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4401 Great America Parkway  
Santa Clara, CA 95054

# **Installing an Expansion Card in the Passport 5430 Multiservice Access Switch**

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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

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### EN 55 022 Statement

This is to certify that the Nortel Networks Passport 5430 Multiservice Access Switch 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.

**Achtung:** Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

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## Canada Requirements Only

### Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Passport 5430 Multiservice Access Switch) 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 (Passport 5430 Multiservice Access Switch) 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.

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## 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.

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## 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): 6.0Y
    - The required Universal Service Order Code (USOC) jack: RJ48C
  - 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: RJ49C
  - When you request ISDN “S/T” Interface Service, you must provide the telephone company with
    - The Service Order Code(s) (SOC): 6.0P
    - The make, model number, and FCC Registration number of the NT1

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

  - 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): 6.0Y
    - 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	81-3-5402-0180

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

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In this guide the Passport 5430 Multiservice Access Switch is referred to as the Passport 5430.

## Before You Begin

This guide is intended for qualified service personnel who need to install or replace an expansion card in a Passport 5430 Multiservice Access Switch. A qualified service person should have appropriate technical training and experience and be aware of the hazards involved in installing and replacing CRUs.

## Text Conventions

This guide uses the following text conventions:

<i>italic text</i>	Indicates new terms, book titles, and variables in command syntax descriptions.
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## Acronyms

This guide uses the following acronyms:

CRU	customer-replaceable unit
PMC	PCI mezzanine card
PROM	programmable read-only memory

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- The “CD ROMs” section lists available CDs.
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Technical Solutions Center	Telephone Number
Billerica, MA	800-2LANWAN (800-252-6926)
Santa Clara, CA	800-2LANWAN (800-252-6926)
Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-7041



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# Chapter 1

## Passport 5430 Expansion Card Overview

This document supplements *Installing and Operating the Passport 5430 Multiservice Access Switch*. Follow the hardware installing steps in that manual, then refer to this document for information specific to the expansion card.



**Warning:** The expansion card is designed to operate in the Passport 5430 Multiservice Access Switch only. Attempting to use the expansion card in any other product may be hazardous and invalidates the regulatory approval.

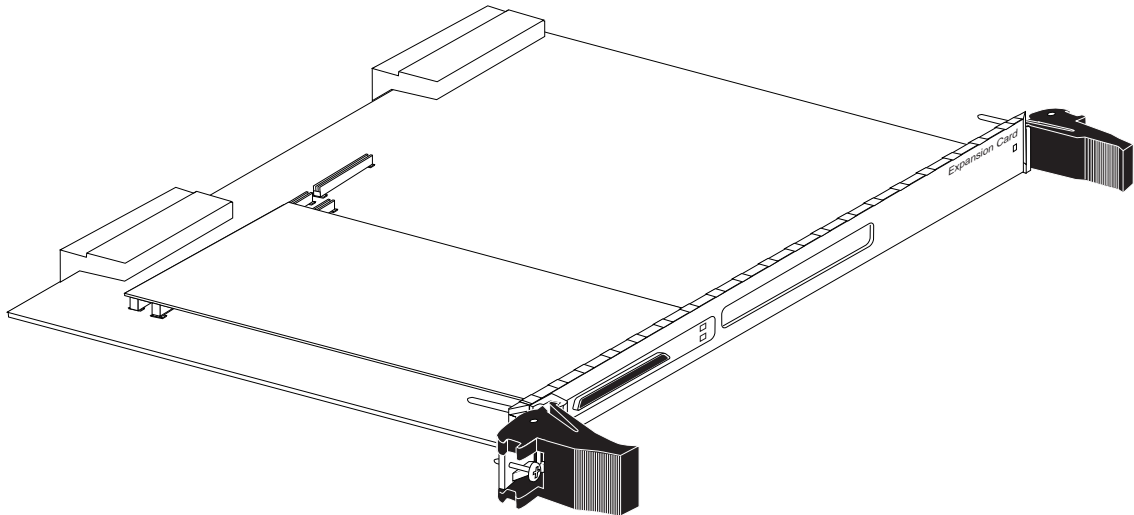
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## Expansion Hardware Description

The Passport 5430 expansion hardware has two types of components:

