8270 Models 600 and 800

Installation and Service Guide

Note

Before using this information and the product it supports, be sure to read the general information in Appendix B, “Notices and Product Warranty” and “Electronic Emission Notices” on page B-1.

1st Edition (July 1998)

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Safety Information

 **Danger:** Before you begin to install this product, read the safety information in *Caution: Safety Information—Read This First*, SD21-0030. This booklet describes safe procedures for cabling and plugging in electrical equipment.

 **Danger:** No user serviceable parts inside product. Refer service to qualified personnel.

 **Varning — livsfara:** Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dokumentet *Varning: Säkerhetsföreskrifter— Läs detta först,* SD21-0030. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

 **VARNING:** Service ska endast utföras av utbildad servicepersonal.

 **Fare:** Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Advarsel: Sikkerhetsinformasjon — Les dette først*, SD21-0030 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

 **Fare:** Inneholder ingen deler som kan repareres av brukeren. Overlat service til kvalifisert personell.

 **Fare!** Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *NB: Sikkerhedsforskrifter—Læs dette først* SD21-0030. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

 **Fare!** Indvendigt eftersyn af dette produkt må kun foretages af servicepersonale.

 **Gevaar:** Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *PAS OP! Veiligheidsinstructies—Lees dit eerst,* SD21-0030. Hierin wordt beschreven hoe u electrische apparatuur op een veilige manier moet bekabelen en aansluiten.

 **GEVAAR:** Dit produkt bevat geen onderdelen die door de gebruiker kunnen worden hersteld. Voor herstellingen moet u een beroep doen op gespecialiseerd onderhoudspersoneel.

Gevaar: Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *Caution: Safety Information - Read This First*, SD21-0030. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische appratuur.

GEVAAR: In dit product bevinden zich geen onderdelen die door de gebruiker kunnen worden onderhouden. Laat onderhoud over aan bevoegd personeel.

Vorsicht: Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Achtung: Sicherheitsinformationen—Bitte zuerst lesen,* IBM Form SD21-0030. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschließen elektrischer Geräte.

Vorsicht: Keine vom Benutzer zu wartenden Teile vorhanden. Instandhaltungsarbeiten dürfen nur von Fachpersonal durchgeführt werden.

危険： 導入作業を開始する前に、安全に関する
小冊子SD21-0030 の「最初にお読みください」
(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の
手順について説明しています。

危険

製品内部にはユーザーが保守できる部品はありません。
保守については訓練されたサービス技術員に問い合せて
ください。

Danger : Avant d'installer le présent produit, consultez le livret *Attention : Informations pour la sécurité — Lisez-moi d'abord*, SD21-0030, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

Danger: Le produit ne contient pas de pièces réparables par l'utilisateur. Adressez-vous à du personnel qualifié pour les réparations.

Danger: Avant de procéder à l'installation de ce produit, lisez d'abord les consignes de sécurité dans la brochure *ATTENTION: Consignes de sécurité—A lire au préalable,* SD21-0030. Cette brochure décrit les procédures pour câbler et connecter les appareils électriques en toute sécurité.

 **Danger:** Ce produit ne contient pas d'éléments susceptibles d'être entretenus par l'utilisateur. Faites appel à un technicien qualifié.

 **Pericolo:** prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Attenzione: Informazioni di sicurezza — Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

 **Pericolo:** Questo prodotto non contiene parti sostituibili dall'utente. Se occorre, richiedere assistenza tecnica a personale specializzato.

 **Perigo:** Antes de iniciar a instalação deste produto, leia as informações de segurança *Cuidado: Informações de Segurança — Leia Primeiro*, SD21-0030. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

 **Perigo:** Nenhum dos componentes internos pode ser reparado pelo cliente. Para qualquer reparação, chame sempre um técnico especializado.

 **Peligro:** Antes de empezar a instalar este producto, lea la información de seguridad en *Atención: Información de Seguridad — Lea Esto Primero,* SD21-0030. Este documento describe los procedimientos de seguridad para cablear y enchufar equipos eléctricos.

 **Peligro:** Dentro del producto no hay piezas a las que el usuario pueda prestar servicio técnico. Ceda el servicio a personal cualificado.

 **Perigo:** Antes de começar a instalar este produto, leia as informações de segurança contidas em *Cuidado: Informações Sobre Segurança—Leia Isto Primeiro,* SD21-0030. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

 **Perigo:** Dentro deste produto não existem peças que possam ser manuseadas por parte do usuário. Qualquer serviço dentro deste produto deverá ser executado por pessoa autorizada e qualificada.

 **VAARA:** Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Varoitus: Turvaohjeet—Lue tämä ensin*, SD21-0030, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

 **VAARA:** Tuotteessa ei ole käyttäjän huollettavaksi tarkoitettuja osia. Tuotteen saa huoltaa vain ammattitaitoinen huoltoedustaja.

위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
(SD21-0030-02)에 있는 안전 정보를
읽으십시오.

위 험

사용자가 제품의 내부를 절대 수리하지 마십시오.
면허를 소지한 기술자에게 서비스를 의뢰 하십시오.

危險：安裝本產品之前， 請先閱讀
"Caution: Safety Information--Read
This First" SD21-0030 手冊中所提
供的安全注意事項。 這本手冊將會說明
使用電器設備的纜線及電源的安全程序。

危险：
在产品内，没有用户可检修的部件。请把检修交给合资格的人员。

Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
"Caution: Safety Information - Read This First", SD21-0030.
Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej
i eksploatacji.

NIEBEZPIECZEŃSTWO:
Nie otwierać.
Serwis wyłącznie przez wykwalifikowany personel.

Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si nejprve bezpečnostní informace v pokynech „Bezpečnostní informace“ č. 21-0030. Tato brožurka popisuje bezpečnostní opatření pro kabeláž a zapojení elektrického zařízení.

NEBEZPEČÍ:
Uvnitř výrobku nejsou žádné díly určené k opravě uživatelem.
Opravu svěřte kvalifikované osobě.

Vigyázat: Mielôtt megkezdi a berendezés üzembe helyezését, olvassa el a *Caution: Safety Information— Read This First,* SD21-0030 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

Magyarország

VIGYÁZAT, VESZÉLY.

A termék a felhasználó által nem szervizelhető. Szervizigényével forduljon szakemberhez.

Pozor: Preden zaènete z instalacijo tega produkta preberite poglavje: 'Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," SD21-0030. To poglavje opisuje pravilne postopke za kabliranje,

OPOZORILO: Proizvod ne vsebuje delov, katere sme servisirati uporabnik. Servis zaupajte kvalificiranemu osebju.

ОСТОРОЖНО: Прежде чем инсталлировать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочесть в первую очередь", SD21-0030. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

ОПАСНО:
Внутри устройства нет никаких деталей, подлежащих обслуживанию или регулировке пользователем. Обслуживание производится только квалифицированным специалистом.

Opasnost: Prije nego sto pčcnete sa instalacijom produkta,
pročitajte naputak o pravilima o sigurnom rukovanju u
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo,
SD21-0030. Ovaj privitak opisuje sigurnosne postupke za
priključrivanje kabela i priključivanje na električno napajanje.

Opasnost: Ne sadrži dijelove popravljive od strane korisnika.
Održavanje prepustiti ovlaštenom osoblju.

Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte
bezpečnosté predpisy v
Výstraha: Bezpeč osté predpisy - Prečítaj ako prvé,
SD21 0030. V tejto brožúrke sú opísané bezpečnosté
postupy pre pripojenie elektrických zariadení.

Nebezpeèenstvo:
Nedotýkajte sa vnútorných èastí
zariadenia. Kontaktujte kvalifikované
osoby v servise.

ОПАСНОСТ
Пред да почнете да го инсталирате овој продукт, прочитајте
ја информацијата за безбедност:
"Предупредување: Информација за безбедност: Прочитајте го
прво ова", SD21-0030.
Оваа брошура опишува безбедносни процедури за каблирање
и вклучување на електрична опрема.

ОПАСНОСТ

Во производот нема делови кои може да се сервисираат од корисникот.
Препуштете го сервисирањето на квалификувани лица.

Κίνδυνος: Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος, διαβάστε τις πληροφορίες ασφάλειας στο φυλλάδιο *Caution: Safety Information-Read this first,* SD21-0030. Στο φυλλάδιο αυτό περιγράφονται οι ασφαλείς διαδικασίες για την καλωδίωση των ηλεκτρικών συσκευών και τη σύνδεσή τους στην πρίζα.

危險：

開始安裝此產品之前，請先閱讀安全資訊。

注意：

請先閱讀 - 安全資訊 SD21-0030

此冊子說明插接電器設備之電纜線的安全程序。

危險：

在產品內無適合使用者自行處理的零件，請洽專業人替您服務。

About This Manual

This manual explains how to install and service the IBM 8270 Nways Token-Ring LAN Switch Models 600 and 800 (hereafter referred to as *8270-600* and *8270-800*). 8270 refers to both 8270-600 and 8270-800.

The 8270 comes preconfigured for Plug and Play capability. You might not have to configure the switch for it to operate in your network. However, should you choose to change default settings, refer to *Planning, Configuration, and Operation*, which is on the 8270 Switch User's Guide CD-ROM.

How This Manual Is Organized

- Chapter 1, “Physical Characteristics and Features” describes the 8270. It also provides a brief functional overview.
- Chapter 2, “Installation” describes installation and cabling procedures.
- Chapter 3, “Setting up a Console Session” describes how to set up a local or remote console.
- Chapter 4, “Updating Software” describes procedures for downloading new code.
- Chapter 5, “Troubleshooting and Service” provides troubleshooting procedures and how to get help from IBM.
- Chapter 6, “Service Procedures for Qualified Personnel” describes the parts that can be replaced by qualified service personnel and step-by-step procedures for replacing these parts.
- Appendix A, “Cable and Pin Information” provides detailed information about cables that can be used with the 8270.
- Appendix B, “Notices and Product Warranty” describes product notices and provides warranty information.

Prerequisite Publication

Caution: Safety Information—Read This First, SD21-0030.

Related Publications

- *Token-Ring Network, Introduction and Planning Guide*, GA27-3677
- *IBM 8270 Publication CD-ROM*— SK2T-0434-00.

Chapter 1. Physical Characteristics and Features

The IBM 8270 Nways Token-Ring LAN Switch is a member of and fully compatible with the 8270 family of LAN switches, which includes the 8272 Nways Token-Ring LAN Switch, Models 108 and 216, and the 8272 LAN Switch Modules, Feature Codes 5208, 5308, 6208 and 6308, for the IBM 8260 Nways Multiprotocol Switching Hub and 8265 Nways ATM Switch.

The 8270 provides high-speed forwarding of Token-Ring frames among the shared or dedicated Token-Ring segments attached to each of the 8270 ports. The 8270 creates multiple, concurrent paths among the connected segments, each supporting the full, 16-Mbps Token-Ring bandwidth. The 8270 also supports ATM uplink connections.

