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Installing ATM Link Modules and Routing Engines in BN Platforms

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This is to certify that the Nortel Networks BN router is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

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Canadian Department of Communications Radio Interference Regulations

This digital apparatus (BN router) 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 (BN router) 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.

Canada CS-03 Rules and Regulations

Notice: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). 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. The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Canada Requirements Only *(continued)*

Repairs to certified equipment should be coordinated by a representative 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.

Notice: For equipment using loopstart lines, please note that the Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5. The REN is located on the “FCC Rules Part 68” label located on the bracket of the module, or on the back of the unit.

Canada CS-03 -- Règles et règlements

Avis: L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

Avis: Veuillez prendre note que pour tout appareillage supportant des lignes de type “loopstart,” l'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5. Le REN figure sur l’étiquette “FCC Rules Part 68” située sur le support du module ou à l’arrière de l’unité.

FCC Part 68 Compliance Statement

This equipment complies with Part 68 of FCC Rules. All direct connections to telephone network lines must be made using standard plugs and jacks compliant with FCC Part 68. Please note the following:

1. You are required to request service from the telephone company before you connect the unit 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 all the codes below:

        - 04DU9-BN (1.544 MB, D4 framing format)
        - 04DU9-DN (1.544 MB, D4 framing format with B8ZF coding)
        - 04DU9-1KN (1.544 MB, ESF framing format)
        - 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)
        - 04DU9-1ZN (1.544 MB, ANSI ESF and ZBTSI without line power)

        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: RJ48C
   - When you request Primary Rate ISDN Service, you must provide the telephone company with
     -- The Facility Interface Code: 04DU9-1SN (1.544 MB, ESF framing format with B8ZF coding)

     -- The Service Order Code(s) (SOC): 6.0F

     -- The required Universal Service Order Code (USOC) jack: RJ48C
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 the unit 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 unit, please contact the Nortel Networks Technical Solutions Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Nortel Networks.

United States	1-800-2LANWAN
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5740-1700

5. You are required to notify the telephone company when you disconnect the unit from the network.

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Preface

Read this guide if you are responsible for installing any of the following Nortel Networks™ Asynchronous Transfer Mode (ATM) link or processor modules in a Backbone Node (BN®) platform:

- ATM Routing Engine (ARE) OC-3 Single Mode or Multimode link module
- ARE STS-3/STM-1 SONET/SDH Multimode Fiber (MMF) or Single Mode Fiber (SMF) link module
- ARE DS-3 link module
- ARE E-3 link module
- ARE processor module

This guide describes how to

- Install an ARE link module in these BN platforms:
  - -- Backbone Link Node (BLN®)
  - -- BLN-2
  - -- Backbone Concentrator Node (BCN®)
- Install an ARE processor module
- Interpret the LEDs on the modules

Note: Experienced network operators can safely perform the user-serviceable procedures described in this book; however, only authorized Nortel Networks service technicians can perform other maintenance procedures not described in this book.

Text Conventions

This guide uses the following text conventions:

bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.
italic text	Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.

Acronyms

This guide uses the following acronyms:

ATM	Asynchronous Transfer Mode
ARE	ATM Routing Engine
EMC	electromagnetic compatibility
FRE	Fast Routing Engine
FRE-2	Fast Routing Engine-2
HDCM	Harpoon Diagnostic Console Monitor
ILI	Intelligent Link Interface
LED	light-emitting diode
MMF	Multimode Fiber
SAR	segmentation and reassembly
SDH	Synchronous Digital Hierarchy

SELV	safety extra-low voltage
SMF	Single Mode Fiber
SONET	Synchronous Optical Network
SRM-F	System Resource Module-Front
SRM-L	System Resources Module-Link
STM	Synchronous Transfer Mode
STS	Synchronous Transport Signal
TNV	telecommunications network voltage
VBM	Virtual Buffer Memory

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North America	(800) 2LANWAN or (800) 252-6926
Asia Pacific	(61) (2) 9927-8800
China	(800) 810-5000

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the www12.nortelnetworks.com/ URL and click ERC at the bottom of the page.

Chapter 1
Installing ATM Link Modules

Note: *In this guide, the term ATM link module includes all Nortel Networks ARE link modules (ARE OC-3, DS-3, E-3, and SONET/SDH) , unless referring to a specific model. The term does not include the ARE processor module.*

To install an ATM link module, complete these preliminary tasks as needed:

- Choose a slot
- Remove a link module
- Configure jumper settings

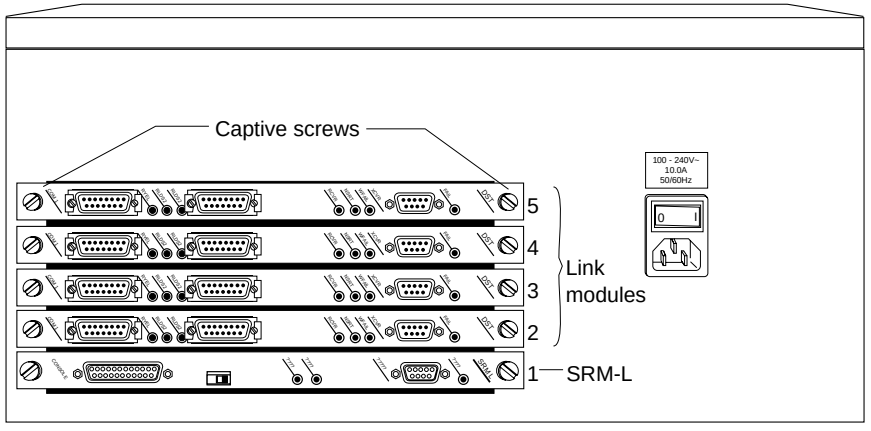
This chapter describes each of these tasks, as well as how to install the ATM link module.

