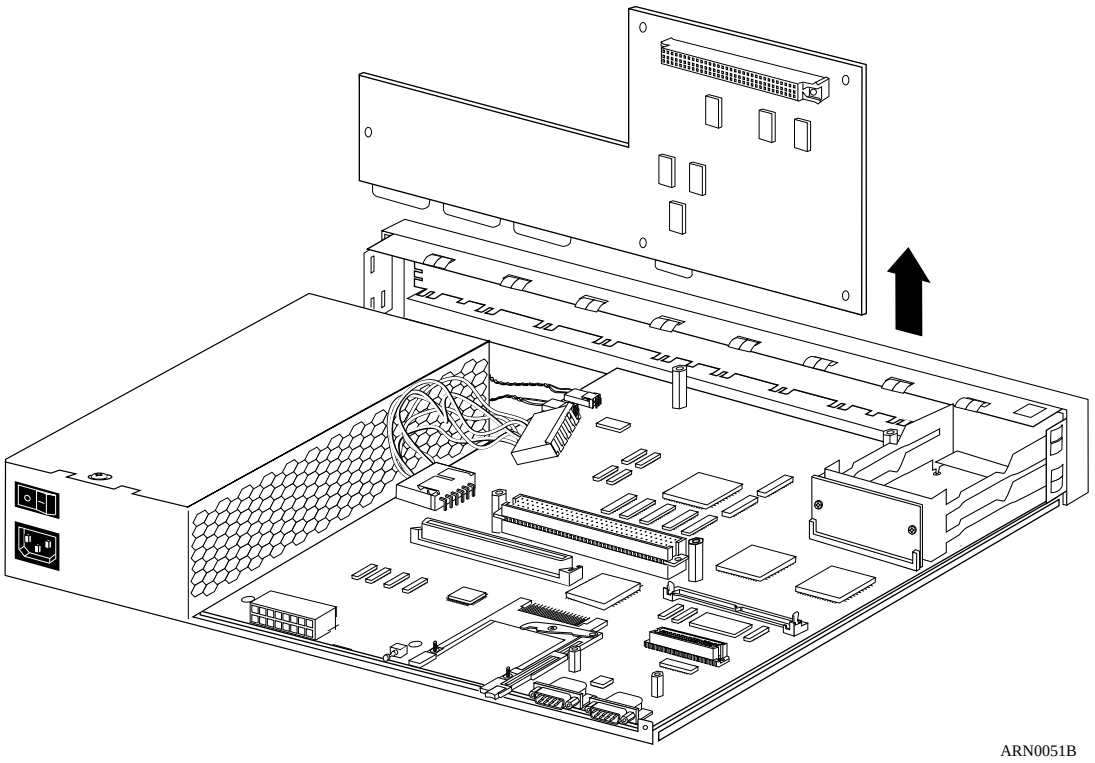


Figure 1-7. Removing the Expansion Module

6. **Place the removed expansion module in an antistatic bag.**
7. **Proceed to the next section to install the replacement expansion module.**

Installing the Module

To install the expansion module upgrade or replacement:

1. **Locate the expansion module connector and five screw mounts standoffs on the ARN base module (Figure 1-8).**