The 8270 forwards Token-Ring frames among multiple, shared or dedicated, Token-Ring LAN segments. Using a frame-forwarding technique similar to that of a multiport, Token-Ring transparent bridge, the 8270 uses both Token-Ring MAC addresses and source-route descriptors to forward Token-Ring frames from one of its ports to another.

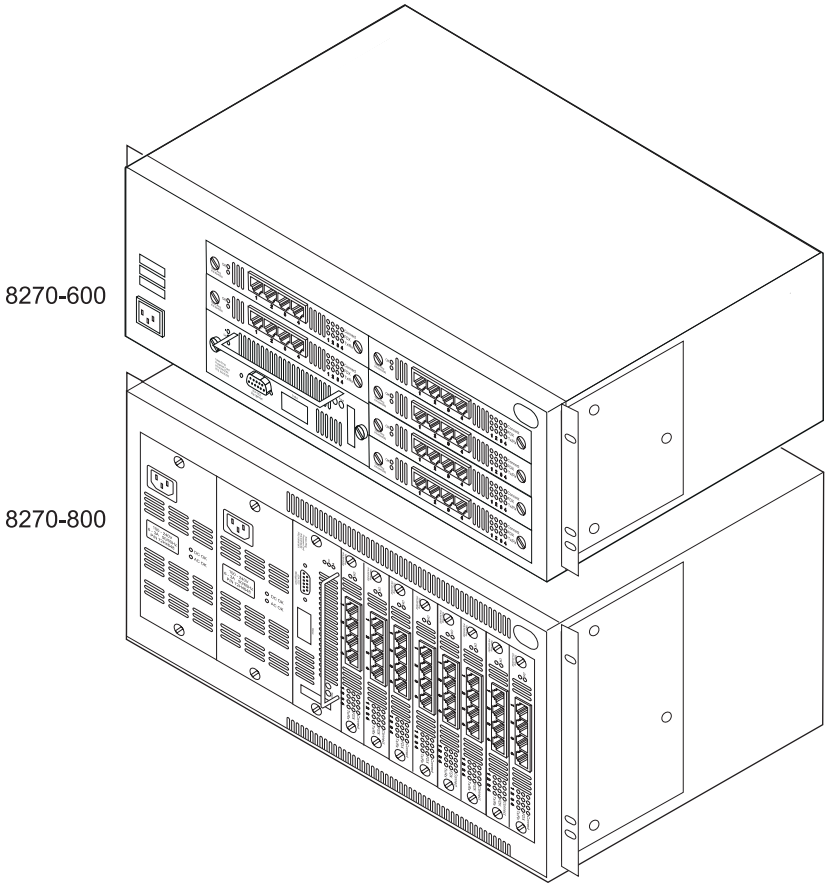


Figure 1-1. The IBM 8270 Nways Token-Ring LAN Switch Model 800 and 600

The 8270 is a rack- or surface-mount chassis that provides slots for one Token-Ring Processor Card and up to six (for the 8270-600) or eight (for the

8270-800) Universal Feature Cards (UFCs). In addition to supporting more UFCs, the 8270-800 can have redundant, load-sharing power supplies and redundant cooling fans. The 8270 can connect to Token-Ring and ATM networks. All LAN ports on the 8270 are provided by UFCs. At least one UFC must be installed in order to have a functional unit. The following UFCs can be installed in the 8270:

- 4-Port Token-Ring/Enhanced UTP/STP UFC
- 2-Port Token-Ring/Enhanced Fiber UFC
- ATM 155-Mbps Multimode Fiber/Token-Ring II UFC
- MSS Client Single Mode Fiber UFC
- MSS Client Multimode Fiber UFC
- MSS Domain Client UFC

Physical Characteristics

The 8270 consists of a base unit, a Token-Ring Processor Card, and at least one Universal Feature Card (UFC). The 8270-800 can have either one or two power supplies.

The front views of the 8270-600 and 8270-800 are illustrated in Figure 1-2 and Figure 1-3 on page 1-3 respectively. Following the illustrations is a description of each of the plug-in modules and UFCs. The connectors, indicators, and switches for each module are also discussed.

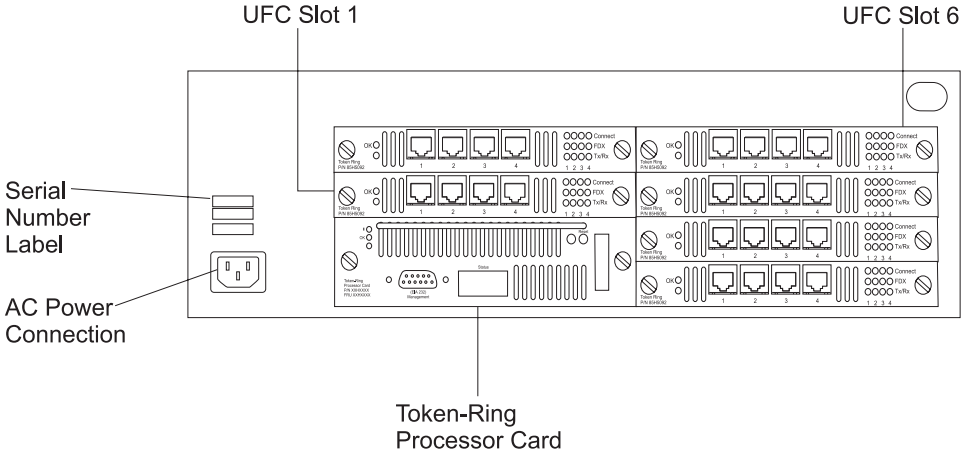


Figure 1-2. The 8270-600 Front View

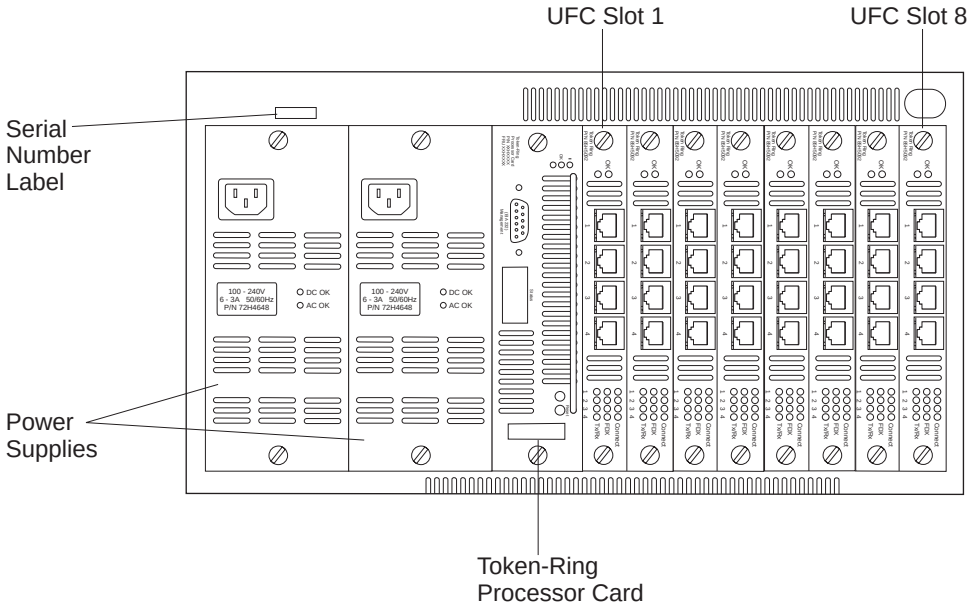


Figure 1-3. The 8270-800 Front View

Power Supply

The 8270-600 has a single internal power supply, while the 8270-800 provides the capability to have two power supplies. Both the 8270-600 and the 8270-800 can operate on input line voltage from 100—240 volts.

8270-800 Power Supply: The 8270-800 provides two slots for power supplies. These are the two leftmost slots in the chassis. (see Figure 1-3). At least one power supply must be installed. The 8270-800 is shipped with a single power supply installed in the right slot. The left slot is available for installation of an optional, redundant power supply.

If two power supplies are installed, they share the power load. In the event of a failure by either supply, the good power supply automatically maintains power for the entire 8270-800. Operation of the 8270-800 is not disrupted.

The 8270-800 power supplies are *hot-pluggable* That means they can be removed and installed while the 8270-800 is powered up. When two power supplies are installed, hot-plugging allows a failed power supply to be replaced without disrupting operation of the switch. Both power supplies must have a line cord connected to ac power.

Figure 1-4 on page 1-4 illustrates the 8270-800 power supply.

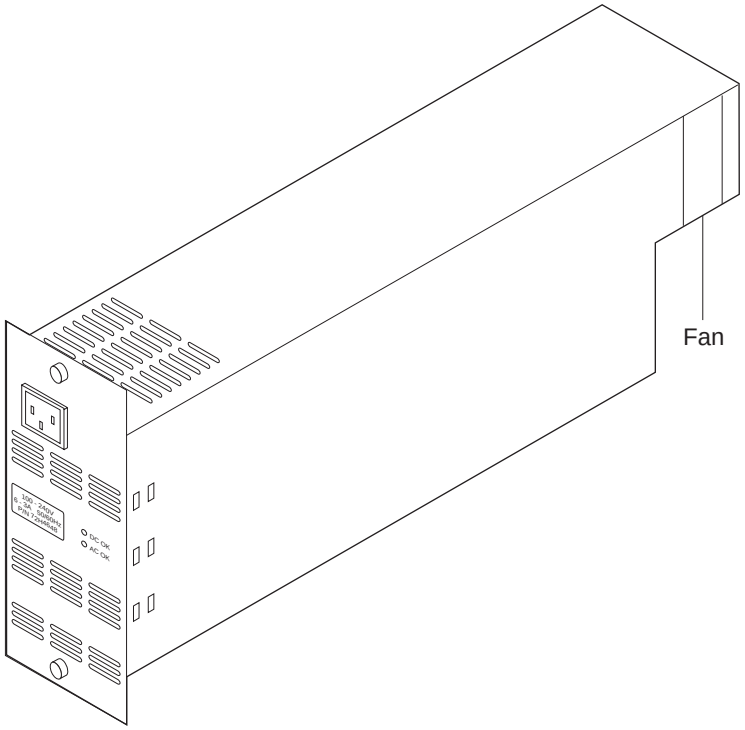


Figure 1-4. The 8270-800 Power Supply

The integrated cooling fan for the power supply is located at the rear of the module. Details of the power supply faceplate are shown in Figure 1-5 on page 1-5.