Choosing a Slot

You can install the ATM link module in

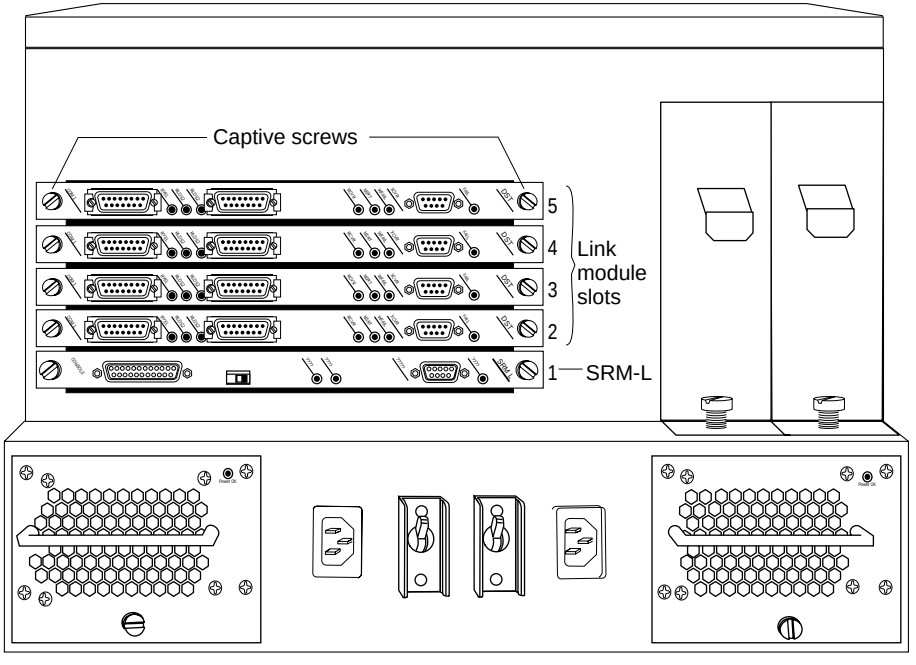
- Slots 2 through 5 in the BLN platform (Figure 1-1)
- Slots 2 through 5 in the BLN-2 platform (Figure 1-2)
- Slots 1 through 6 and Slots 8 through 14 in the BCN platform (Figure 1-3)

Note: *You must install the link module in a slot opposite an ARE processor module. (See Chapter 2 for instructions on installing an ARE processor module.) Do not install an ATM link module in a slot opposite a Fast Routing Engine (FRE or FRE-2) processor module. Likewise, do not install a FRE or FRE-2 link module into a slot opposite an ARE processor module.*



QMC0008A

Figure 1-1. Link Module Slots in a BLN Platform



QMC0009A

Figure 1-2. Link Module Slots in a BLN-2 Platform

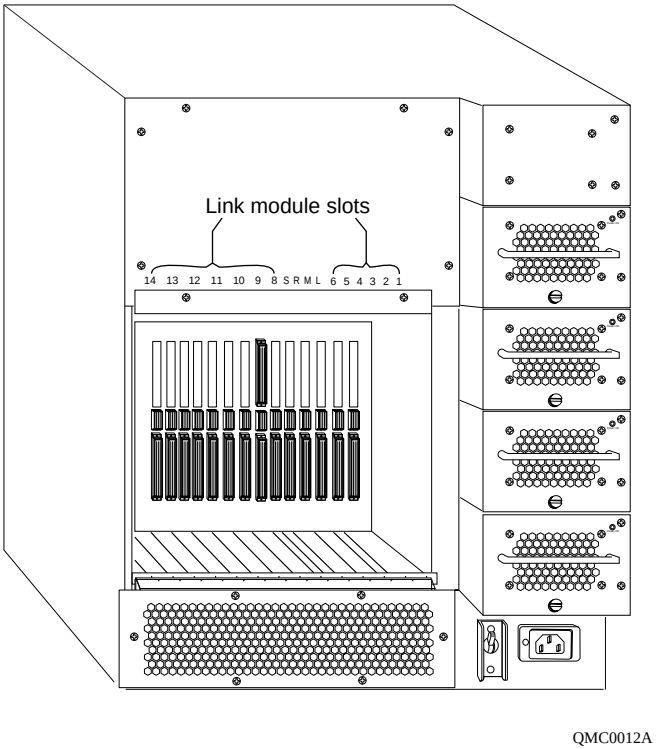


Figure 1-3. Link Module Slots in a BCN Platform

Removing a Link Module

If there are no empty slots in your BN platform, you must remove a link module to install the ATM link module. When replacing a configured link module, you must delete all configured circuits (ports) on the slot so the BN platform software can properly configure the new link module.

Refer to *Configuring Routers* if you use router software or Administration Guide if you use BayStream software for instructions on editing a configuration file and deleting circuits.

The BN hot-swap feature allows you to remove or replace a link module with the chassis power on or off.

Danger: *Do not remove more than two adjacent modules with the power on.*

Removing a link module with the power on distrupts the services that slot provides. However, after the slot fails to receive packets, the other link modules in the chassis resynchronize their routing tables and continue uninterrupted.

The procedure for removing a link module is the same for the BLN, BLN-2, and BCN platforms:

1. **Disconnect any exterior cables from the link module.**
2. **Attach an antistatic wrist strap.**

   BN platforms and link modules ship with an antistatic wrist strap. You must wear one of these straps when accessing components on BN platforms. The antistatic wrist strap directs the discharge of static electricity from your body to the chassis, thereby avoiding discharge and possible damage to sensitive electronic components.

Caution: *Electrostatic discharge can damage hardware. Always use an antistatic wrist strap when handling any component on your BN platform.*

3. **Loosen the captive screw on each end of the module.**
4. **Grasp the sides of the module and pull it out of the slot.**
5. **Place the module in an antistatic protective bag.**

Configuring Jumper Settings

The ARE DS-3 link module (Order No. AG13110114) and the ARE E-3 link module (Order No. AG13110115) contain user-configurable jumper settings.

Note: *The other ATM link modules and the ARE processor module do not contain user-configurable jumpers or switches. Changing the jumper settings on these modules can jeopardize module functioning.*

Figure 1-4 shows the user-configurable jumpers on the ARE DS-3 link module. The jumper locations and settings on the ARE DS-3 and the ARE E-3 link modules are identical.