- An expansion card
- PMC modules

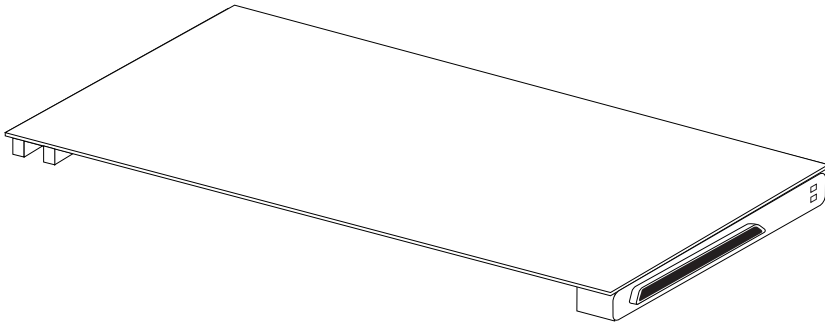
The expansion card ([Figure 1-1](#)) can accommodate two dual synchronous PMC modules. The PMC modules plug into connectors on the expansion card. The expansion card, with PMC module(s) installed, installs into the Passport 5430 chassis.



FBR0010A

**Figure 1-1. Passport 5430 Expansion Card with PMC Module**

A dual synchronous PMC module is shown in [Figure 1-2](#).



FBR0015A

**Figure 1-2. Dual Synchronous PMC Module**

## How to Use This Guide

Refer to [Table 1-1](#), identify the scenario that matches your objective, and follow the associated steps.

**Table 1-1. Installation Tasks and Procedures**

If you need to...	You must...
Install an expansion card	<ol style="list-style-type: none"><li>1. Install PMC modules onto the expansion card. See "Installing a PMC Module Onto an Expansion Card" on page 2-1.</li><li>2. Remove the blank filler panel. See "Removing the Filler Panel" on page 3-4.</li><li>3. Install the expansion card into the Passport 5430 chassis See "Installing an Expansion Card" on page 3-1.</li></ol>
Replace an expansion card	<ol style="list-style-type: none"><li>1. Install PMC modules onto the expansion card. See "Installing a PMC Module Onto an Expansion Card" on page 2-1.</li><li>2. Remove the expansion card. See "Removing an Expansion Card" on page 3-5.</li><li>3. Install the expansion card into the Passport 5430 chassis. See "Installing an Expansion Card" on page 3-1.</li></ol>
Add PMC modules to an installed expansion card	<ol style="list-style-type: none"><li>1. Remove the installed expansion card. See "Removing an Expansion Card" on page 3-5.</li><li>2. Install PMC module onto the expansion card. See "Installing a PMC Module Onto an Expansion Card" on page 2-1.</li><li>3. Install the expansion card into the Passport 5430 chassis. See "Installing an Expansion Card" on page 3-1.</li></ol>

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## Chapter 2

# Installing PMC Modules Onto the Expansion Card

Complete the steps in this chapter to install PMC modules onto the expansion card. Each expansion card can accommodate two PMC modules.



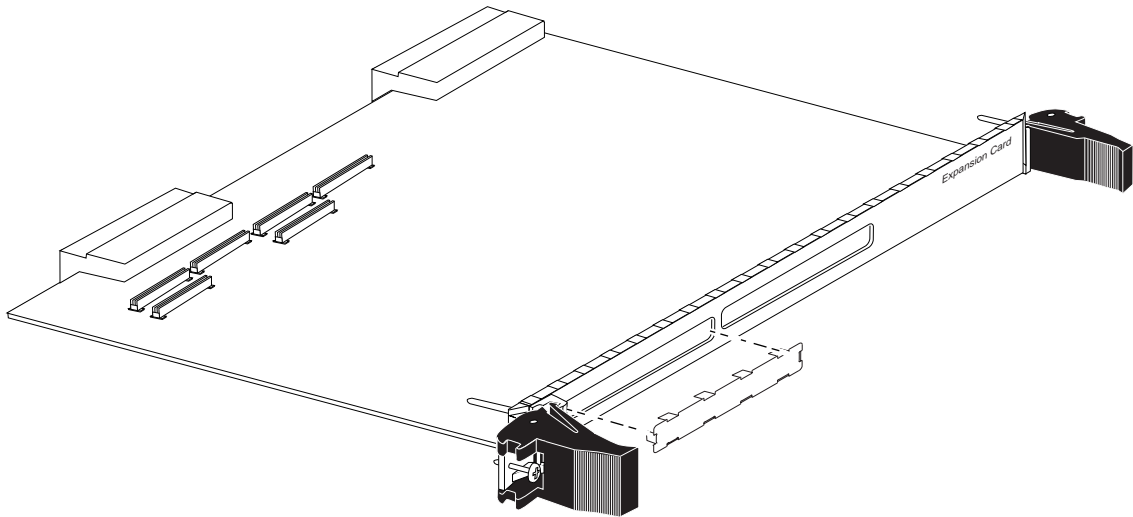
**Caution:** Electrostatic discharge can damage hardware. You must wear the antistatic wrist strap on your arm whenever you handle printed circuit boards. Refer to the instructions enclosed with your antistatic wrist strap to attach it.