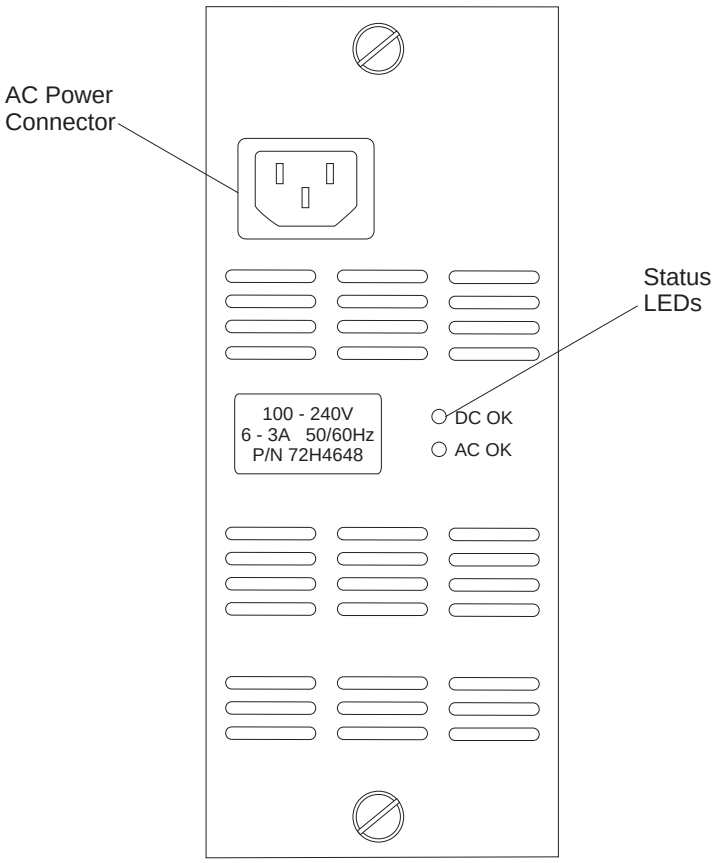


Figure 1-5. The 8270-800 Power Supply Faceplate

One connector and two LEDs are on the power supply faceplate. The connector is for a standard three-prong power cord that connects to 120/220 V AC at 50/60 Hz line frequency. The LEDs indicate the status of the ac power input (AC OK) and the DC power output (DC OK). See Table 1-1.

Table 1-1. Power Supply Status LEDs (8270-800 Only)

LED	State	Meaning
DC OK	On	DC power output is OK.
	Off	DC power output is not OK.
AC OK	On	AC power input is OK.
	Off	AC power input is not OK.

Processor Card

In the 8270-600, the Token-Ring Processor Card comes pre-installed in the lower left slot. As part of the installation, you must install the Token-Ring Processor Card in the 8270-800 in the third slot from the left. Though similar in function, the cards are not interchangeable. The Token-Ring Processor Card faceplate has three status LEDs, one communication port, one 4-character alphanumeric display and two push buttons. See Figure 1-6 on page 1-6. Each of these items is discussed in detail in the following sections.

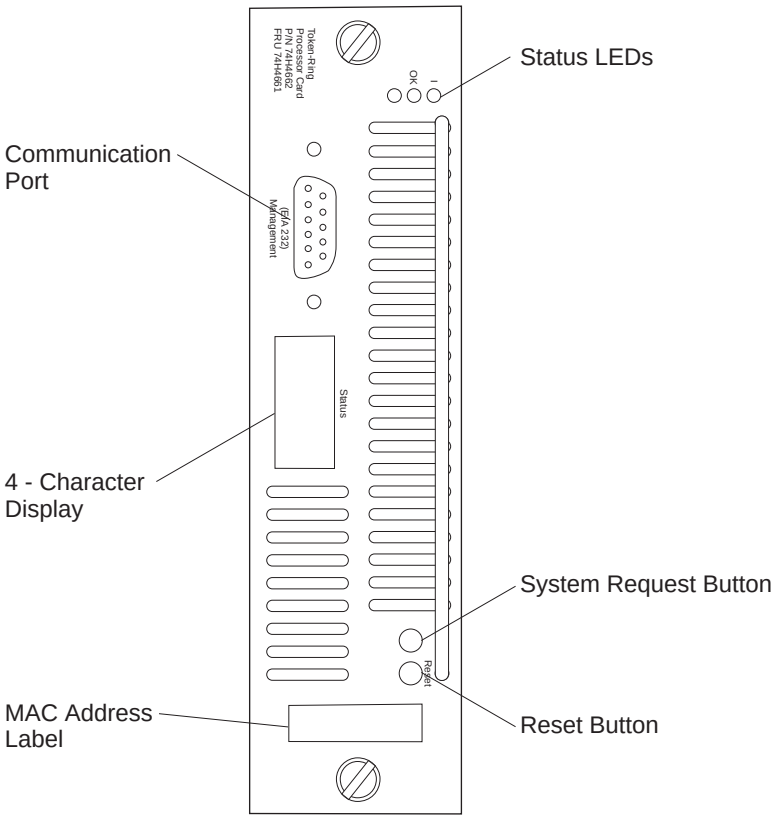


Figure 1-6. The Token-Ring Processor Card Faceplate

Status LEDs

The Token-Ring Processor card has three status LEDs. See Figure 1-6 on page 1-6 for the locations of the LEDs.

Table 1-2. Status LEDs

Function (color)	Label	State	Meaning
Power (green)	|	On	The Token-Ring Processor Card is receiving power from the 8270 backplane.
		Off	The Token-Ring Processor Card is not receiving power from the 8270 backplane.
OK (green)	OK	On	The 8270 is working correctly.
		Off	The 8270 is not working correctly.
		Blinking	Diagnostics are in progress.
Fault (amber)	none	On	A diagnostic failure has occurred. The Token-Ring Processor Card is bad and should be replaced.
		Off	The 8270 is working correctly.
		Blinking	Diagnostics are in progress.

Status Display

The 4-character alphanumeric display provides additional status information concerning the state of the 8270. This includes the power supplies, the Token-Ring Processor Card, any UFCs, and any cooling fans. The messages are decoded as follows:

- Power-On Self Test messages

  When Power-On Self Test is running, the first display character is T, followed by a 3-digit numeric code identifying the test in progress. If the test fails, the T character changes to E and the test stops.

- OK

  This message appears for 2 minutes after a successful Power-On Self Test to indicate that the 8270 is working correctly.

- Non-test messages
  - The first 2 display characters identify the system component:

    F1 Fan 1

    F2 Fan 2 (8270-800 only)

    P1 Power supply 1

    P2 Power supply 2 (8270-800 only)

    PC Processor card

    Sx UFC in slot x

    !A Fuses 3 and 4 (8270-800 only)

    Note: Fuses 3 and 4 control power to the 8270-800 Token-Ring Processor Card. If either fuse 3 or fuse 4 fails, the Token-Ring Processor Card becomes inoperative and cannot display status messages.

!B Fuses 1 and 2 (8270-800 only)

!C Fuses 7 and 8 (8270-800 only)

!D Fuse 6 (8270-800 only)

– The third display character indicates the required action:

H Hardware failure. Replace the component identified by the first 2 characters in the message.

Note: Replacement of fans, fuses, and the 8270-600 power supply can be done by qualified service personnel only. See "Obtaining Service" on page 5-6.

C Software failure. Download new software and reconfigure.

C1 - Boot image
C2 - Main image

X UFC is not installed in a valid slot. Move the UFC to a valid slot.

? The failure cannot be isolated to a specific component. See Chapter 5, "Troubleshooting and Service."

EIA 232 Port

This nine-pin, male, management port functions as a DTE port.

With this port you can attach a VT100 terminal or VT100 terminal emulator to use when customizing the switch's configuration, monitoring switch activity and switch status, testing the switch, or downloading software (see Chapter 4, "Updating Software"). Console access can be either local, by direct attachment to the EIA 232 port, or remote, through a modem connection.

When enabled, the EIA 232 port automatically detects the baud rate of the terminal to which it is attached.

Reset Button

The Reset button resets the hardware and software and clears all tables and memory, including the address tables. Pressing the Reset button does not clear the user-set configuration parameters; those values are stored in nonvolatile random access memory (NVRAM). For more information about the Reset button, refer to *Planning, Configuration, and Operation*.

System Request Button

The System Request button is located next to the Reset button. It is unlabeled and is recessed to prevent unintentional activation. Pressing this button causes the System Request Menu to appear on the console device attached to the EIA 232 port. See "Initiating a Download with the System Request Menu" on page 4-2 for more information.

Universal Feature Cards

The 8270 contains UFC slots (see Figure 1-2 on page 1-2 or Figure 1-3 on page 1-3) that accommodate optional, field-installable UFCs to provide network connections. Currently available UFCs provide the following types of connections:

- Token-Ring UTP/STP
- Token-Ring optical fiber
- ATM network

Token-Ring Ports

Depending upon the type and quantity of UFCs installed, the 8270-800 can provide up to 30 Token-Ring ports, the 8270-600 can support up to 24 ports. This configuration requires 4-port UTP/STP UFCs. The 4-port UFC provides shielded RJ-45 connectors for the Token-Ring connections.

Note: (8270-800 Only) Ports 3 and 4 on UFC slot 1 are not available for use. When a 4-port UFC is installed in slot 1, the invalid slot message (X) appears in the Status display. Even though the invalid slot message is displayed, the 4-port UFC will operate correctly for ports 1 and 2.

Token-ring ports allow HDX or FDX connections to other switches, hubs, or end nodes. The ports can be connected to the IBM Cabling System via 150-ohm, STP, or 100-ohm or 120-ohm twisted-pair (shielded or unshielded).

You can also use optical fiber Token-Ring ports provided by the 2-port Fiber Token-Ring UFC. These ports are compatible with RI/RO ports and make connection to the network through ST**-compatible optical receptacles and multimode optical fiber cables. Since this UFC has only 2 ports, it is valid for installation in slot 1 of the 8270-800.

The 8270 automatically senses the following types of Token-Ring connection on each port:

- Shared-media segment via a Token-Ring concentrator
- Another Token-Ring switch
- 4-Mbps or 16-Mbps, Token-Ring segment
- Dedicated- or shared-media segment, directly to a Token-Ring LAN station
- HDX mode
- FDX mode

The 8270 automatically configures (requiring no operator action) each port to operate at the highest level of capability possible. No special crossover cables are required for Token-Ring stations on dedicated-media segments or for switch-to-switch connections. These connections use the same cabling used to connect the 8270 port to shared-media segments. You can configure the 8270 to override this auto-sense and auto-configure capability through the console configurator.

UFC Status LEDs

8270 UFCs have OK and Fault (unlabeled) status LEDs. The meaning of these LEDs is similar to those on the Token-Ring Processor Card. Refer to the documentation provided with the UFC for details regarding these LEDs.