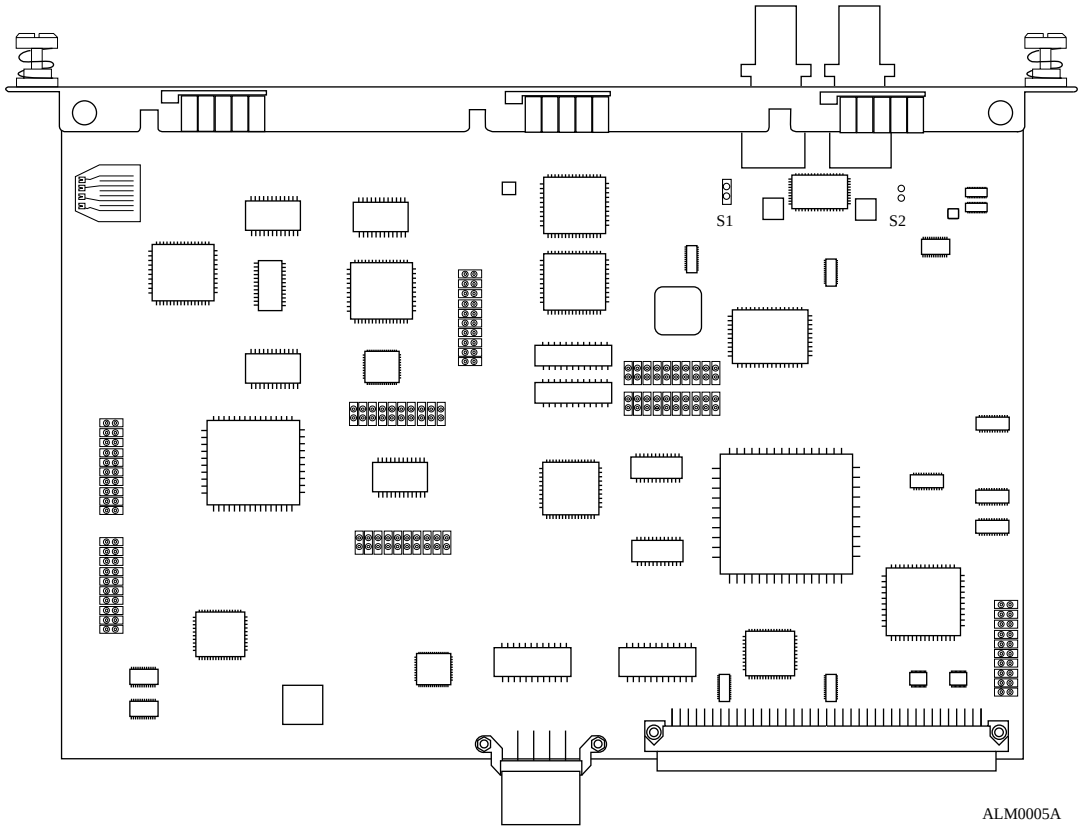


Figure 1-4. Jumpers on the ARE DS-3 Link Module

Before installing the ARE DS-3 or E-3 link module, refer to Table 1-1 to ensure that the jumper settings match your configuration.

Table 1-1. ARE DS-3 and ARE E-3 Jumper Settings

Option	Setting	Jumper
Chassis ground connection for BNC transmit interface	Connected	 S1
	Disconnected	 S1
Chassis ground connection for BNC receive interface	Connected	 S2
	Disconnected	 S2

Inserting the Link Module

Insert the link module in the BLN, BLN-2, or BCN platform as follows:

1. **Attach an antistatic wrist strap.**

   BN platforms and link modules ship with an antistatic wrist strap. You must wear one of these straps whenever you access components in a platform.

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

Caution: *Electrostatic discharge can damage hardware. Always use the antistatic wrist strap when handling any component in the BN platform.*

2. **Using the slot card guides, slide the module into the appropriate slot until the module's connector panel touches the BN platform's back panel.**

   Refer to Figure 1-1 (BLN), 1-2 (BLN-2), or 1-3 (BCN) in Chapter 1 for slot locations.

3. **Secure the captive screw on each end of the module (Figure 1-5).**

   Figure 1-5 shows the captive screws on an ARE E-3 link module; however, these screws are the same on all link modules.

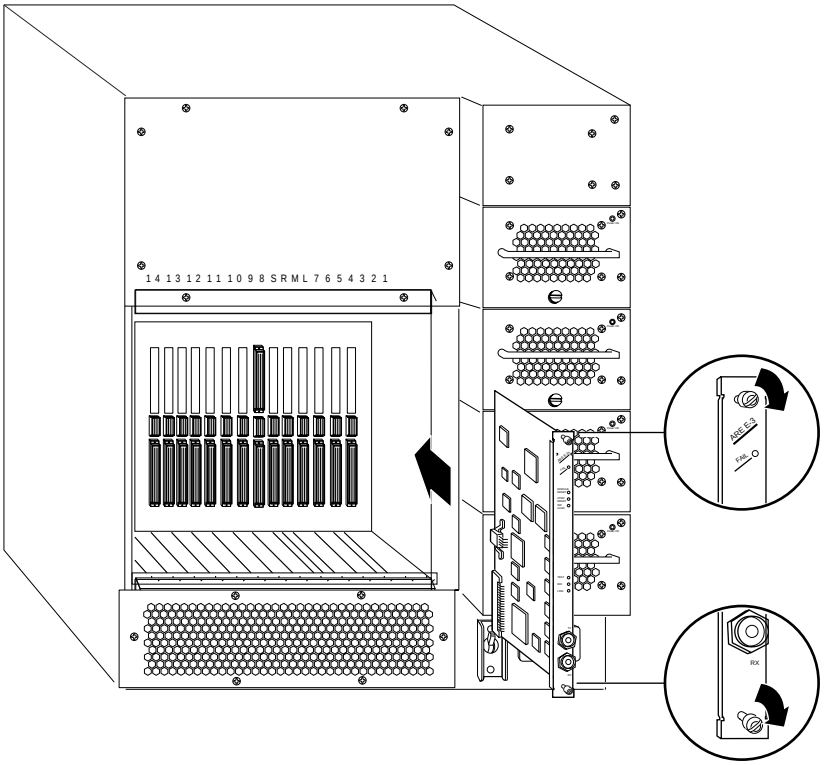


Figure 1-5. Link Module Captive Screws (BCN Example)

4. **Once you are done accessing the interior of the chassis, remove the antistatic wrist strap.**

Chapter 2
Installing ARE Processor Modules

To install an ARE processor module, you must first

1. Remove the front bezel of your BN platform.
2. Remove the electromagnetic compatibility (EMC) shield from the front panel to access the interior.
3. Choose a slot.
4. Remove the board retainer bracket (BLN and BLN-2 only).
5. Remove the air flow module (unless the slot you want to use already contains a processor module).
6. Remove a processor module (unless the slot you want to use is does not already contain a processor module, in which case you must remove the air flow module).
7. Insert the ARE processor module into your BN platform.

Depending on your BN platform, you need a Phillips or flat-head screwdriver to complete the steps in this chapter.

The BN hot-swap feature allows you to remove and replace ARE processor modules with the power on or off.

Danger: *A potential energy hazard exists during hot-swap service of processor modules. Do not remove more than two adjacent modules without powering off the BN platform.*

Removing the Front Bezel

You must remove the BN platform front bezel (front cover) to access the interior.