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## Installing a PMC Module Onto an Expansion Card

To install a PMC module onto an expansion card:

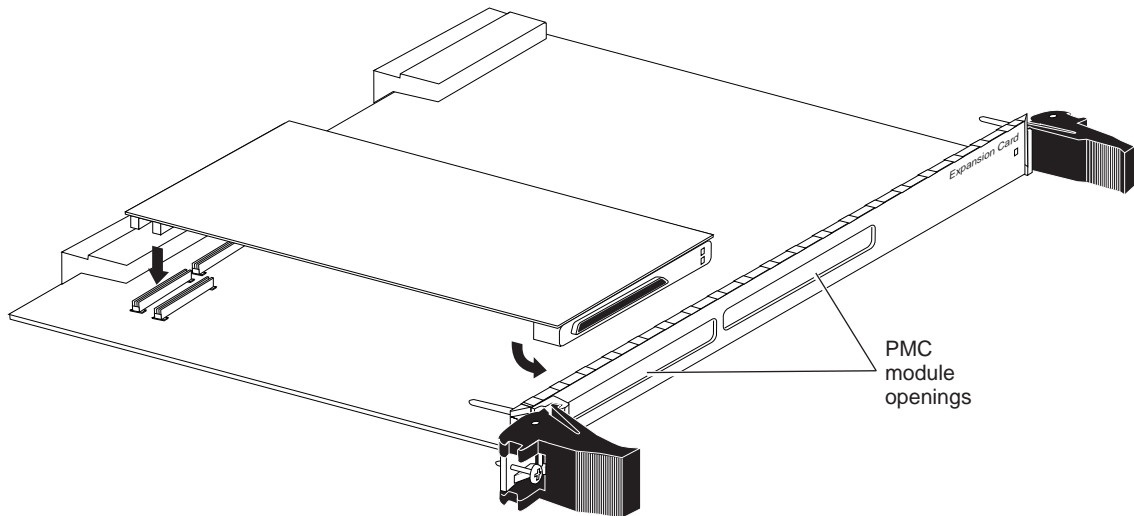
1. **If necessary (first time installation), push the PMC module filler panel out from behind the card bezel ([Figure 2-1](#)).**



FBR0058A

**Figure 2-1. Removing a PMC Module Filler Panel**

2. **Orient the PMC module so that its connectors are aligned with the connectors on the expansion card** [\(Figure 2-2\)](#).