UFC Port LEDs

In addition to the status indicators, UFCs have LEDs that show the status of the ports provided by the UFC. Table 1-3 on page 1-10 provides the meaning of the port LEDs on the Token-Ring UFCs.

Table 1-3. Token-Ring Port LEDs

LED	Position	State	Meaning
Connect	Top	On	Connected.
		Off	Disabled or faulty port, if the UFC Fault LED is on.
		Blinking	Attempting to connect.
FDX	Middle	On	The port is set to FDX mode.
		Off	The port is set to HDX mode.
Tx/Rx	Bottom	On	Data is being transferred or received by the port.
		Off	Data is not being transferred or received by the port.

Refer to the documentation provided with the UFC for details regarding other port LEDs.

Dimensions and Weight

Table 1-4 provides the dimensions and weight of the 8270-800.

Table 1-4. Dimensions and Weight

	8270-600	8270-800
Width	440 mm (17.3 in.)	440 mm (17.3 in.)
Depth	305 mm (12.0 in.)	356 mm (14.0 in.)
Height	133 mm (5.2 in.)	222 mm (8.7 in.)
Weight (configuration dependant)	7 to 10 kg (16 to 21 lb)	17 to 23 kg (37.5 to 50.7 lb)

Power Requirements

The 8270 auto-ranging power supplies operates on nominal line voltages in the range of 100 to 127 or 200 to 240 V ac, and 50 or 60 Hz. Power cord information is included with the 8270 ordering instructions for your country.

Operating Environment

Table 1-5. Operating Environment

Characteristic	Typical Configuration	Maximum Configuration
Temperature	10° to 40°C (50° to 104°F)	Same as typical
Relative humidity	8% to 80%	Same as typical
Maximum wet-bulb temperature	27°C (81°F)	Same as typical
Caloric value (8270-600)	130 Kcal/hr (500 BTU/hr)	170 Kcal/hr (680 BTU/hr)
Caloric value (8270-800)	180 Kcal/hr (700 BTU/hr)	360 Kcal/hr (1400 BTU/hr)
Electrical power (8270-600)	0.15 KW	0.2 KW
Electrical power (8270-800)	0.25 KW	0.6 KW

Functional Overview

Switch Configuration for Optimum Performance

The flexibility of the 8270 allows the system to be configured to meet the network topology requirements of an individual establishment. Any mix of token-ring 4-port copper and 2-port fiber UFCs can be used in the 8270. The port speeds might be a mix of both 4 and 16 Mbps or all ports might operate at the same speed. Some ports can operate as dedicated full-duplex links while others operate as shared links.

The following configuration guidelines should be observed:

- The ATM UFC will allow traffic flow to or from the Token-Ring ports. ATM-to-ATM traffic flow will be blocked by the 8270.
- An ATM UFC, a 2-port Fiber UFC, an MSS Client, or an MSS Domain Client UFC should be installed in slot 1 of the 8270-800. Only the first two ports of a 4-port UFC will be operational in slot 1.

The internal data capacity of the 8270 is 480 Mbps. Port buffering for both the transmit and receive paths permit data bursts exceeding this capacity to be handled without frame loss. Some frame loss is normal for all switch configurations. Excessive frame loss that affects end-user performance is usually an indication of a traffic imbalance that can usually be remedied by repositioning of client and server stations. Frame traffic should be distributed across several ports on a switch for optimum switch performance. Token-Pipes should be on switch-to-switch links to match the projected traffic capacity or if excessive packet loss is observed.

Additional performance information for the 8270 can be made available by IBM through other documents or publications. Independent test organizations have measured and published performance data regarding the 8270s.

Interconnected Switches

Connect any 8270 port to another switch in either HDX or FDX mode, or as part of a TokenPipe connection.

Shared Media

Shared media consists of two or more Token-Ring LAN stations that share the 4- or 16-Mbps LAN segment. Connect these ports to Token-Ring devices such as multistation access units (MSAUs), Token-Ring concentrators, or Token-Ring hubs, using the 802.5 Token-Passing Protocol.

Dedicated Media

Create *dedicated media* by directly attaching a single Token-Ring LAN station adapter to a switch port without an intervening Token-Ring concentrator or hub. You can then operate the LAN station adapter as a dedicated Token-Ring device in HDX (4 or 16 Mbps) or FDX (8 or 32 Mbps) mode.

UFCs

UFCs provide switch ports, support other Token-Ring media, or provide high-bandwidth uplinks. Refer to each individual UFC *Planning and Installation Guide* for UFC interconnectivity requirements.

Chapter 2. Installation

This chapter explains the equipment that you need to install the 8270 and describes the installation procedure.

Before installing the 8270, be sure to read “Electronic Emission Notices” on page B-1.

Installation Summary

Table 2-1 outlines the steps you must complete to install the 8270-800.

Table 2-1. 8270-800 Installation Procedures

Step	Procedure	Reference
1	Read the Safety Manual shipped with the 8270.	Form number SD21-0030-02
2	Plan for installation.	Refer to *Planning, Configuration, and Operation* (available on the 8270 CD-ROM).
3	Unpack the Token-Ring Processor Card (8270-800 only).	“Unpacking the Token-Ring Processor Card (8270-800 Only)”
4	Unpack the 8270.	“Unpacking the 8270 Chassis” on page 2-2
5	Gather materials.	“Other Materials You Will Need” on page 2-2
6	Install the Token-Ring Processor Card (8270-800 only).	“Installing the Token-Ring Processor Card (8270-800 Only)” on page 2-3
7	Mount the 8270 in the rack, if applicable.	“Rack-Mounting the 8270-800” on page 2-7 or “Rack-Mounting the 8270-600” on page 2-6
8	Install UFCs.	“Installing a Universal Feature Card” on page 2-15
9	Install the redundant (second) power supply, if applicable (8270-800 only).	“Installing the Second Power Supply (8270-800 Only)” on page 2-19
10	Connect the 8270 to the network.	“Cabling” on page 2-21
11	Verify the operation of the 8270.	“Powering On the 8270” on page 2-24
Note: Complete the following step only if you are customizing the configuration of the 8270 or monitoring its activity.		
12	Configure the 8270.	Refer to *Planning, Configuration, and Operation* (available on the 8270 CD-ROM).

Unpacking the Token-Ring Processor Card (8270-800 Only)

Step 1. Open the carton containing the Token-Ring Processor Card.

Step 2. Remove the Token-Ring Processor Card from its protective packaging.

Attention: Before removing the Token-Ring Processor Card from its antistatic bag, ensure that you are static-free by use of appropriate

grounding precautions. Electrostatic discharge into or around the uninstalled module can permanently damage it.

Step 3. Visually inspect the Token-Ring Processor Card to ensure that it was not damaged during shipment.

Step 4. This package should also contain:

- □ One Safety Manual
- □ One CD-ROM

If any item is missing or damaged, contact your place of purchase.

Unpacking the 8270 Chassis

Step 1. Open the carton containing the 8270 chassis.

Step 2. Remove the 8270 chassis from its protective packaging.

Step 3. Visually inspect the 8270 chassis to ensure that it was not damaged during shipment.

Note: The 8270-800 chassis should have one power supply installed in the rightmost power supply slot.

Step 4. The package should also contain:

- □ One Safety Manual
- □ One Service Information card
- □ One cable management bracket
- □ One power cord
- □ IBM 8270 Publication CD-ROM

If any item is missing or damaged, contact your place of purchase.

Other Materials You Will Need

To install the 8270, you need a cabling chart from your network administrator.

If the 8270 is to be rack-mounted, you also need:

- A rack inventory chart from your network administrator
- Screws and appropriate tools (screwdriver, and so on) for attaching the cable management bracket and the 8270 to the rack.

Note: If you are installing an 8270-600, skip to “Surface Mounting” on page 2-5. If you are installing an 8270-800, continue to “Installing the Token-Ring Processor Card (8270-800 Only)” on page 2-3.

Installing the Token-Ring Processor Card (8270-800 Only)

When removed from its package, the 8270-800 chassis has two open slots in the faceplate. See Figure 2-1.

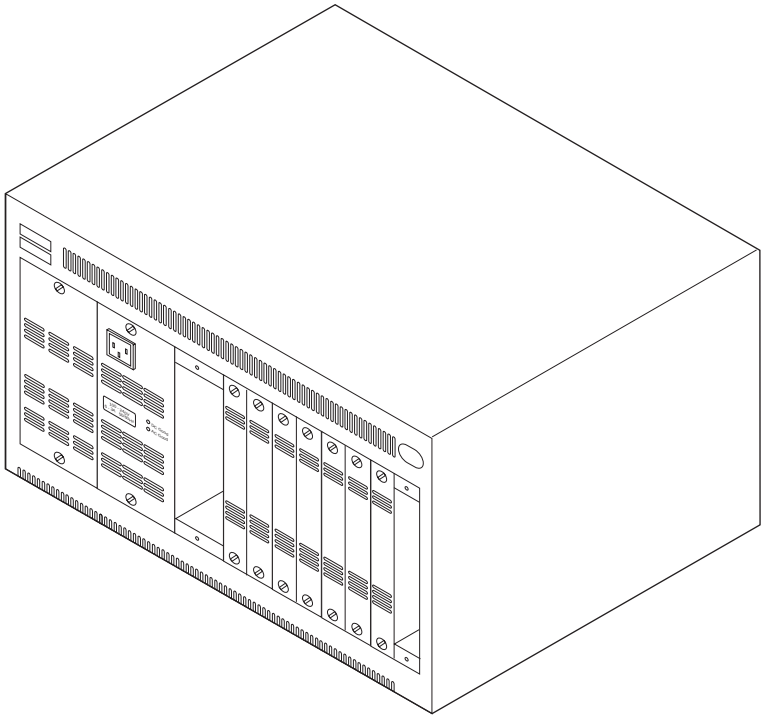


Figure 2-1. The 8270-800 As It Is Shipped.

The open slot on the left is for the token-ring processor card. Follow these steps to install the token-ring processor card.

Step 1. Carefully insert the card in the open processor card slot, fitting each side into the card rails. Ensure that the connector on the card is correctly seated in the connector at the back of the slot. See Figure 2-2.