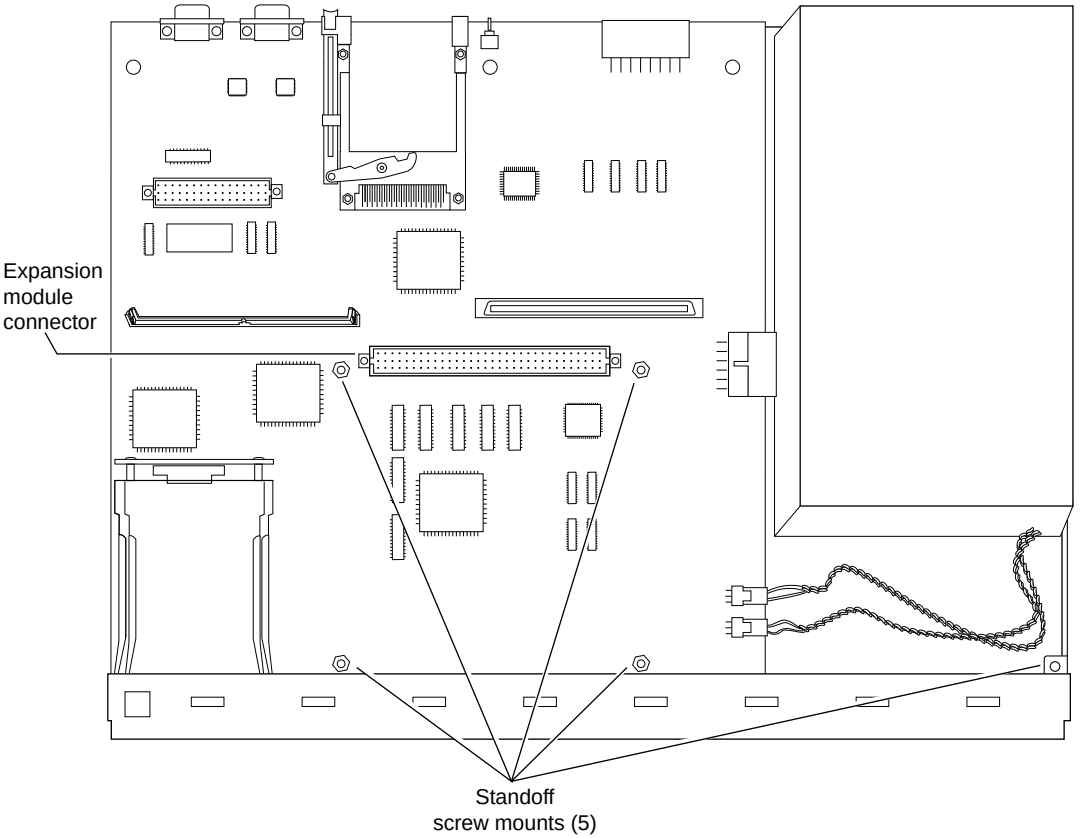


Figure 1-8. Location of the Expansion Module Connector on the Base Module

2. **Insert the module's interface connector panel into the front panel expansion slot (Figure 1-9).**

   To clear the mounting screw standoffs, hold the expansion module at a 45-degree angle and slide the interface connectors into the slot facing down.