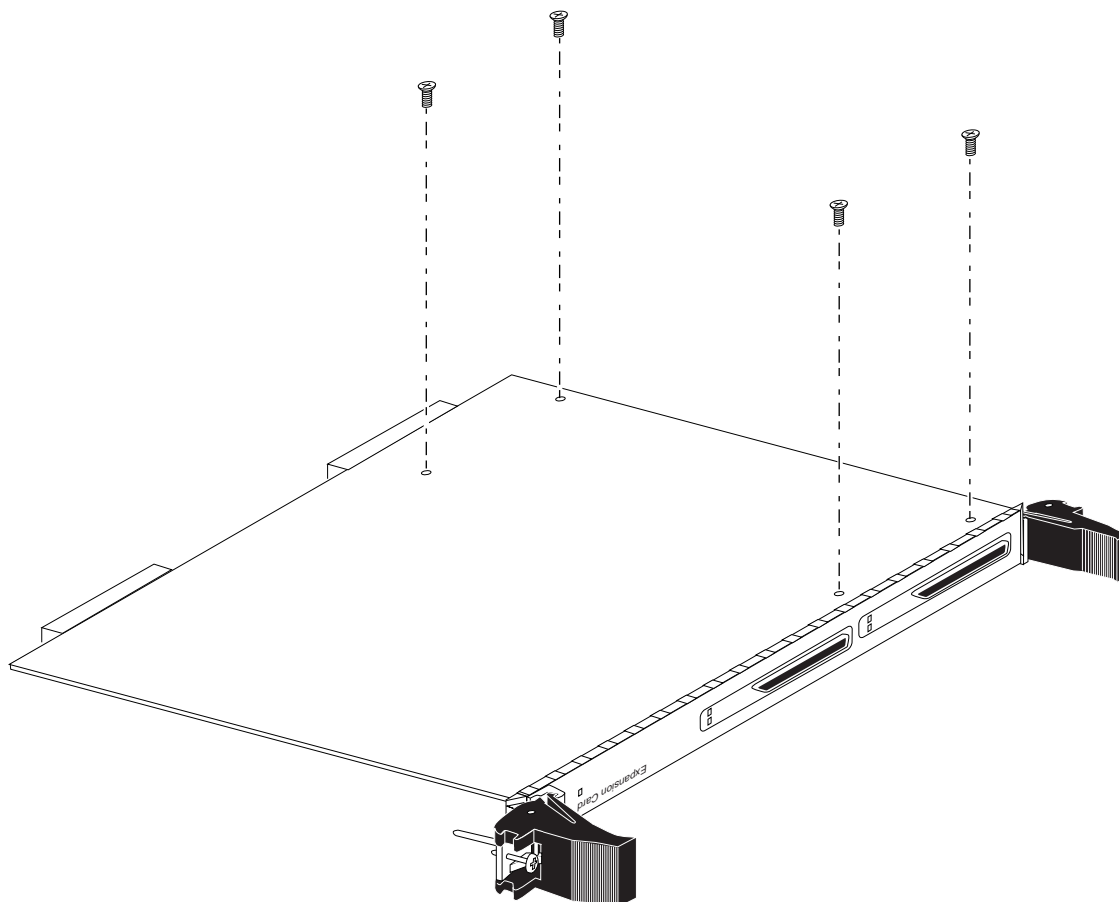
FBR0006A

**Figure 2-2. Installing a PMC Module**

3. **Press the PMC module into the connectors on the expansion card** [\(Figure 2-2\)](#).

Make sure the PMC module is properly seated in the connectors.

4. **Flip the expansion card over (component side down) and secure the PMC module with the four screws provided ([Figure 2-3](#)).**