Note: *Keep the front bezel on during normal operation to comply with air flow requirements.*

To remove the front bezel from the BLN (Figure 2-1) and BLN-2 (Figure 2-2):

1. **Using both hands, pull the bottom of the front bezel forward.**
2. **Remove the bezel from the chassis.**

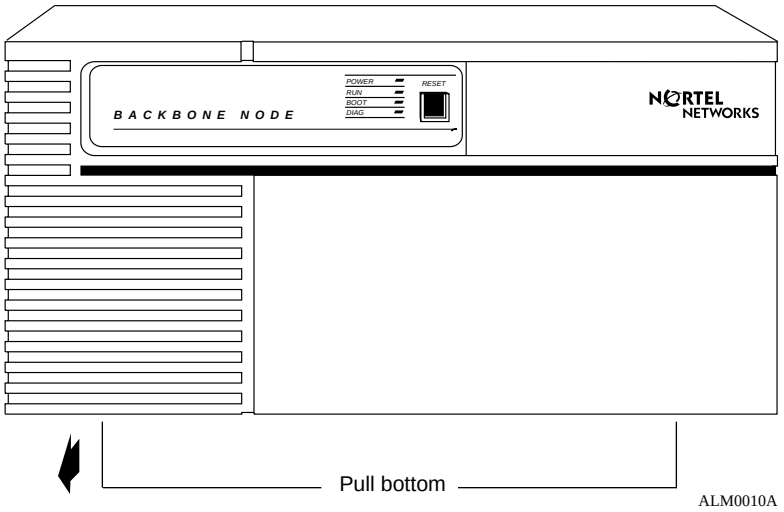


Figure 2-1. Removing the BLN Front Bezel

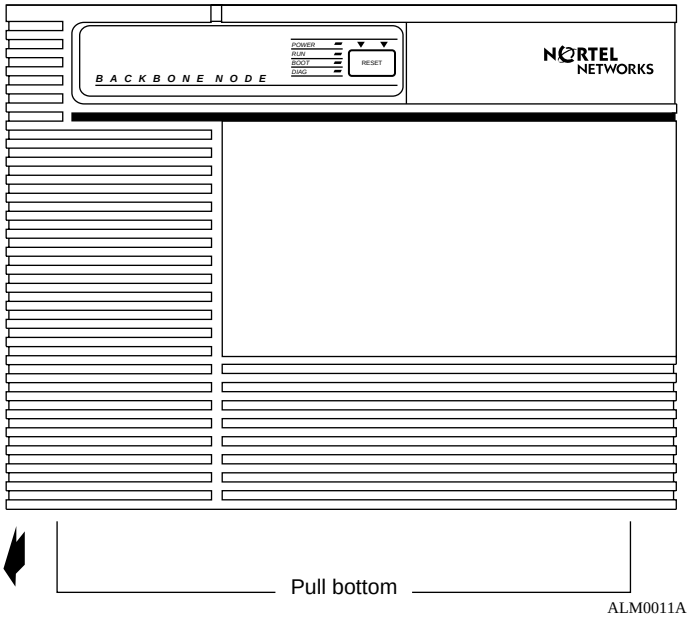


Figure 2-2. Removing the BLN-2 Front Bezel

To remove the front bezel from the BCN (Figure 2-3):

1. **Using both hands, pull the top of the front bezel forward.**
2. **Remove the bezel from the chassis.**

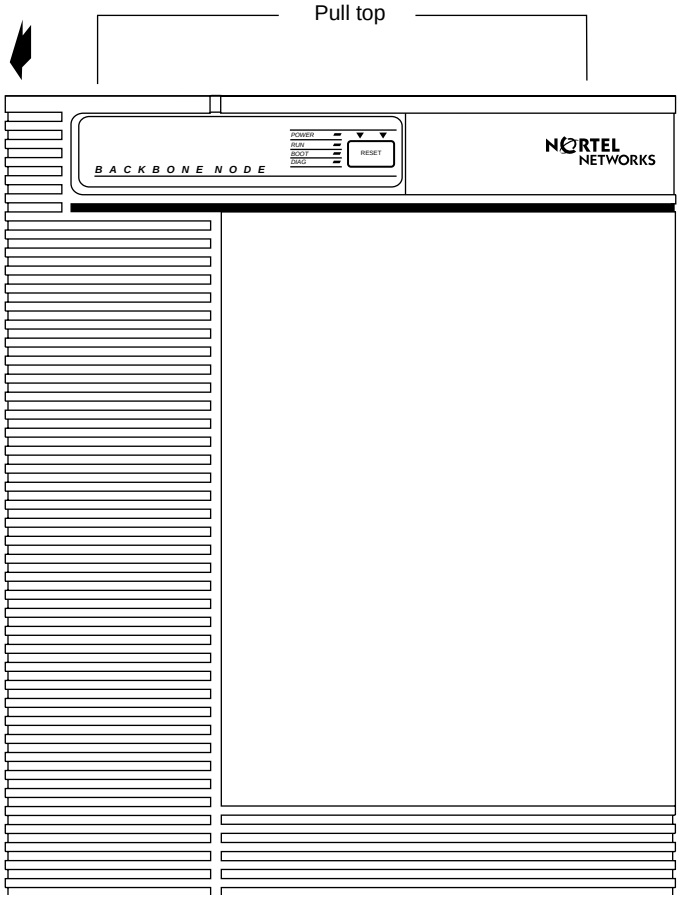


Figure 2-3. Removing the Front Bezel from the BCN

Removing the EMC Shield

You must remove the EMC shield to access the processor modules in BN platforms.

Caution: *Do not operate a BN platform with the EMC shield removed for more than 5 minutes. Without the EMC shield, the BN platform may overheat. In addition, the BCN contains temperature sensors that may not detect an overheating condition without the shield in place.*

To remove the EMC shield (Figure 2-4):

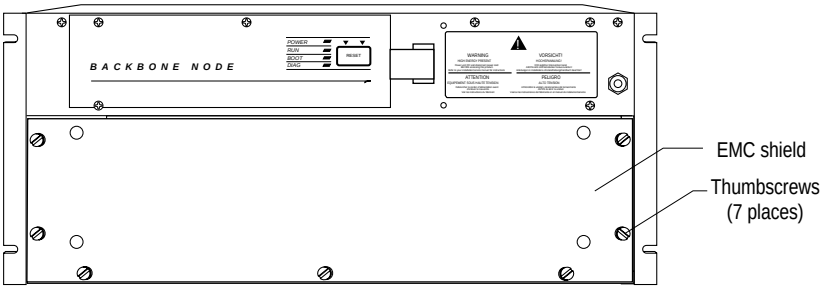
1. **Attach an antistatic wrist strap.**

   BN platforms and link modules ship with an antistatic wrist strap. You must wear one of these straps whenever you access components in a platform.