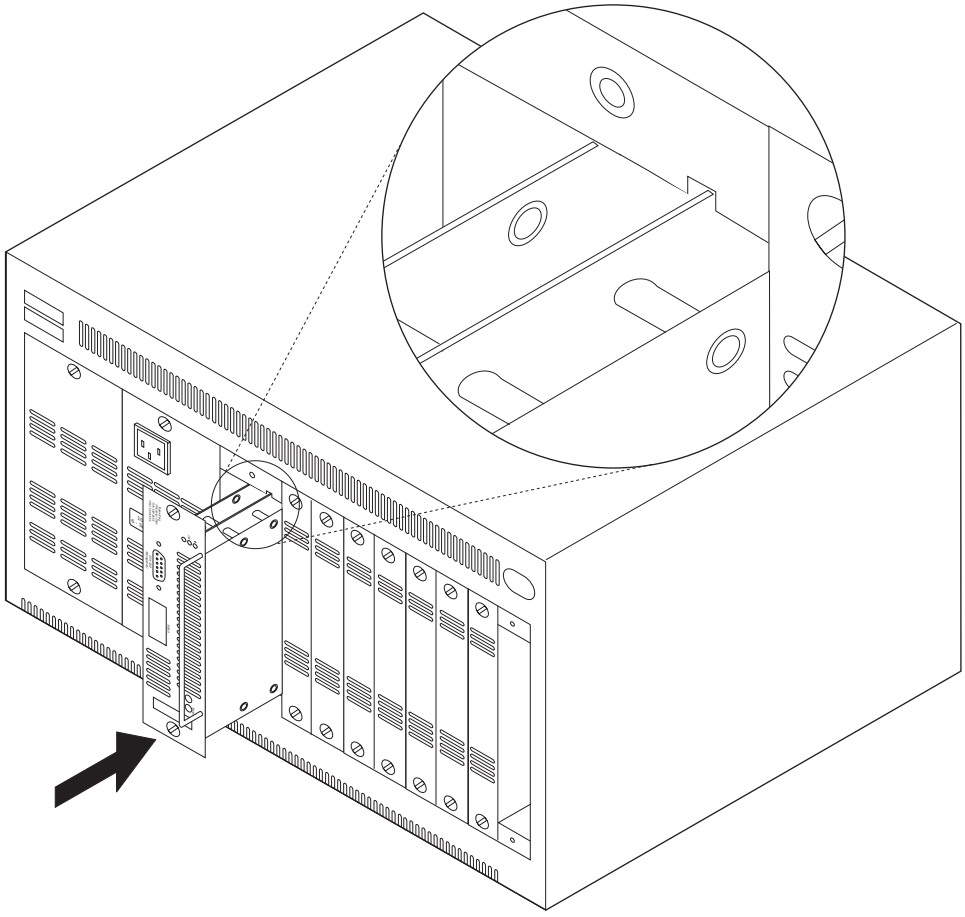


Figure 2-2. Installing the Token-Ring Processor Card

Step 2. Secure the card with the two thumbscrews attached to it. See Figure 2-3.

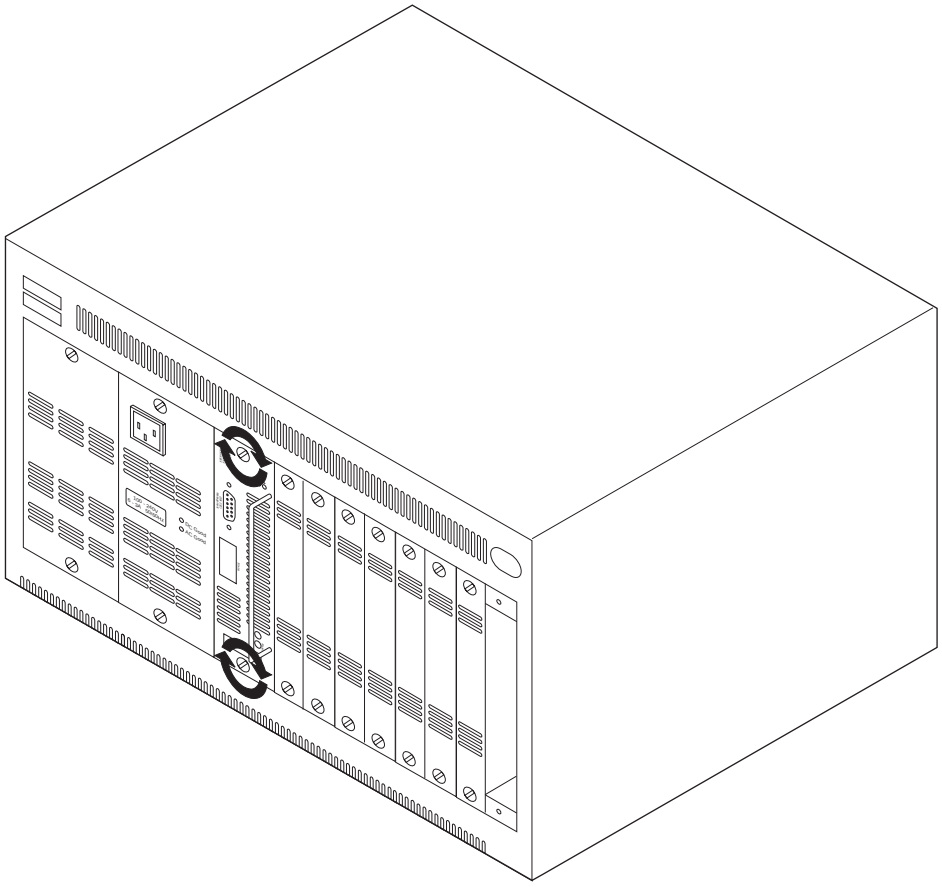


Figure 2-3. Securing the Token-Ring Processor Card

Surface Mounting

If the 8270 is to be rack-mounted, skip to “Rack-Mounting the 8270-600” on page 2-6 or “Rack-Mounting the 8270-800” on page 2-7 depending on your 8270 model.

If the 8270 will not be rack-mounted, you might wish to reposition the rack-mount brackets. For surface mounting:

Step 1. Remove the rack-mount brackets from both sides of the chassis by removing the mounting screws from each bracket.

Step 2. Reinstall the screws on the top front corners of the chassis.

Step 3. Remove the screws at the top rear corners on both sides of the chassis.

Step 4. Turn the bracket over so that the rack-mount tab points inward, toward the center of the chassis.

Step 5. Position the bracket on the side of the chassis with the tab against the rear of the chassis and reinstall the screws.

Step 6. Repeat the steps 4 and 5 for the other bracket.

Continue with “Installing a Universal Feature Card” on page 2-15.

Rack-Mounting the 8270-600

This section describes rack-mounting the 8270-600. For information on rack-mounting the 8270-800, see “Rack-Mounting the 8270-800” on page 2-7.

If you choose to rack-mount, you can use any EIA standard 19-inch rack. The rack can be open or closed. However, if you use a closed rack, special provisions must be made in order to ensure sufficient airflow through the machine. Decorative covers on the front of the rack that impede airflow to the machine must be removed or modified to allow sufficient airflow. Similarly, unvented rear covers that prevent sufficient airflow out of the machine, or cause a back-pressure buildup due to other machines discharging air, are prohibited.

The rack-mounting procedure tells you how to mount both the 8270-600 chassis and the cable management bracket. The 8270-600 occupies three standard EIA rack units. The 8270-600 cable management bracket can attach to any of the four rack-mount screws depending how you want to route your cables.

Step 1. Using four rack-mount screws, mount the 8270-600 as shown in Figure 2-4 on page 2-7.

Attention: When lifting the 8270-600 chassis, lift it using the outside surfaces only.

Step 2. If the cable management bracket is to be used, mount it, using one of the four rack-mounting screws.

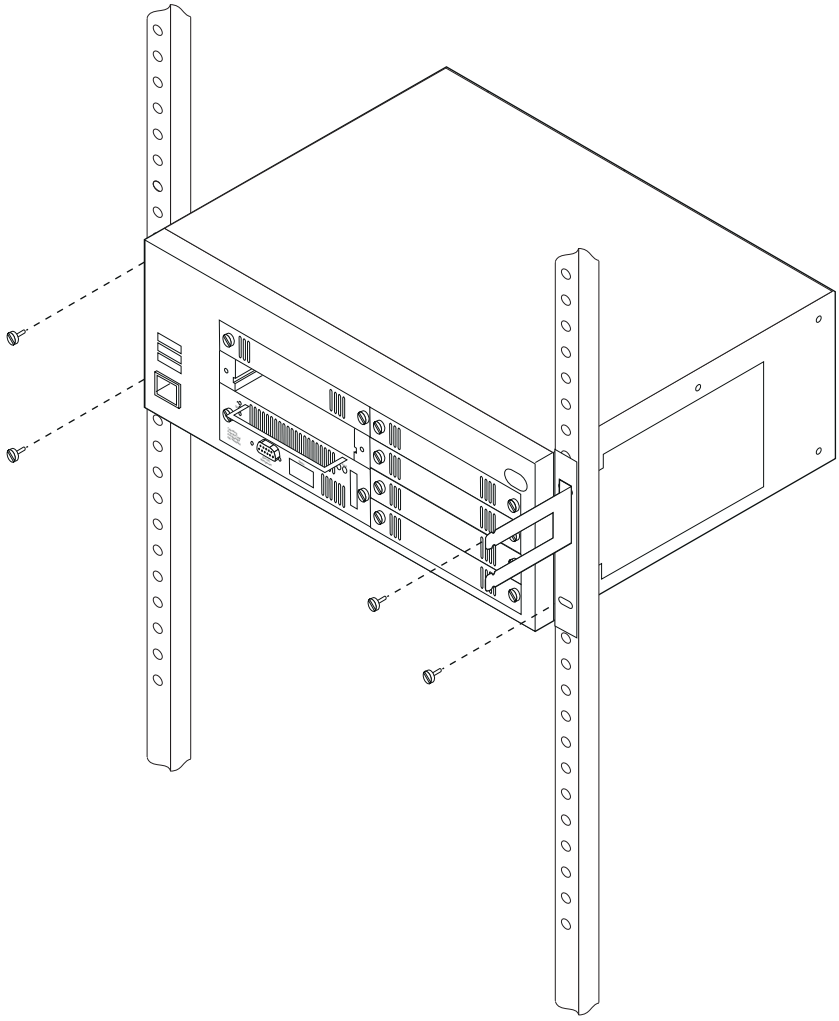


Figure 2-4. Installing the 8270-600 in the Rack

Note: If you want to mount the 8270-600 with the front of the chassis extending out of the rack, you can do so by repositioning the rack-mount brackets on the sides of the chassis. To reposition the brackets, remove the two bracket-mounting screws, rotate the brackets so that the rack-mount tabs are toward the rear of the chassis, and reinstall the two screws.

Rack-Mounting the 8270-800

This section describes rack mounting the 8270-800. For information on rack-mounting the 8270-600, see “Rack-Mounting the 8270-600” on page 2-6.

If you choose to rack-mount, you can use any EIA standard 19-inch rack. The rack can be open or closed. However, if you use a closed rack, special provisions must be made in order to ensure sufficient airflow through the machine. Decorative covers on the front of the rack that impede airflow to the machine must be removed or modified to allow sufficient airflow. Similarly, unvented rear covers that prevent sufficient airflow out of the machine, or cause a back-pressure buildup due to other machines discharging air, are prohibited.