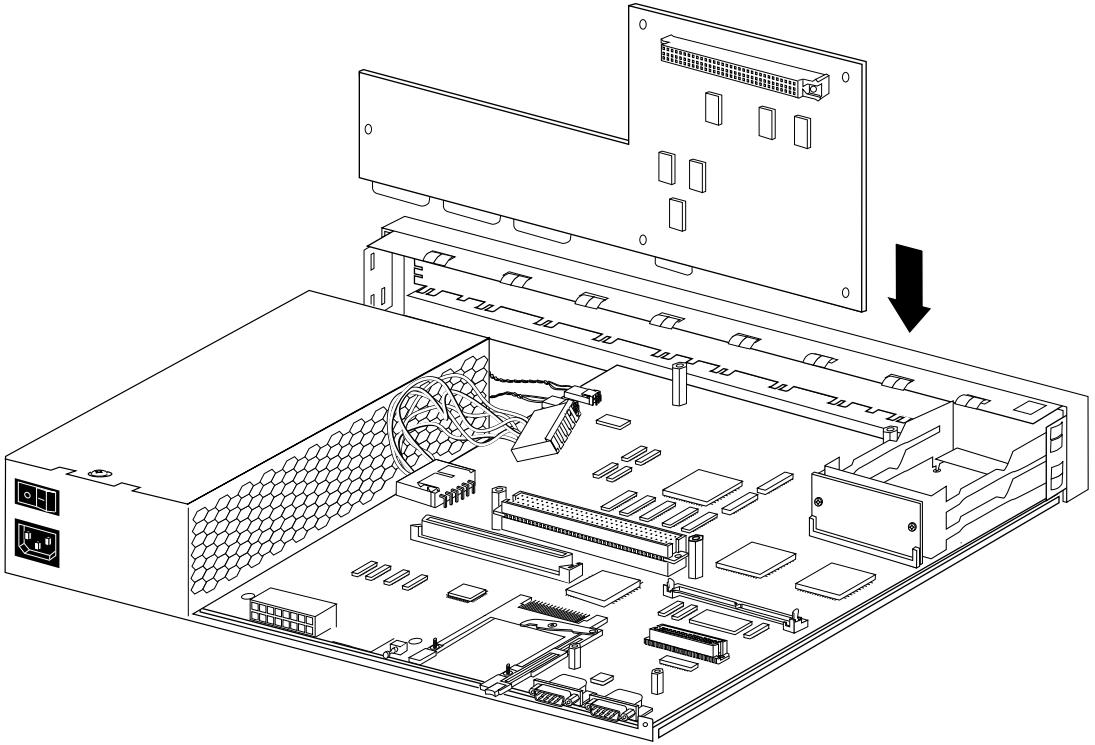


Figure 1-9. Aligning the Expansion Module

3. **Rotate the module downward until the connectors fit into place in the expansion slot (Figure 1-10).**

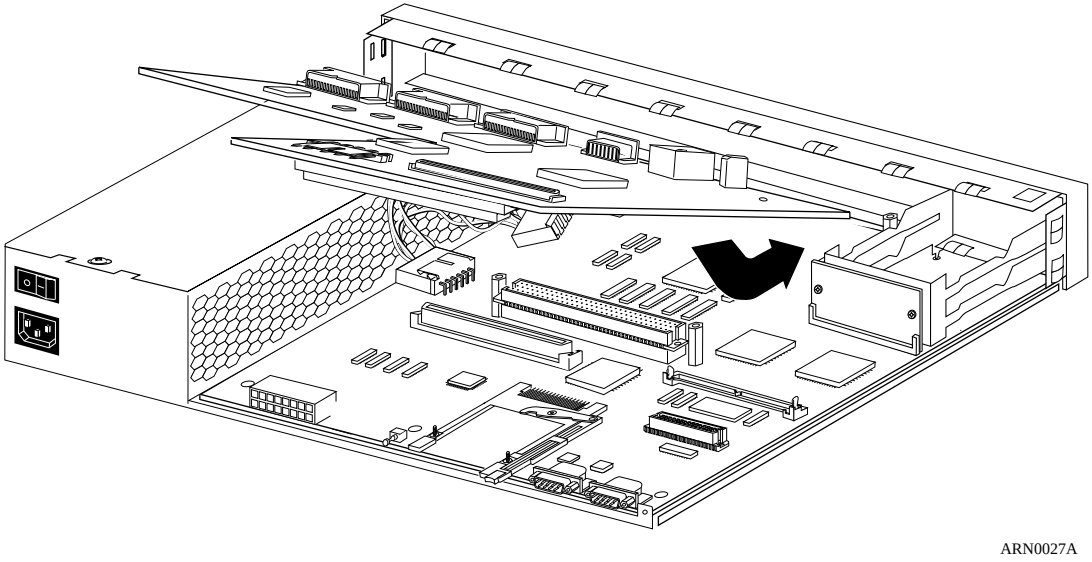


Figure 1-10. Inserting the Expansion Module

4. **Press the module all the way forward into the expansion slot, until the pins in the expansion module's base module connector align with the base module connector socket.**
5. **Press down on the corners of the module at either end of the base module connector until the module connector slides securely into place.**
6. **Insert five screws and washers into the base module mounting standoffs (Figure 1-11).**

   Use the five screws and washers that came with the expansion module kit.
7. **Tighten the screws using a Phillips screwdriver.**
8. **With the clip side up, insert the expansion module power cable into the power connector on the expansion module (Figure 1-11).**

   Be sure that the cable locks into place and is completely secured.