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

Caution: *Electrostatic discharge can damage hardware. Always use the antistatic wrist strap when handling any component in the BN platform.*

2. **Loosen the captive thumbscrews that fasten the EMC shield to the chassis.**
3. **Remove the EMC shield from the chassis.**



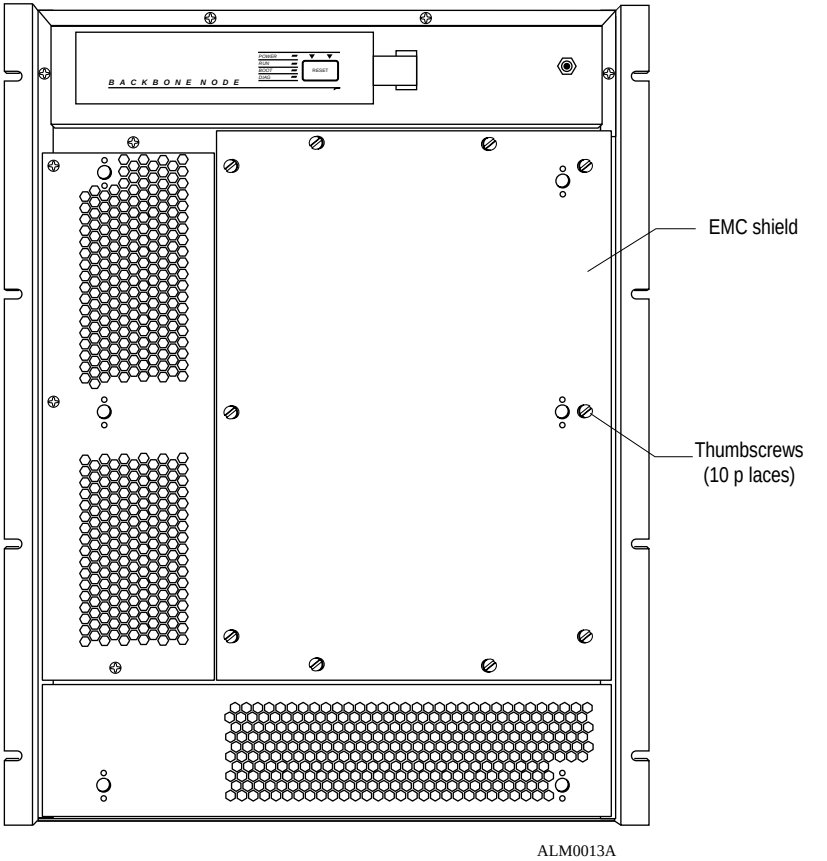


Figure 2-4. BLN and BCN EMC Shields

Choosing a Slot

You can install the ARE processor module in

- Slots 2 through 5 in the BLN platform (Figure 2-5)
- Slots 2 through 5 in the BLN-2 platform (Figure 2-6)
- Slots 1 through 6 and Slots 8 through 14 in the BCN platform (Figure 2-7)

Insert ARE processor modules only in slots opposite ARE link modules.