The rack-mounting procedure tells you how to mount both the 8270 chassis and the cable management bracket. If the cable management bracket is to be used, with the 800, it should be mounted first. The 8270-800 occupies five standard EIA rack units. The 800 cable management bracket occupies one standard EIA rack unit. This space requirement and the nature of adjacent equipment should be taken into account when assigning rack space to the 8270

Step 1. It is recommended that the power supply in the 8270-800 chassis be removed temporarily, while mounting the chassis. This significantly reduces the weight of the chassis to ease the mounting process. To remove the power supply, unscrew the two thumbscrews and pull the module out of the chassis. See Figure 2-5.

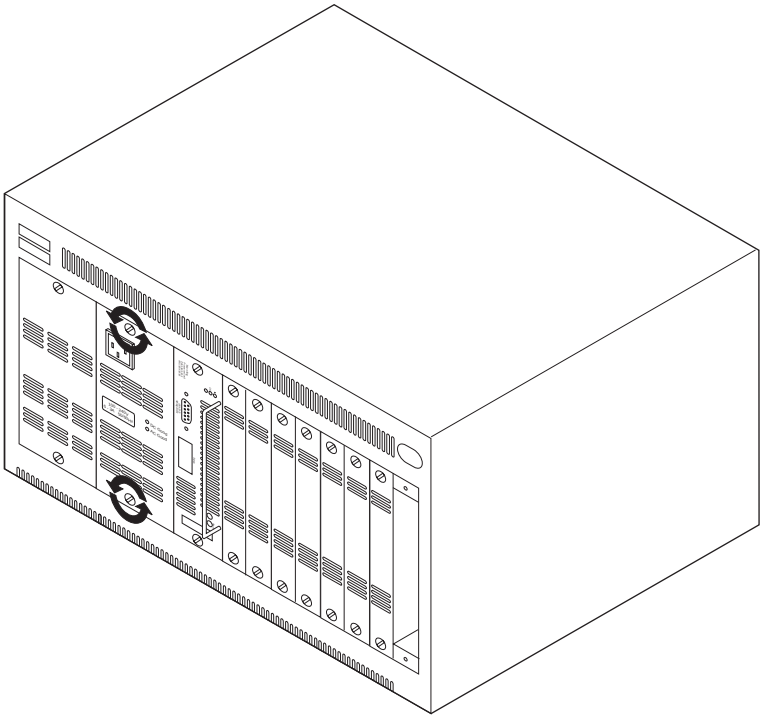


Figure 2-5 (Part 1 of 2). Removing the Power Supply from the 8270-800

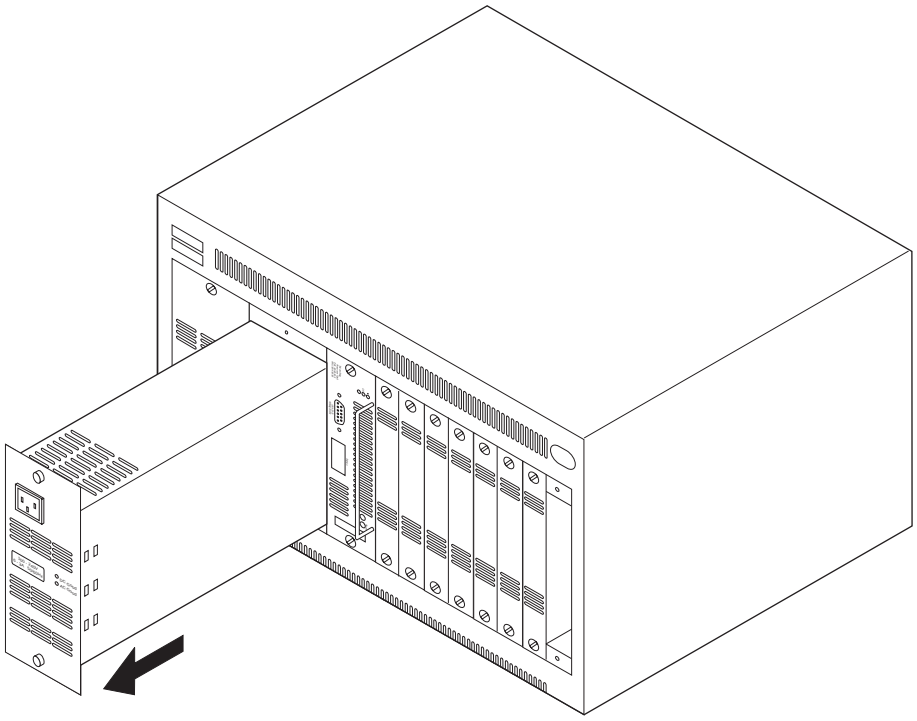


Figure 2-5 (Part 2 of 2). Removing the Power Supply from the 8270-800

Step 2. Using the rack inventory chart, determine where in the rack the 8270-800 should be mounted and if the cable management bracket is to be mounted.

Step 3. If the cable management bracket is to be used, mount it, using two rack-mounting screws, in the bottom unit of the allocated rack space. See Figure 2-6.

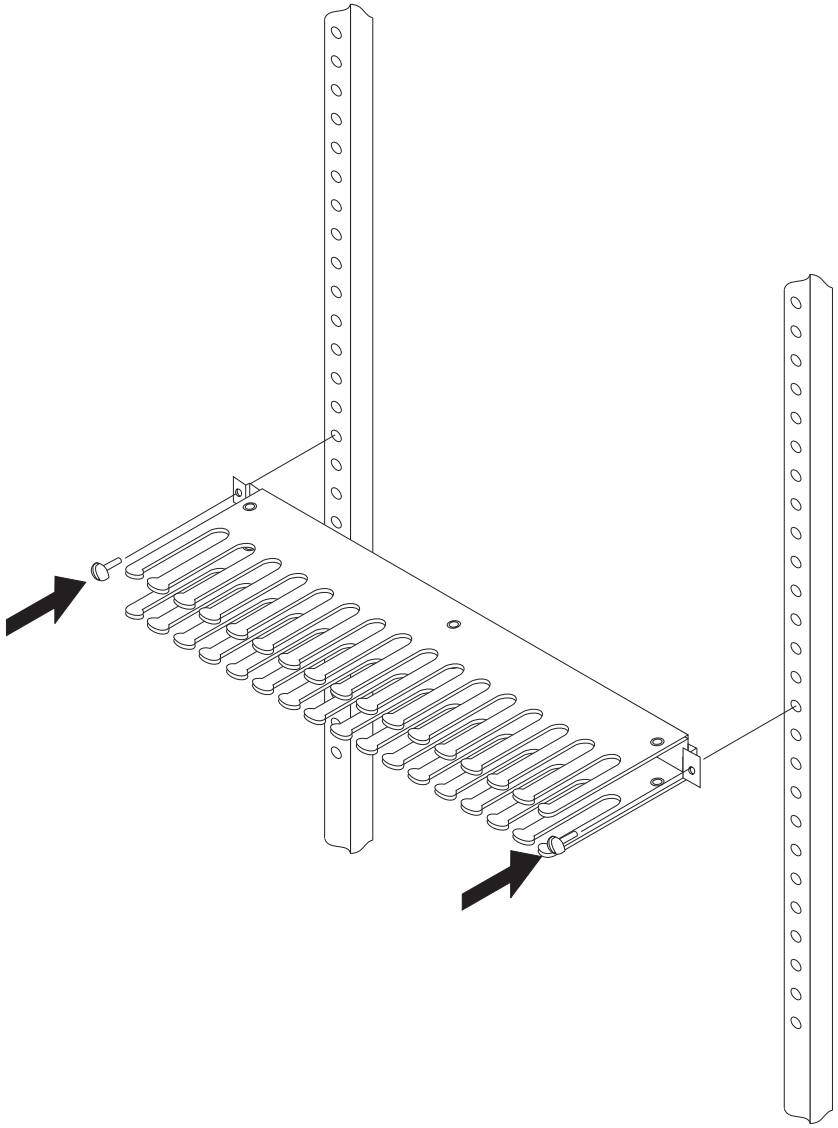


Figure 2-6. Installing the 8270-800 Cable Management Bracket

Step 4. Using four rack-mount screws, mount the 8270-800 as shown in Figure 2-7. If the cable management bracket is mounted, the 8270-800 occupies the rack space above the cable management bracket. The cable management bracket can also be used to support the 8270-800 chassis while positioning it for mounting.

Attention: When lifting the 8270-800 chassis, lift it using the outside surfaces only.