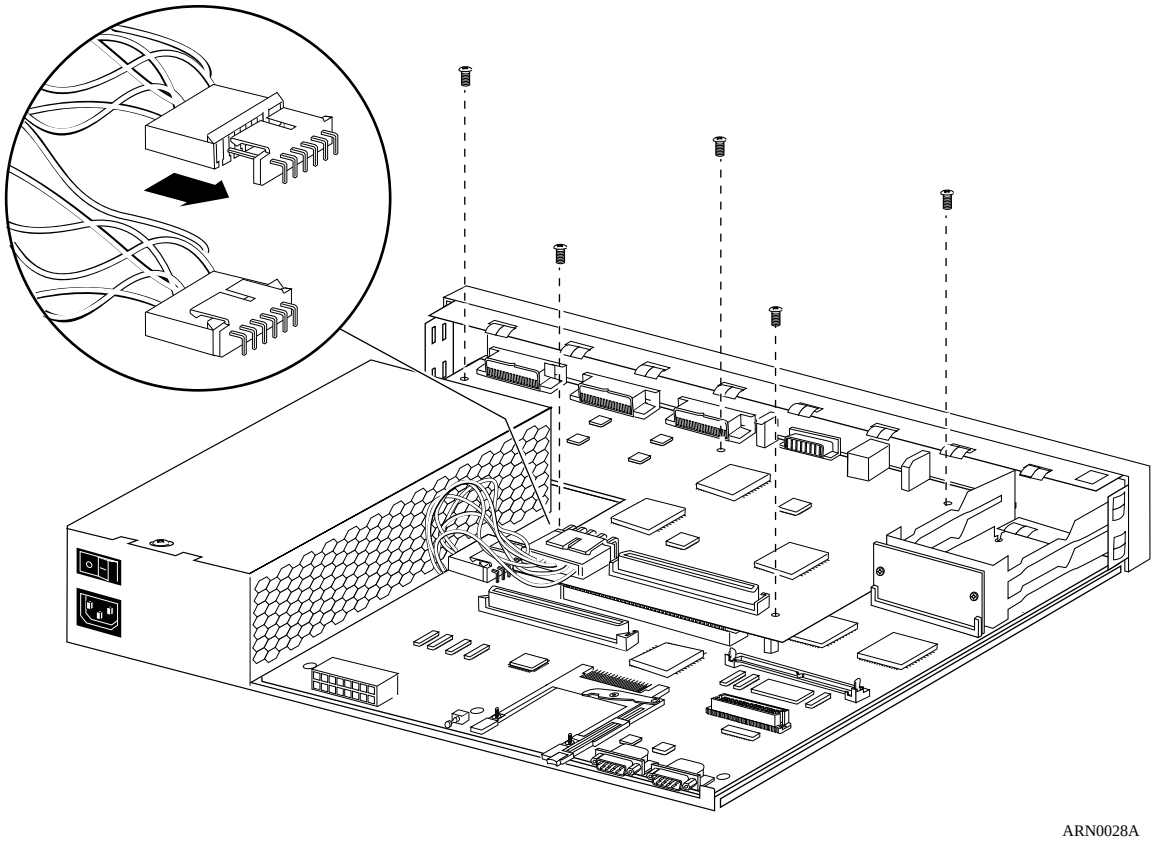


Figure 1-11. Attaching the Power Cable and Securing the Expansion Module

Closing the ARN

To replace the ARN enclosure:

1. **Remove the antistatic wrist strap.**
2. **Align the enclosure top around the base module component tray and slide the enclosure in until it meets the front panel (Figure 1-12).**

   If you meet resistance, lift up slightly on the enclosure, and center the component tray between the enclosure edges.
3. **Secure the two captive screws that hold the cover to the component tray.**