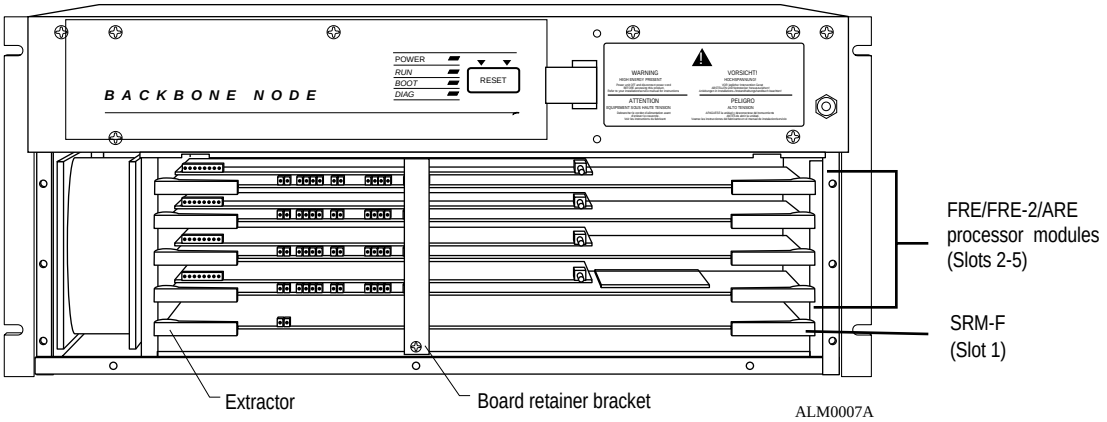


Figure 2-5. Location of Processor Modules and the SRM-F in a BLN Platform

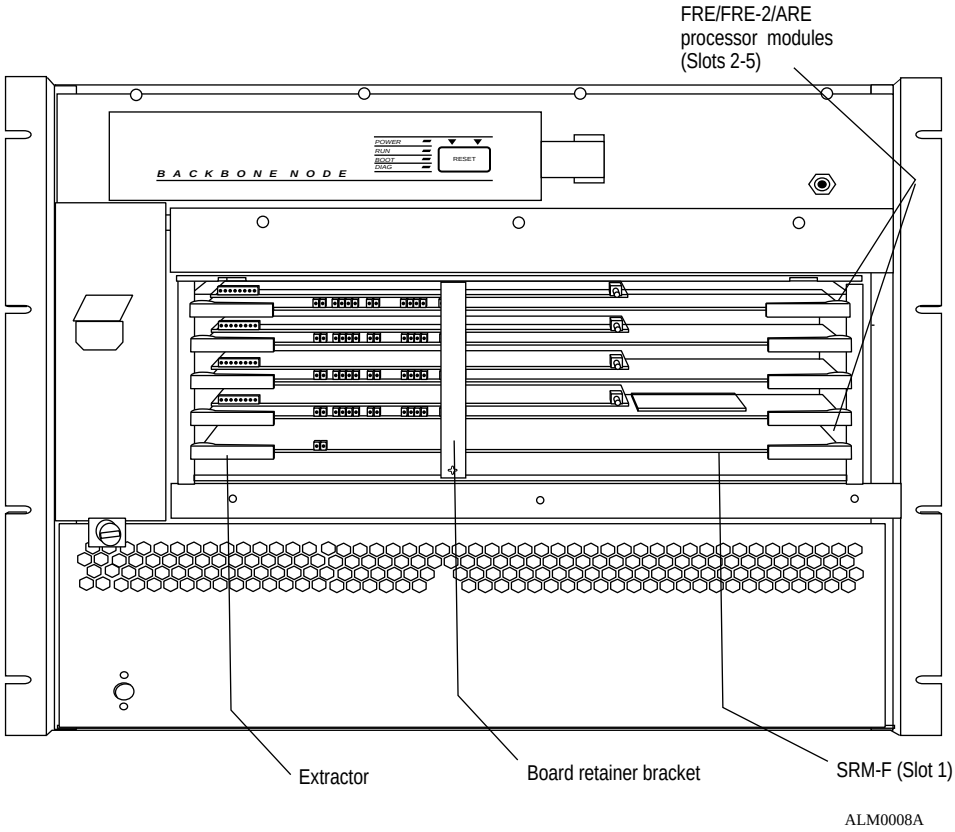


Figure 2-6. Location of Processor Modules and the SRM-F in a BLN-2 Platform

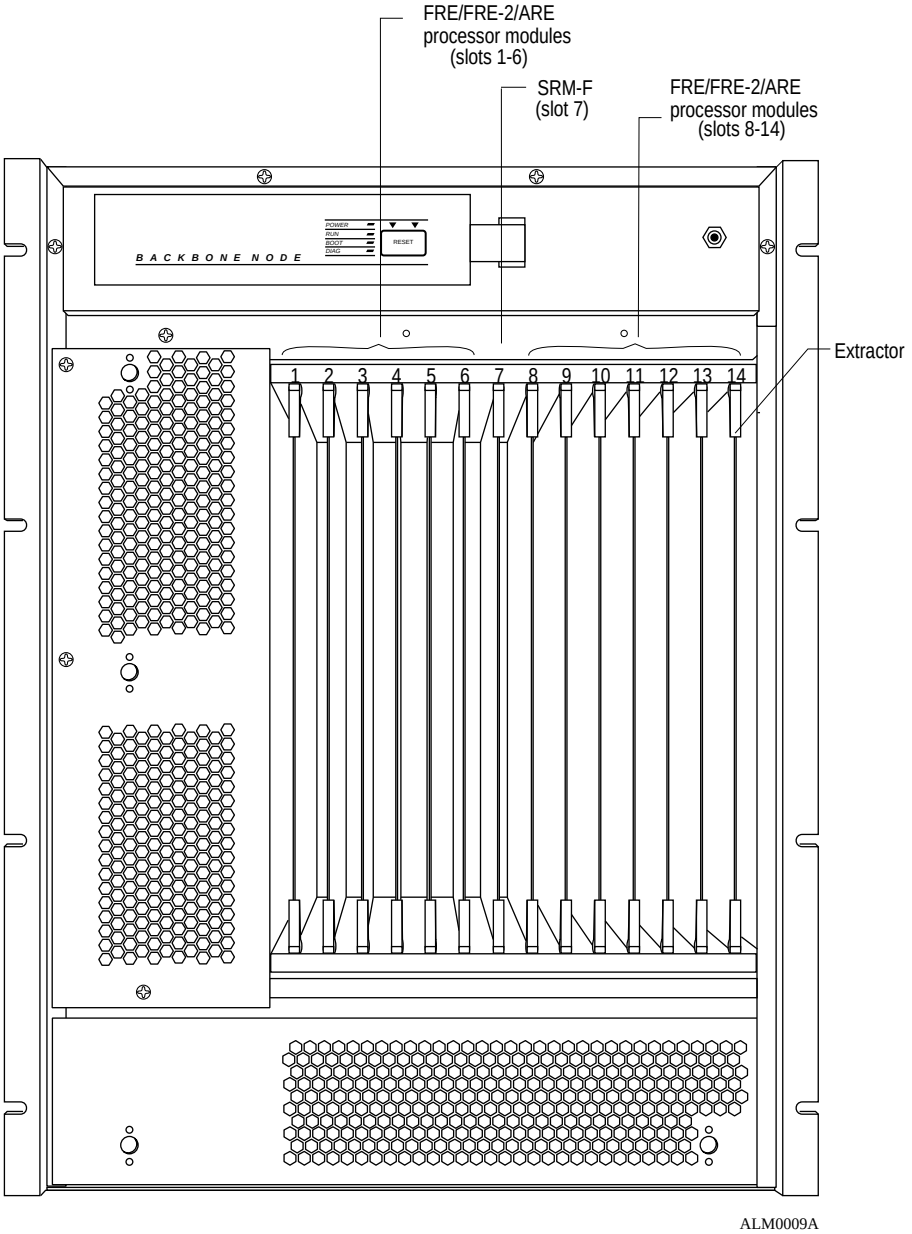


Figure 2-7. Location of Processor Modules and the SRM-F in a BCN Platform

Removing the Board Retainer Bracket (BLN and BLN-2 Only)

If you have a BLN or BLN-2 platform, remove the board retainer bracket shown earlier in Figure 2-5 (BLN) and Figure 2-6 (BLN-2):

1. **Use a screwdriver to remove the screw connecting the board retainer bracket to the chassis.**
2. **Gently pull the bottom of the board retainer bracket to remove it.**

Removing an Air Flow Module

Nortel Networks ships an air flow module in each empty processor module slot in the front of all BN platforms. Each air flow module redirects cool air to the adjacent processor module.

Figure 2-8 shows the location of an air flow module. If the slot in which you want to install the processor module contains an air flow module, you must first remove the air flow module from that slot. If the slot you want to use already contains a processor module, refer to the next section, "Removing a Processor Module."

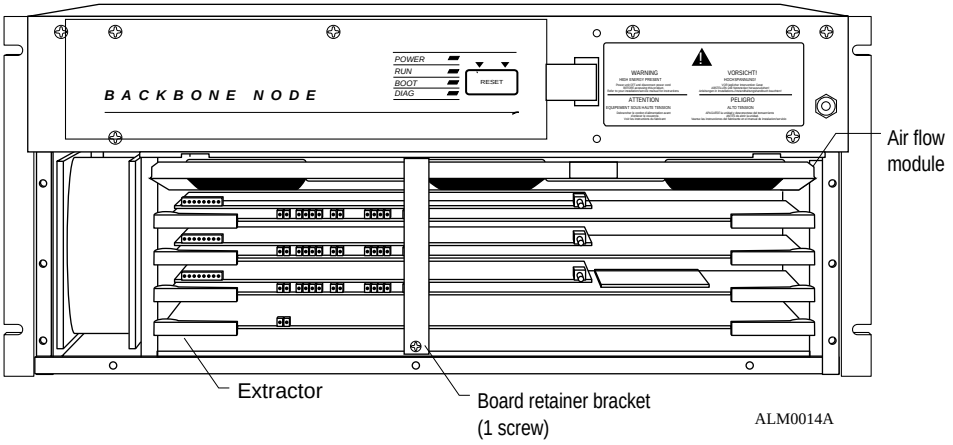


Figure 2-8. Air Flow Module in a BN Platform

Pull the front of the air flow module out to remove it (Figure 2-9.) Then proceed to the section "Inserting the Processor Module."