FBR0007A

**Figure 2-3. Securing the PMC to the Expansion Card**

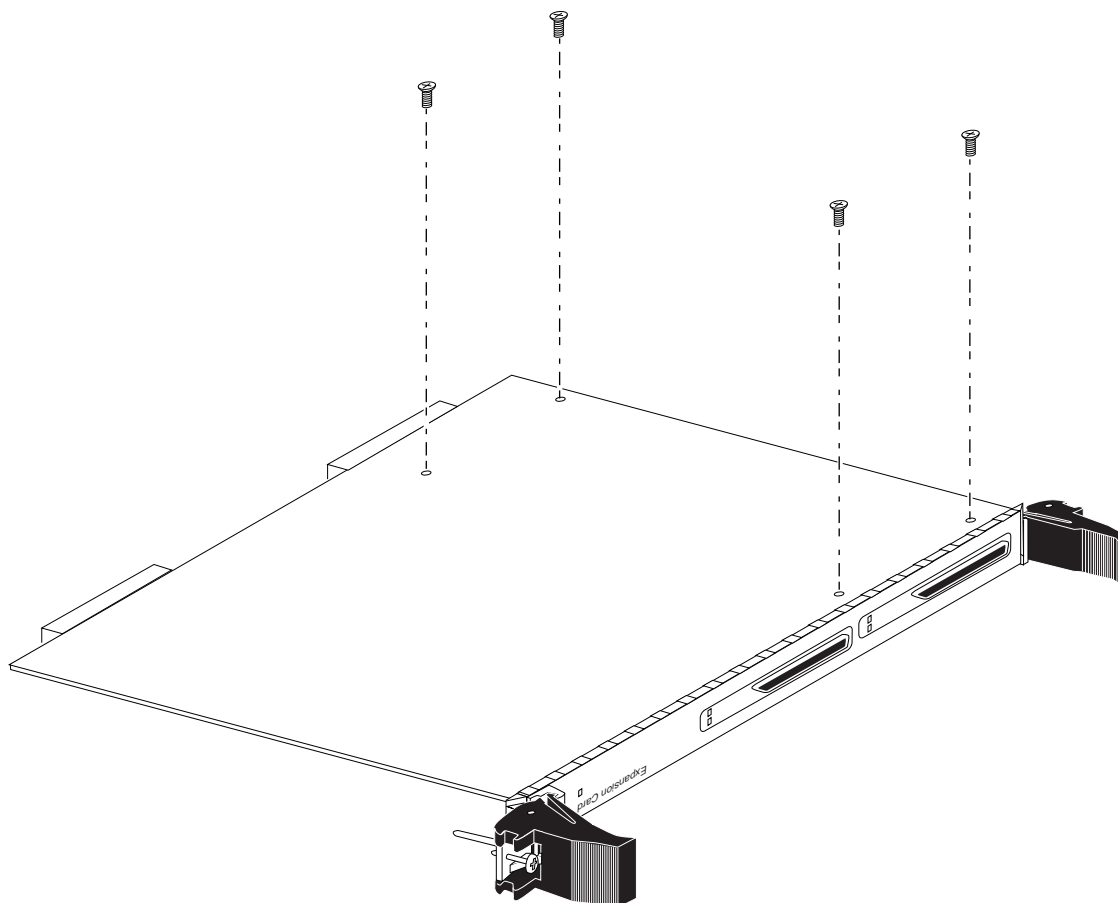
5. **Repeat steps 1 through [4](#) to install another PMC module onto the expansion card.**
6. **Install the expansion card into the Passport 5430 chassis.**  
For instructions, see “Installing an Expansion Card” on page 3-1.



## Removing and Replacing a PMC Module

Occasionally it may be necessary to remove or replace a PMC module on the expansion card. To remove and replace a PMC module on an expansion card:

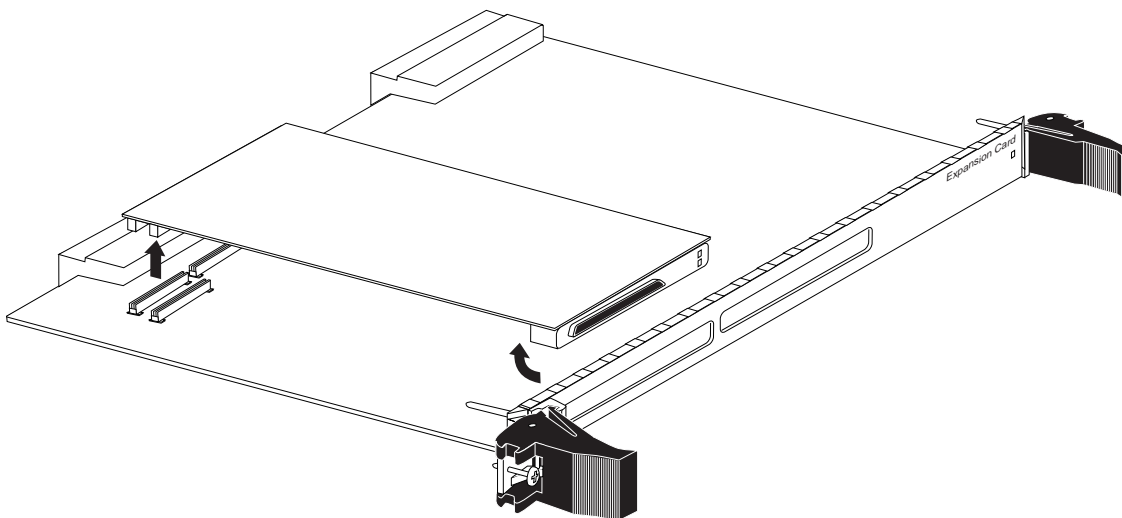
1. Follow the instructions in “Removing an Expansion Card” on page 3-5 to remove the expansion card from the Passport 5430 chassis.
2. Locate the installed PMC module you wish to remove or replace.
3. Flip the expansion card over (component side down) and remove the four screws securing the PMC module ([Figure 2-4](#)).