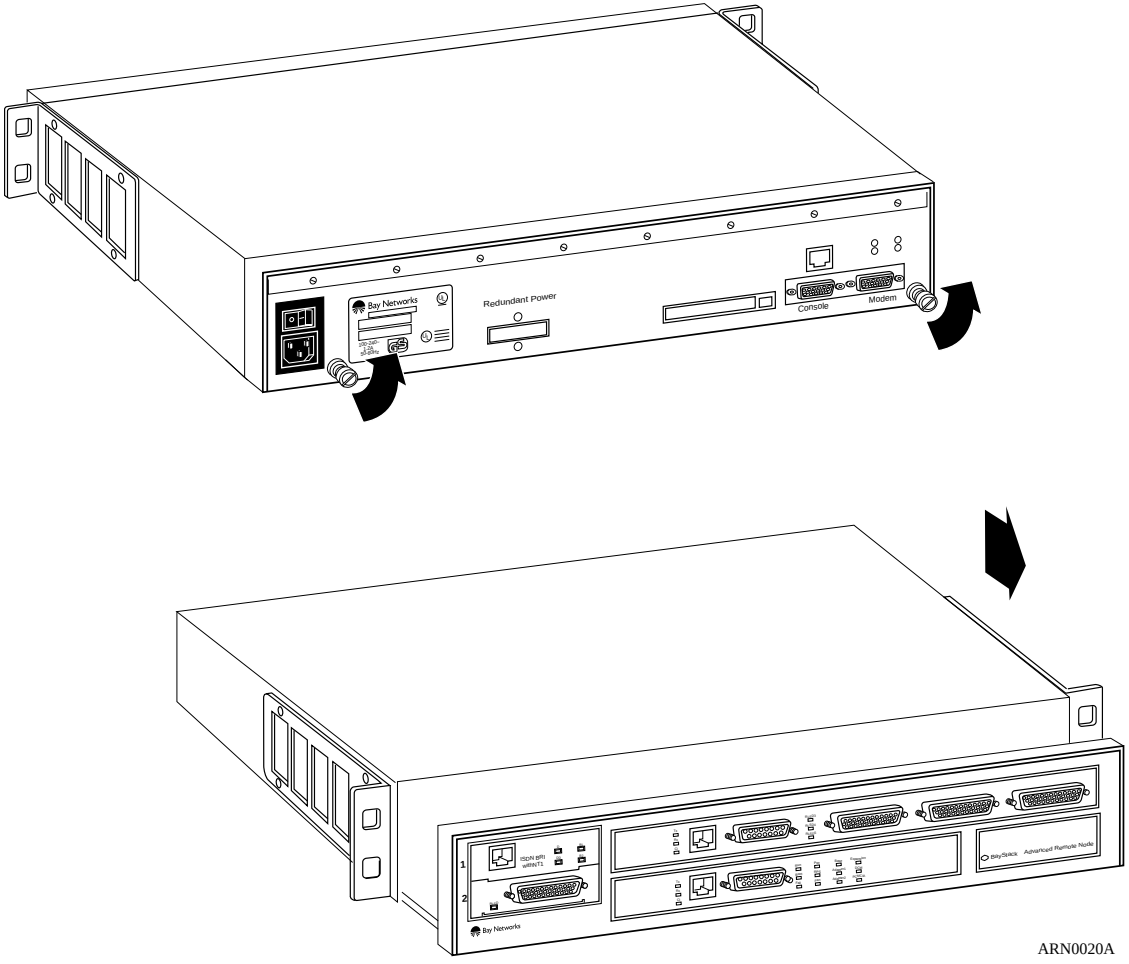


Figure 1-12. Replacing the ARN Cover

Connecting Cables

To reconnect the ARN:

1. **Reconnect any console or network cables that you disconnected from the front and back panel connectors.**
2. **Connect the appropriate cabling to the new Ethernet, token ring and/or serial interfaces: COM, STP, AUI, or 10Base-T.**

   Refer to the *Cable Guide for Routers and BNX Platforms* for the cables available from Bay Networks.

   Figures 1-13 through 1-15 show the cable connections.