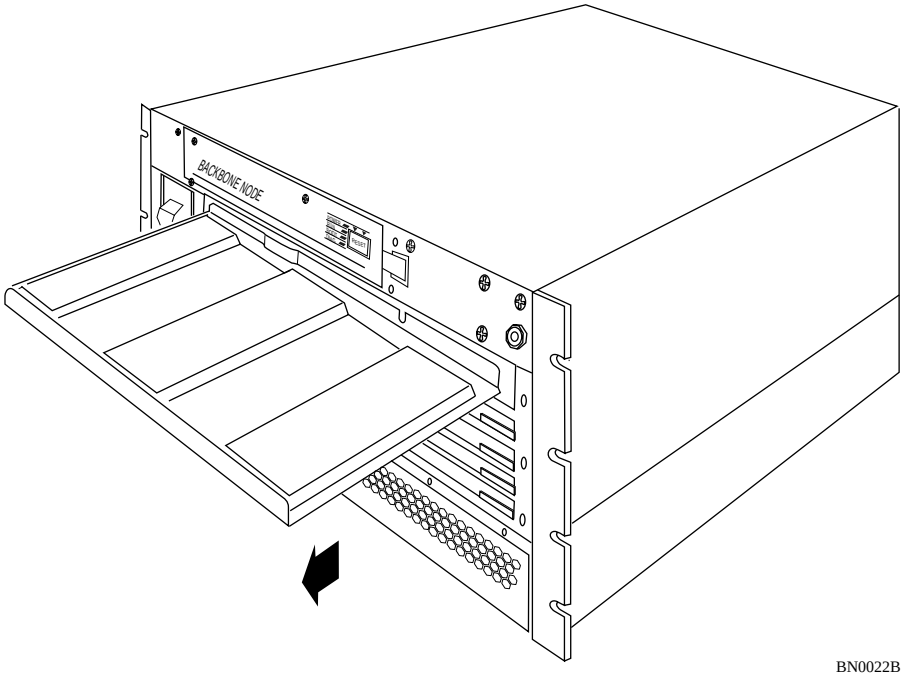


Figure 2-9. Removing an Air Flow Module

Removing a Processor Module

Danger: *A potential energy hazard exists during hot-swap service of processor modules. Do not remove more than two adjacent modules without powering off the BN platform.*

To remove a processor module:

1. **Gently pull the inside of the board extractors at the end of the module toward you (Figure 2-10).**

   The extractors swing open, pushing the module out of the backplane connectors.

2. **Place the processor module in an antistatic protective bag.**

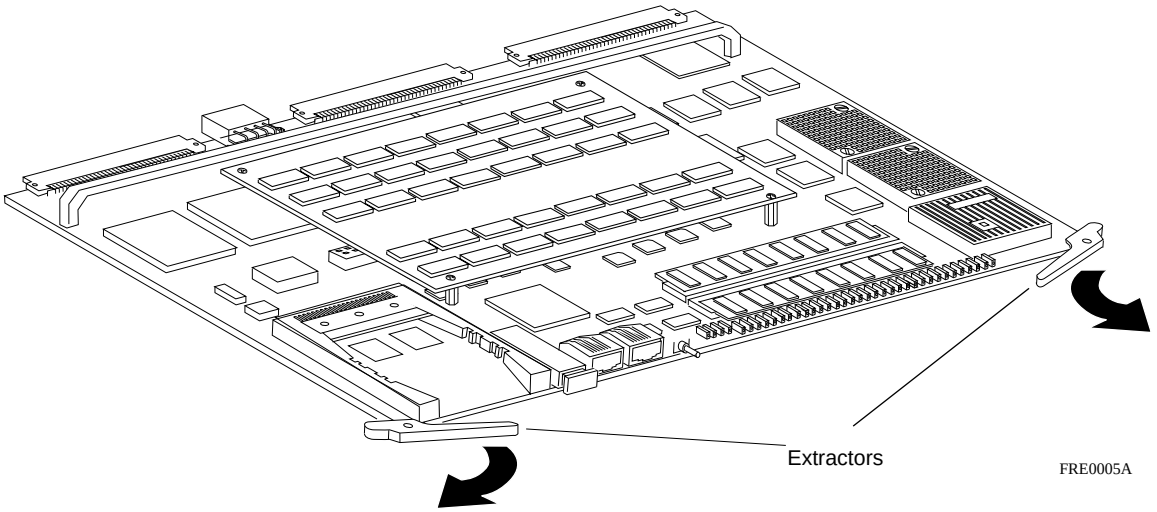


Figure 2-10. Using the Extractors to Remove a Processor Module

Inserting the Processor Module

Insert the ARE processor module as follows:

1. **Holding the board extractors open (refer to Figure 2-10), slide the module into the card guides of the desired slot.**

   When inserting a module into a BLN or BLN-2 platform, lift the middle of the board slightly and push it gently to ensure that the connector in the middle of the board engages.

2. **Swing the board extractors forward to lock the board in place.**

   If the extractors do not lock into place easily, remove the module and repeat Steps 1 and 2.

   When you insert the processor module into a slot, and the module determines that slot power is stable, the module automatically

   — Executes the diagnostics image on its memory card

   — Completes the boot process

3. **Observe the module and front-panel LEDs to determine whether it is functioning properly.**

   Chapter 3 describes the ARE processor module LEDs.

4. **If you just installed the ARE processor module in a BLN or BLN-2 platform, replace the board retainer bracket:**
   a. **Slide the top of the board retainer bracket into its designated ridge and align the bottom of the bracket with the screw hole at the bottom of the chassis (refer to Figure 2-5 or 2-6).**
   b. **Using a screwdriver, secure the bracket to the chassis.**
5. **Replace the EMC shield as follows (refer to Figure 2-4):**
   a. **Position the EMC shield in front of the chassis.**
   b. **Tighten the captive thumbscrews that fasten the EMC shield to the chassis.**
6. **Replace the front bezel as follows:**
   a. **Align the mounting retainers on the inside of the bezel with the holes on the front of the EMC shield.**
   b. **Push the sides of the bezel into place.**

   Refer to Figure 2-1 (BLN), Figure 2-2 (BLN-2), or Figure 2-3 (BCN).

Chapter 3
Checking Status Indicators

Check the LEDs on the ATM link modules or the ARE processor module to verify that a module is operating after installation.

Note: *We recommend that you issue the* **diags** *command to the associated slot, using the Nortel Networks Technician Interface, immediately after you insert a link module. (Refer to Using Technician Interface Software if you use router software or Troubleshooting and Testing if you use BayStream software.) Otherwise, the link module FAIL LED will remain lit, indicating that diagnostics have not run on the Intelligent Link Interface (ILI). However, even if you do not issue the* **diags** *command, the link module initializes and becomes operational as long as the board functions properly and contains the correct interface configurations.*

ARE DS-3, E-3, and SONET/SDH Link Module LEDs

Figure 3-1 shows the LEDs on the ARE E-3 link module. The LEDs are identical on the ARE DS-3 link module.

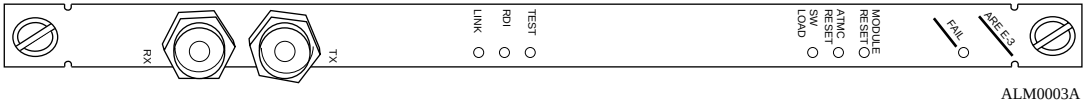


Figure 3-1. ARE E-3 Link Module LEDs

Figure 3-2 shows the LEDs on the ARE SONET/SDH link module. The LEDs are identical on the ARE STS-3/STM-1 SONET/SDH MMF, STS-3/STM-1 SONET/SDH SMF, and OC-3 link modules.