FBR0007A

**Figure 2-4. Removing the PMC Module Screws**

4. Flip the expansion card over again (component side up) and remove the PMC module by pulling it straight up and out of the expansion card sockets ([Figure 2-5](#)).



FBR0112A

**Figure 2-5. Removing a PMC Module**

5. If required, follow the instructions in [“Installing a PMC Module Onto an Expansion Card”](#) on [page 2-1](#) to install a replacement PMC module.

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# Chapter 3

## Installing Expansion Cards

This chapter describes how to install and remove expansion cards.

### Installing an Expansion Card

To install an expansion card:

1. **Turn off the Passport 5430.**
2. **If a redundant power supply is installed, turn it off.**
3. **Put on an antistatic wrist strap.**



**Caution:** Electrostatic discharge can damage hardware. You must wear the antistatic wrist strap on your arm whenever you handle printed circuit boards.

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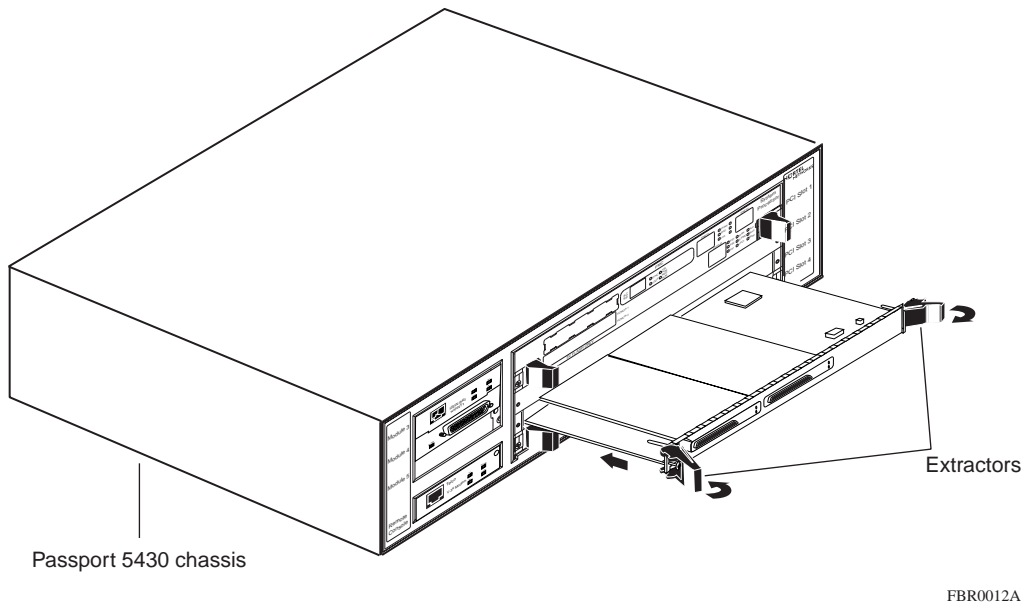
4. **Install one or two PMC modules onto the expansion card.**

For instructions, see “Installing a PMC Module Onto an Expansion Card” on page 2-1.

5. **If necessary (first time installation) remove the blank filler panel covering the slot on the Passport 5430 chassis.**

For instructions, see [“Removing the Filler Panel”](#) on [page 3-4](#).