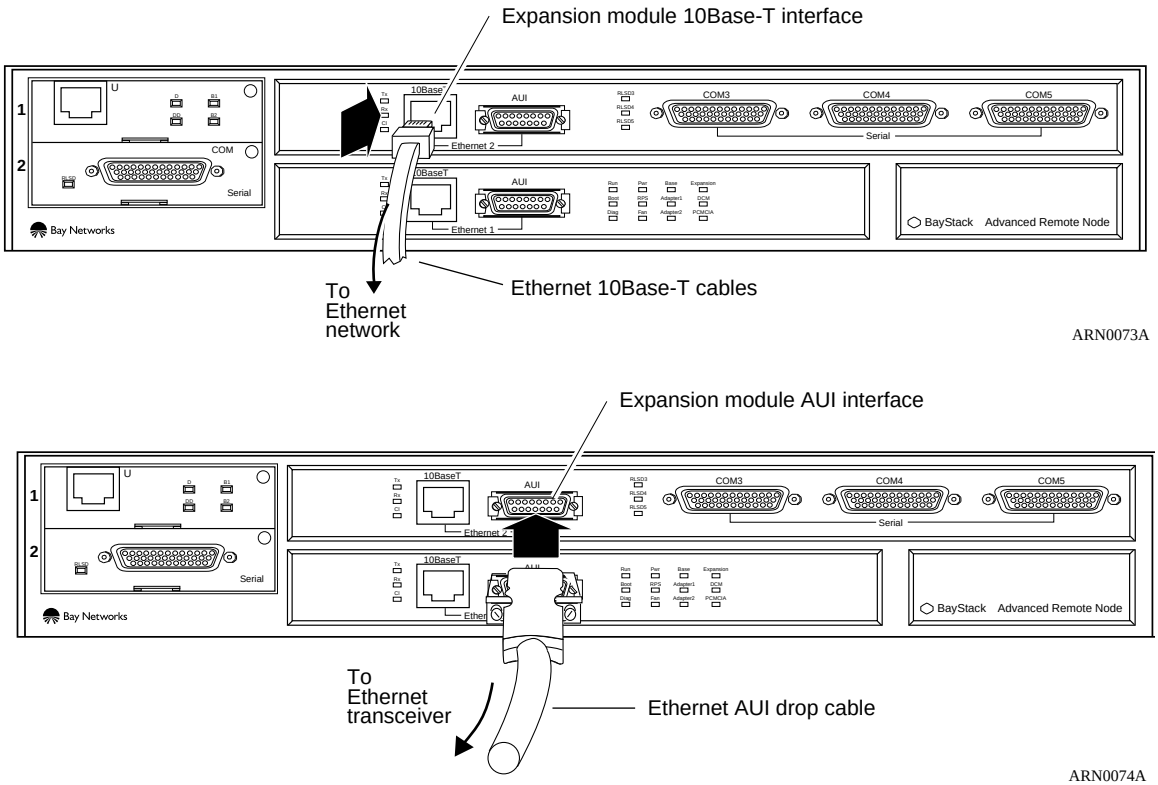


Figure 1-13. Ethernet Cables

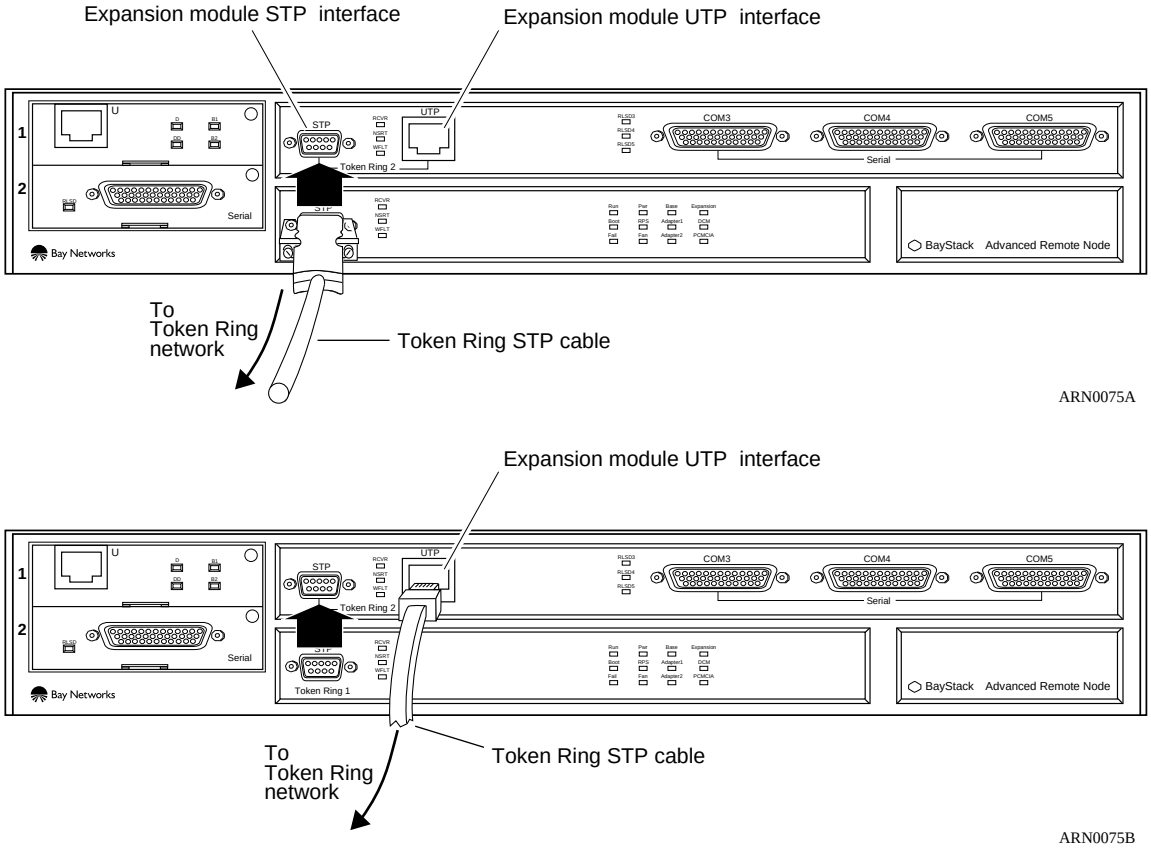


Figure 1-14. Token Ring Cables

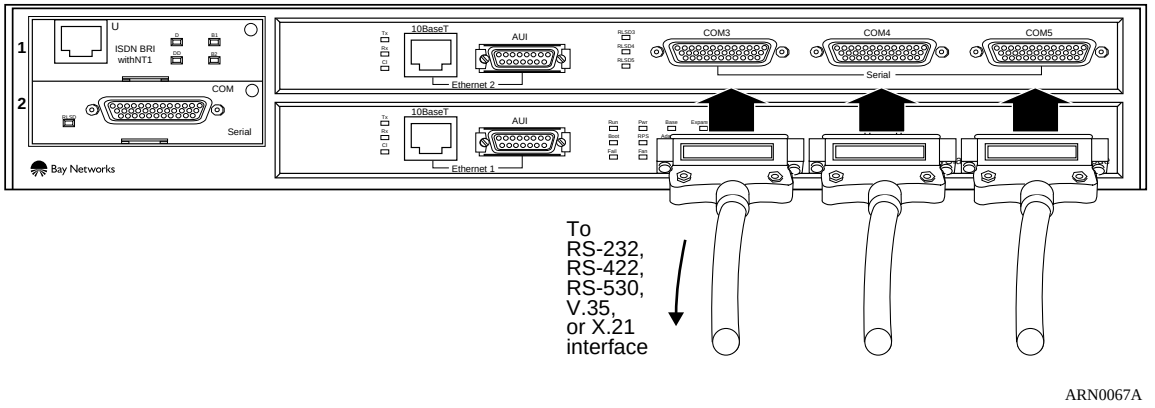


Figure 1-15. Serial Cables

3. **Plug in the power cord and, if applicable, redundant power supply cable.**

   Refer to Figure 1-1.

Ensuring a Successful Installation

After reconnecting the ARN to the network, you can ensure a successful upgrade by checking the diagnostic LEDs on the front panel of the base module (Figure 1-16).