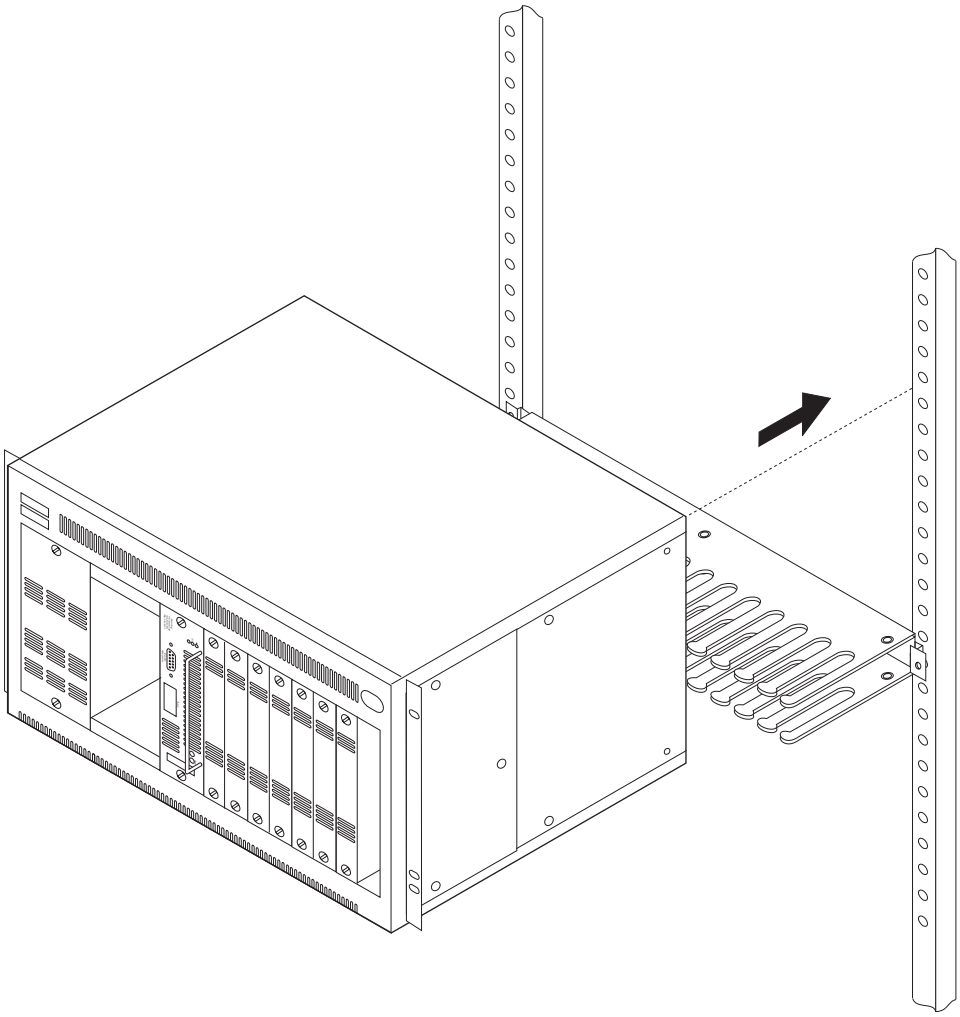


Figure 2-7 (Part 1 of 2). Installing the 8270-800 in the Rack

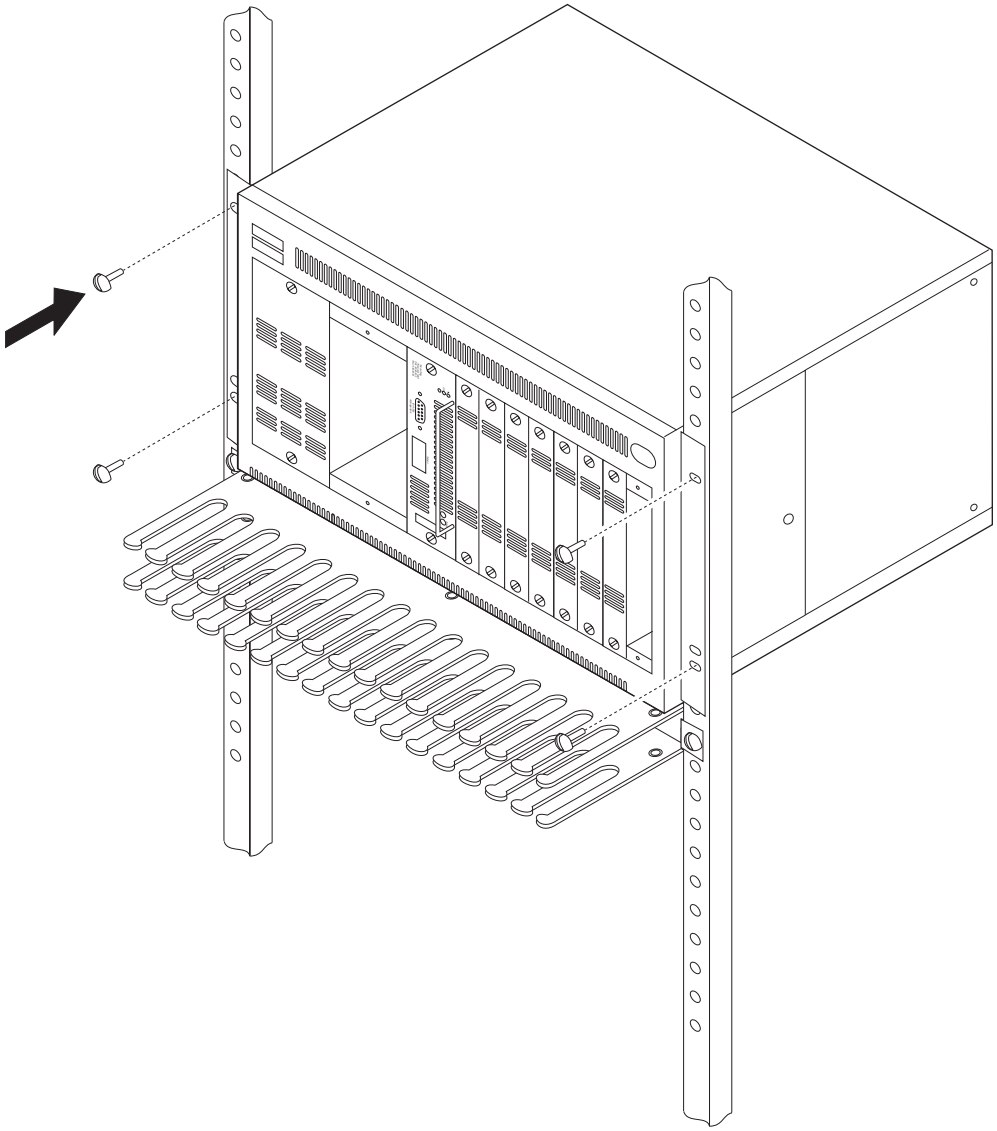


Figure 2-7 (Part 2 of 2). Installing the 8270-800 in the Rack

Step 5. Reinstall the power supply if it was removed. Tighten the thumbscrews. See Figure 2-8.

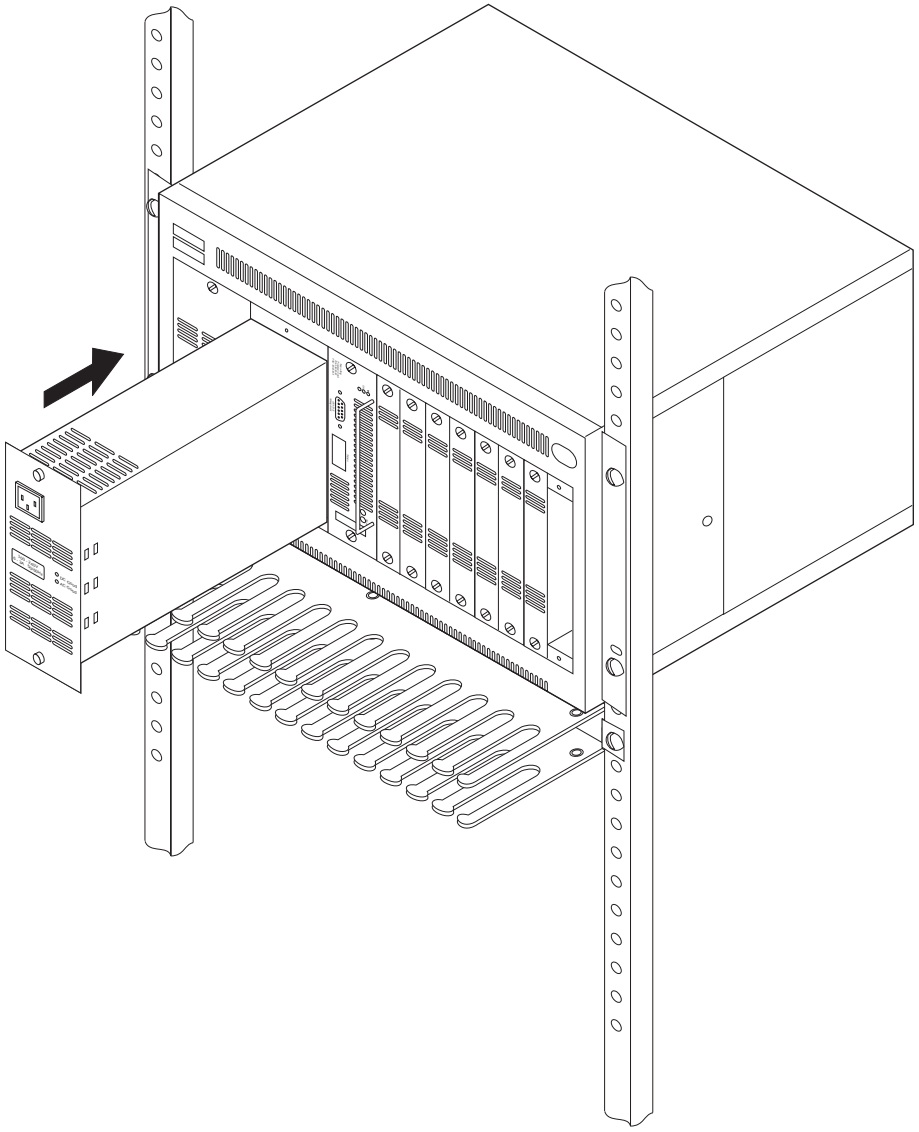


Figure 2-8 (Part 1 of 2). Installing the Power Supply in the 8270-800

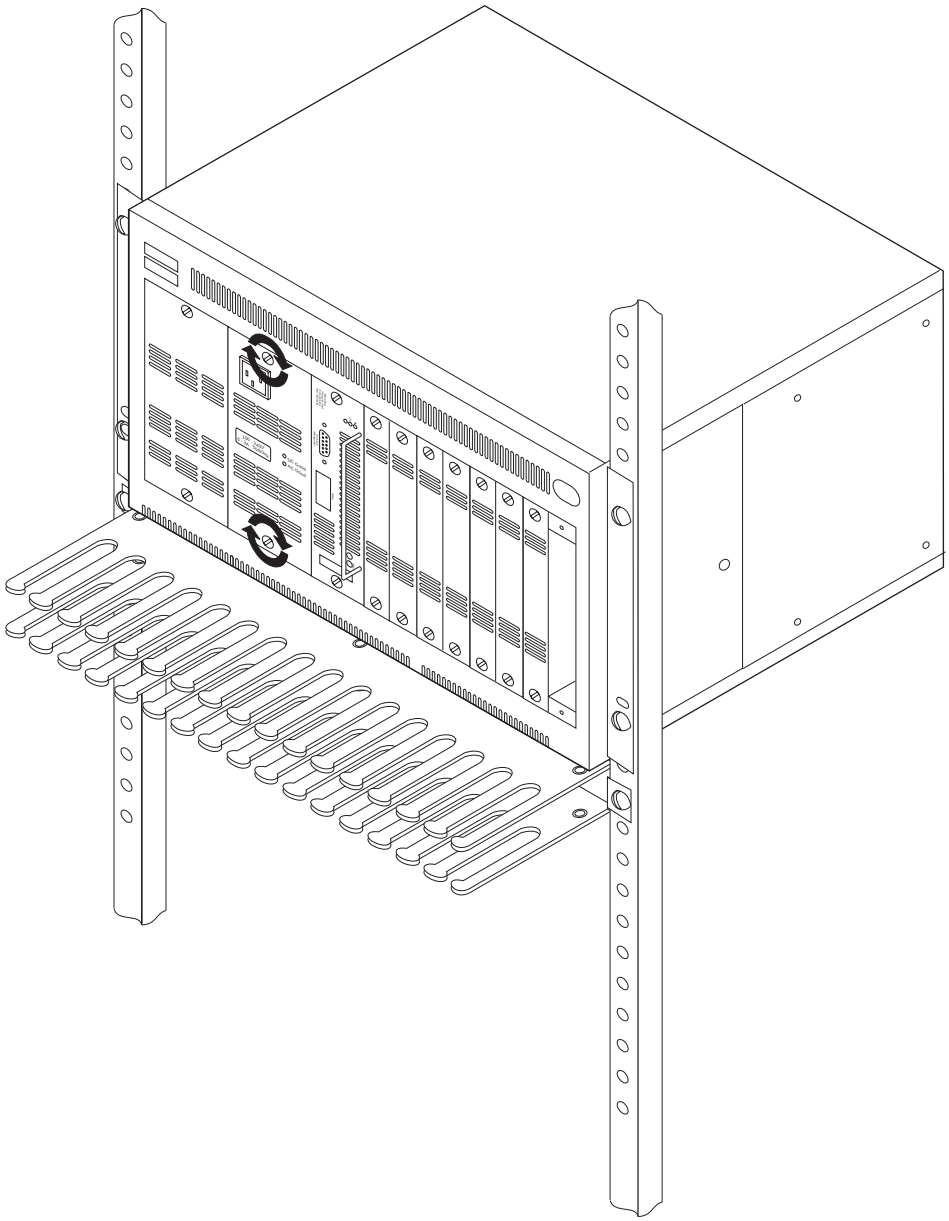


Figure 2-8 (Part 2 of 2). Installing the Power Supply in the 8270-800

Note: If you want to mount the 8270-800 with the front of the chassis extending out of the rack, you can do so by repositioning the rack-mount brackets on the sides of the chassis. To reposition the brackets, remove the three bracket-mounting screws, rotate the brackets so that the rack-mount tabs are toward the rear of the chassis, and reinstall the three screws.