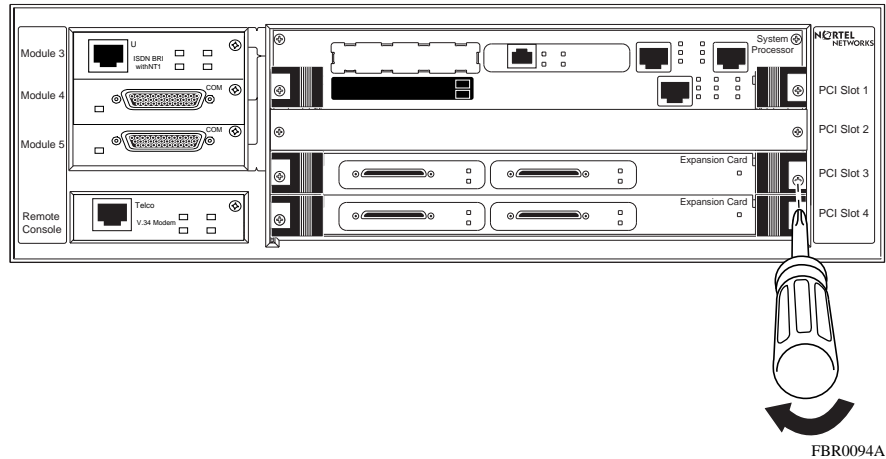
6. **Hold the expansion card with the components facing up.**
7. **Slide the expansion card into the slot, making sure that the slot guides engage both sides of the expansion card ([Figure 3-1](#))**



**Figure 3-1. Inserting the Expansion Card**

8. **Push the expansion card in until it stops.**
9. **Push the extractors inwards to lock the card in place ([Figure 3-1](#)).**

10. Tighten the two captive screws to secure the card in the chassis  
([Figure 3-2](#))



**Figure 3-2. Tightening the Extractor Screws**

11. Connect the cabling to the new interface.

For cabling information, see the applicable module-specific *Supplement*.

12. Turn power on.

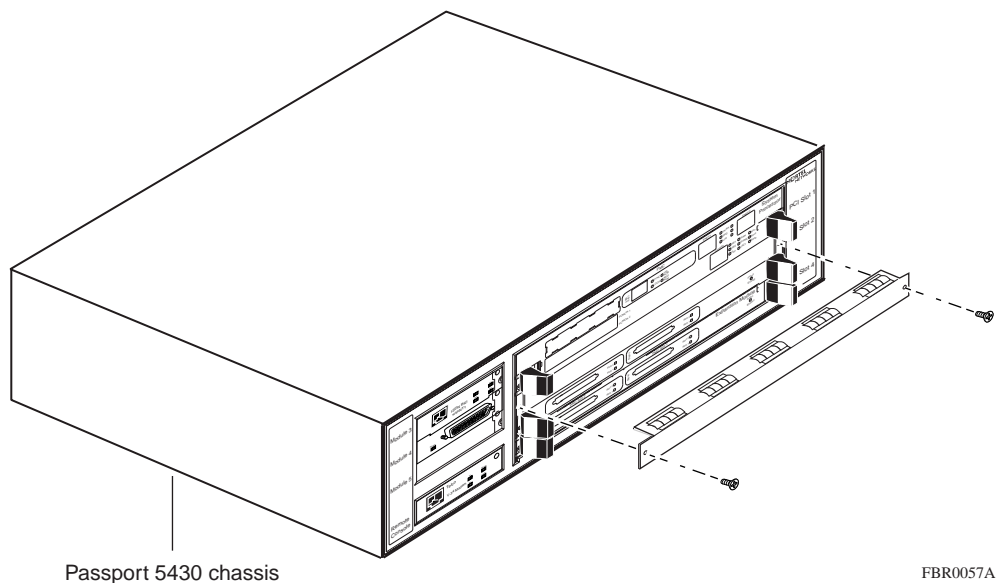
13. Modify the Passport 5430 configuration file to include the new expansion card.

See *Configuring and Managing Routers with Site Manager* or *Using the Bay Command Console (BCC™)*.