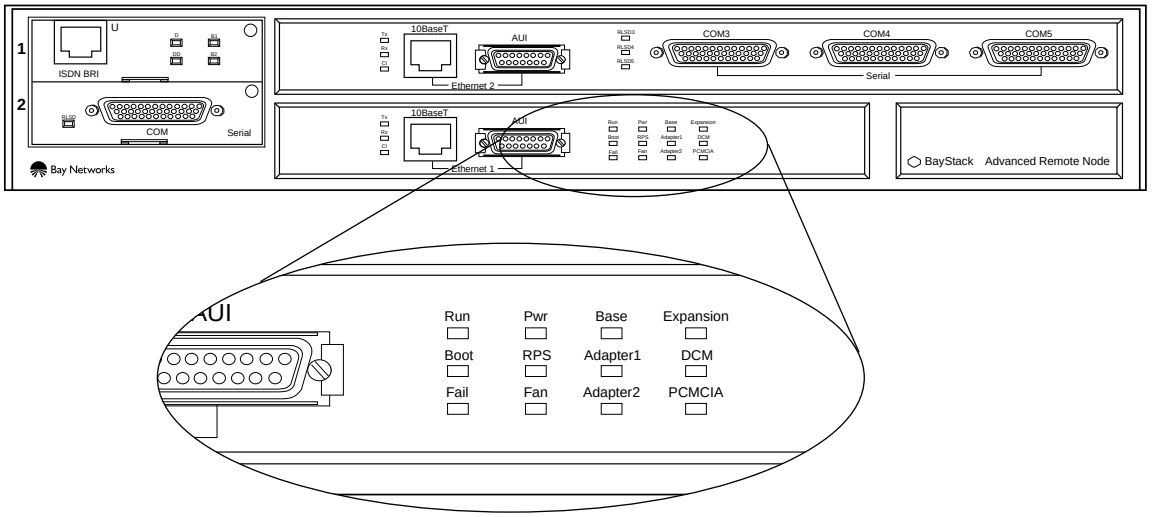


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Figure 1-16. ARN Base Module Diagnostic LEDs

When you power on the ARN, the following sequence of front panel LED activity should occur:

1. All base module LEDs light momentarily; this tests that the LEDs are operational.
2. The Run, Boot, and Fail LEDs count through a short, initial startup sequence.
3. The Pwr (power) LED lights and remains on.
4. The Run LED begins flashing and continues to flash until the ARN completes all diagnostic tests.
5. As the diagnostic procedure tests each module, the LED representing that module flashes slowly. If the module passes its diagnostic test, the LED remains on. If the module fails its diagnostic test, the Fail LED remains on and the module LED flashes rapidly.

6. After completing the diagnostic testing procedure, the boot process begins. The Run and Boot LEDs indicate the boot status as shown in Table 1-1.

Table 1-1. Boot Status LEDs

Boot Status	Run LED	Boot LED
Local Boot	Off	On
Netboot (attempting)	Off	Flashing
Netboot (downloading)	Flashing	On
Interrupted (using ARN monitor)	Flashing	Flashing

7. After the boot process completes, the Run LED lights and the Boot LED turns off, indicating that the ARN is operational.

If the LEDs on the ARN light in this sequence, your upgrade is successful. Contact the network administrator to verify that the ARN is now connected to the network.

If the LEDs do not light in this sequence, the network administrator can refer to *Configuring Remote Access* to help troubleshoot the problem.

Note: If the ARN does not contain an expansion module, an adapter module, a redundant power supply, a data collection module, or a Flash card, the LEDs associated with these components remain off.

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

Your Next Step

To connect the new interfaces to a network and modify the ARN configuration file, you must follow the appropriate installation procedures. Refer to

- *Installing and Operating BayStack ARN Routers* or to the *Configuring Remote Access* guide for instructions on using the **inst_arn.bat** Technician Interface script
- *Configuring Routers* for information about using Site Manager to configure router interfaces

- *Modifying Software Images for Routers* for information about changing the router image

Table 1-2 indicates how the physical interface labels on the ARN correspond to Site Manager connector names.

Table 1-2. Site Manager Names for ARN Expansion Module Interfaces

Expansion Module Physical Connector Label	Site Manager Connector Name
AUI	XCVR2
10Base-T	XCVR2
UTP	TOKEN2
STP	TOKEN2
COM3	COM3*
COM4	COM4*
COM5	COM5*

*. Site Manager numbers the ARN COM interfaces exactly as they are labeled. If there are no Adapter modules installed in COM1 or COM2, COM3 through COM5 could be the first three serial ports in the ARN.

Note: Be aware that adding software for your expansion module interfaces may increase the ARN memory requirements.

Contact your network administrator if you need additional information.