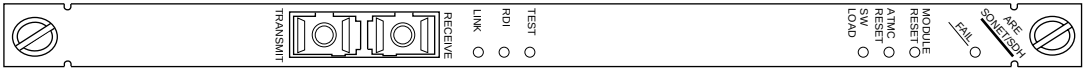


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Figure 3-2. ARE SONET/SDH Link Module LEDs

Table 3-1 describes the LED functions, which are identical for the DS-3, E-3, and SONET/SDH interface link modules.

Table 3-1. Functions of the DS-3, E-3, and SONET/SDH Link Module LEDs

LED	Function
MODULE RESET	Lights when the link module is resetting. During a hardware reset, the link module returns to a known (inactive) state. The exception is the frame, which sources idle cells and maintains SONET framing.
ATMC (ATM Coprocessor) RESET	Lights when the ATM Coprocessor (local microcontroller on the link module) is in reset mode. This occurs during the upload of the driver code from the ARE to link module memory.
SW LOAD	Indicates that the driver code has been successfully loaded into link module memory, and is ready to forward traffic. A blinking SW LOAD LED indicates a software fault.
TEST	Indicates that the port is disabled or looped back.
RDI (Remote Defect Indication)	Lights when the framer receives an indication that the far-end device has detected a receive defect/failure or is unable to achieve frame synchronization. Note that the LED is valid only when the driver software is running (in which case, the SW LOAD LED is on).
LINK	Indicates that SONET frame synchronization has been achieved. If the link module detects a signal, but frame synchronization is not achieved, this LED blinks. If the link module does not detect a signal, the LED remains off. This LED is valid only when the driver software is running (in which case, the SW LOAD LED is on).
FAIL	Lights when the link module fails diagnostics or bypasses diagnostics (as is the case during the hot-swap procedure).

Note that all LEDs light briefly during powerup, reset, and hot-swap of the link module

ARE Processor LEDs

Figure 3-3 shows the ARE processor LEDs, as well as the following:

- Harpoon Diagnostic Console Monitor (HDCM) port and button
- A reserved port
- Memory card ejector

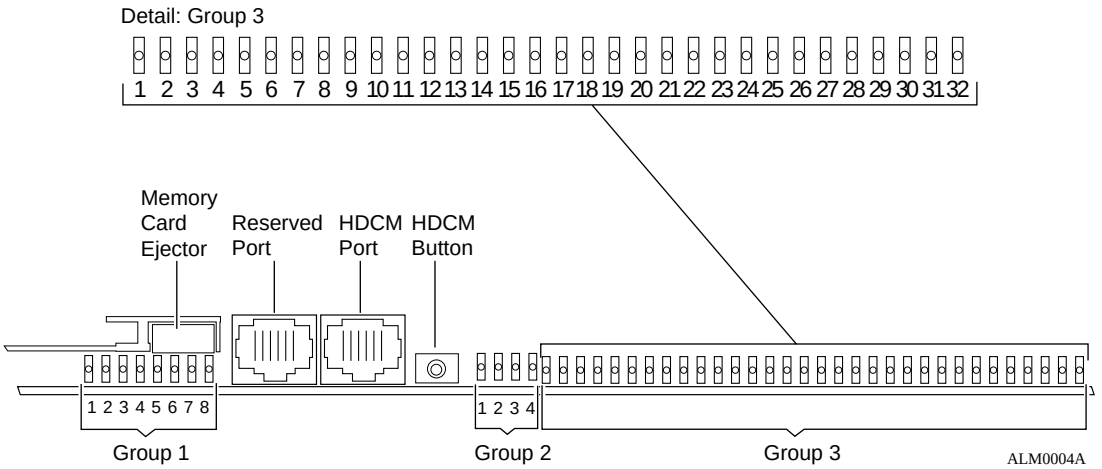

Figure 3-3. ARE Processor LEDs

Table 3-2 describes the ARE processor LEDs.

Table 3-2. ARE Processor LEDs

LED	Description
Group 1	
1 (Green)	The ARE module is transmitting on PPX A.
2 (Green)	The ARE module is transmitting on PPX B.
3 (Green)	The ARE module is transmitting on PPX C.
4 (Green)	The ARE module is transmitting on PPX D.
5 (Green)	The ARE module is flow-controlling on PPX A.
6 (Green)	The ARE module is flow-controlling on PPX B.
7 (Green)	The ARE module is flow-controlling on PPX C.
8 (Green)	The ARE module is flow-controlling on PPX D.
Group 2	
1 (Green)	The backbone is requesting Virtual Buffer Memory (VBM).
2 (Amber)	The backbone is resetting.
3 (Amber)	The Transmit ATMizer is resetting. (The LSI Logic ATMizer chip performs segmentation and reassembly [SAR] of ATM cells. The ARE processor module uses two ATMizer chips, one for transmitting and one for receiving.)
4 (Amber)	The Receive ATMizer is resetting.
Group 3	
1 (Amber)	The link card is resetting.
2 (Green)	Router software is executing.
3 (Red)	Diagnostic code execution is in progress.
4 (Amber)	The ARE processor module is booting.
5 (Amber)	The ARE processor module is resetting.
6 through 13 (Green)	When diagnostics are running, LED 6 is on, and LEDs 7 through 13 indicate the current test in hexadecimal notation. When on, LEDs indicate 1s; when off, LEDs indicate 0s. When the GAME operating system is executing, GAME uses these LEDs to count time.
14 and 15 (Green)	Indicate the diagnostic test that is currently executing (Table 3-3).

(continued)

Table 3-2. ARE Processor LEDs *(continued)*

LED	Description
16 (Amber)	The Technician Interface is running on this slot.
17 through 25 (Green)	Transmit and Receive ATMizers are active. These LEDs indicate bus activity.
26 (Amber)	Motorola Power PC microprocessor memory coherency operations are taking place. Memory coherency operations occur when the two Power PCs share data between their data caches. The Power PCs need to keep the data coherent so that neither one has outdated information.
27 through 31 (Green)	There is activity on the processor bus.
32 (Green)	The ARE processor power is receiving power (3 V).

LEDs 14 and 15 in Group 3 (refer to Figure 3-3) indicate the diagnostic test that is currently executing. Table 3-3 shows the LED patterns for each test.

Table 3-3. ARE Processor Diagnostic Codes

LED 14	LED 15	Diagnostic Test in Progress
OFF	OFF	CPU
ON	OFF	Backbone
OFF	ON	Link Module
ON	ON	ATM

The HDCM button has three functions:

- Cold-starts the ARE processor (when you press it for more than 1 second and release — regardless of the session).
- Establishes an HDCM session (when you press it for less than 1 second and release). The HDCM session is for Nortel Networks Customer Service personnel only.
- Warm-starts the ARE processor (when an HDCM session is running and you press it for less than 1 second and release).