## Removing the Filler Panel

To remove the filler panel:

1. Using a Phillips screwdriver, remove the two screws that fasten the filler panel to the slot ([Figure 3-3](#)).



**Figure 3-3. Removing the Filler Panel**

2. Grasp the metal tabs on the filler panel and pull forward to remove the panel.
3. Set the filler panel aside.

## Removing an Expansion Card

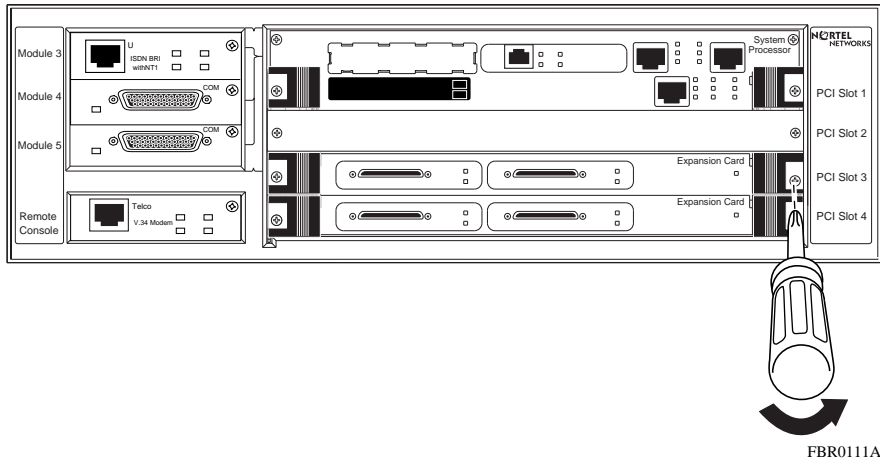
Occasionally it may be necessary to remove an expansion card. To remove an expansion card:

1. **Turn off the Passport 5430.**
2. **If present, turn off the redundant power supply.**
3. **Attach an antistatic wrist strap.**



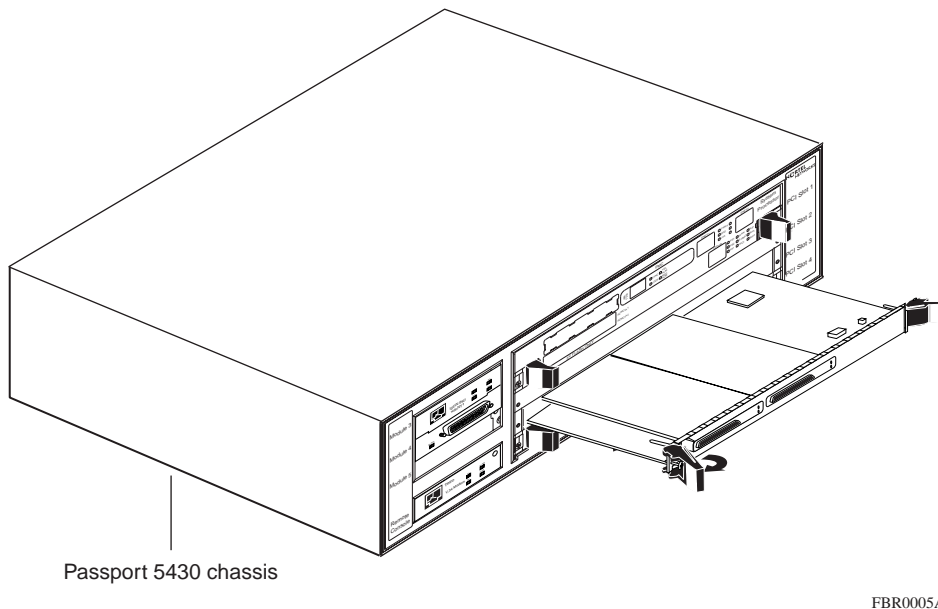
**Caution:** Electrostatic discharge can damage hardware. You must wear the antistatic wrist strap on your arm whenever you handle printed circuit boards.

4. **Disconnect any cables attached to the ports on the expansion card.**
5. **Using a Phillips screwdriver, loosen the 2 captive screws that fasten the expansion card to the chassis ([Figure 3-4](#)).**



**Figure 3-4. Loosening the Extractor Screws**

6. Gently push the inside of the board extractors at each end of the expansion card away from you ([Figure 3-5](#)).



**Figure 3-5. Removing the Expansion Card**

7. Pull the expansion card toward you to detach it from the card connector in the Passport 5430 chassis.  
Be prepared to apply some force, but stop pulling as soon as the expansion card is free from the expansion card connector.
8. Slide the expansion card all the way out of the slot.