Installing a Universal Feature Card

The following instructions describe how to install a UFC in the 8270.

Note: The following illustrations show installing a UFC in an 8270-800, however installing a UFC in an 8270-600 is similar. If you are installing a UFC in a slot that is currently unoccupied you might not have to reconfigure the 8270. If you are replacing an existing UFC, it must be replaced with one of the same type or reconfiguration will be required.

Follow these steps to install UFCs:

Step 1. Remove the UFC and all accompanying documentation from the shipping container.

Step 2. Read all of the documentation provided with the UFC before installing it in the 8270.

Step 3. If the 8270 is powered on, power it off before installing the UFC.

Step 4. Remove the blank cover from the UFC slot in which the UFC is to be installed from the front of the 8270. To remove the cover, remove the two thumbscrews holding it in place, then grasp the edge of the cover and pull it out of the slot. See Figure 2-9 on page 2-16. Retain the cover and the thumbscrews for use in the event that the UFC is ever removed.

Notes:

a. The 8270-600 is shipped with no cover on UFC slot 1. The first UFC that is installed in the 8270-600 should be placed in slot 1.

b. The 8270-800 is shipped with no cover on UFC slot 8. The first UFC that is installed in the 8270-800 should be placed in slot 8. If possible, avoid installing a UFC with more than 2 ports in UFC slot 1. If a 4-port UFC is installed in slot 1, ports 3 and 4 will not operate.

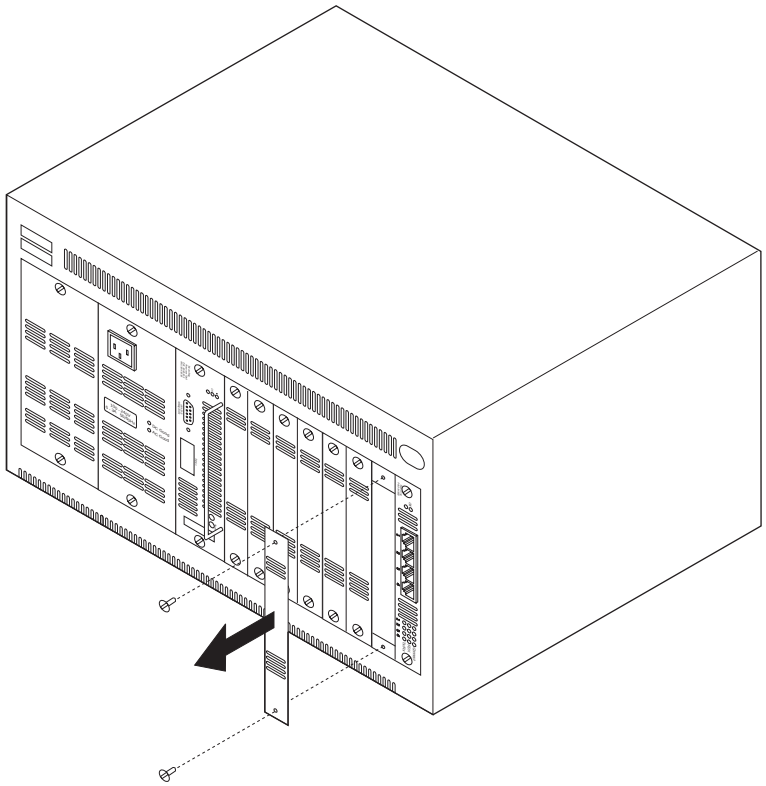


Figure 2-9. Removing a UFC Slot Cover

Step 5. Carefully insert the card in the UFC slot, fitting each side into the card rails, and making sure that the connector on the card is seated in the connector at the back of the slot. Secure the card with the two thumbscrews attached to it. See Figure 2-10.

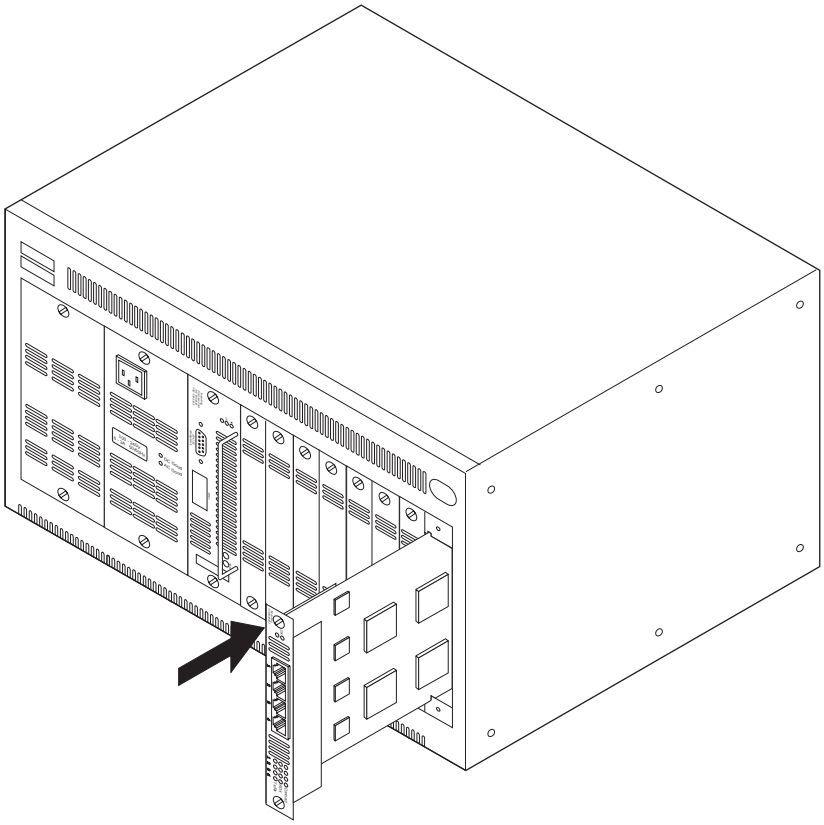


Figure 2-10 (Part 1 of 2). Installing a UFC

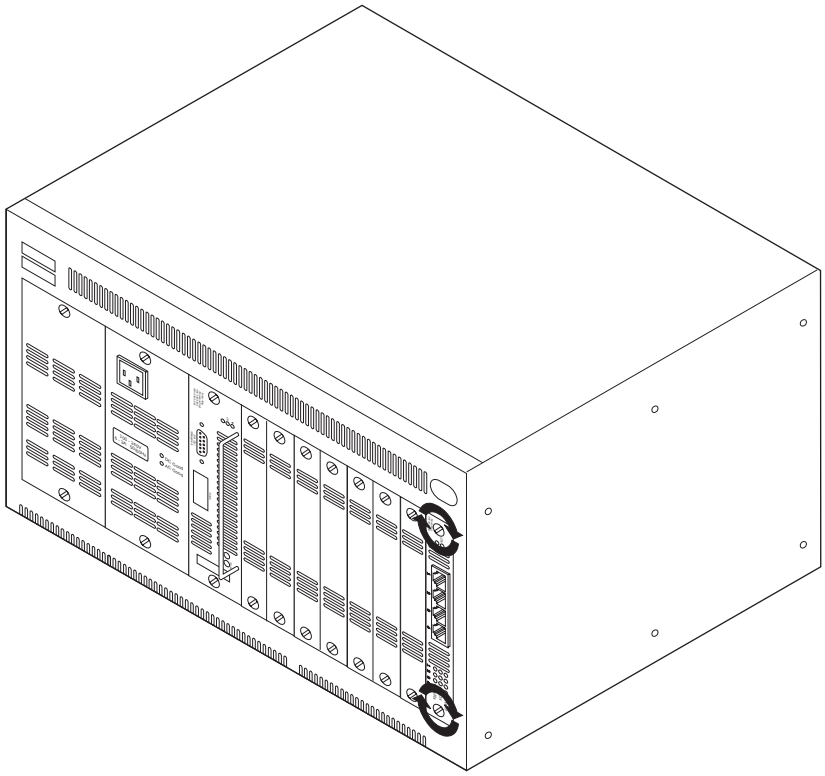


Figure 2-10 (Part 2 of 2). Installing a UFC

Step 6. If you installing an 8270-600 or an 8270-800 with a single power supply, skip to “Cabling” on page 2-21. If you are installing a second power supply in your 8270-800, continue with “Installing the Second Power Supply (8270-800 Only)” on page 2-19.

Installing the Second Power Supply (8270-800 Only)

If you have the optional redundant (second) power supply it should be installed at this time. If the 8270-800 is to be rack-mounted, you should not attempt to install the power supply before the 8270-800 chassis is mounted in the rack since the weight of the supply can make the rack-mounting procedure difficult.

Step 1. Remove the power supply and all accompanying documentation from the shipping container.

Step 2. Read all of the documentation provided with the power supply before installing the power supply in the 8270-800.

Note: The second power supply can be hot-plugged. If you are installing this power supply in an existing installation, do not disconnect power from the 8270-800 or remove the existing power supply.

Step 3. Remove the blank cover from the power supply slot in which the power supply is to be installed from the front of the 8270-800 by removing the two thumbscrews holding it in place. Retain the plate and the thumbscrews for use in the event that the power supply is ever removed.

Step 4. Insert the power supply module into the open slot until the supply is firmly seated in the connectors at the back of the slot. See Figure 2-11.

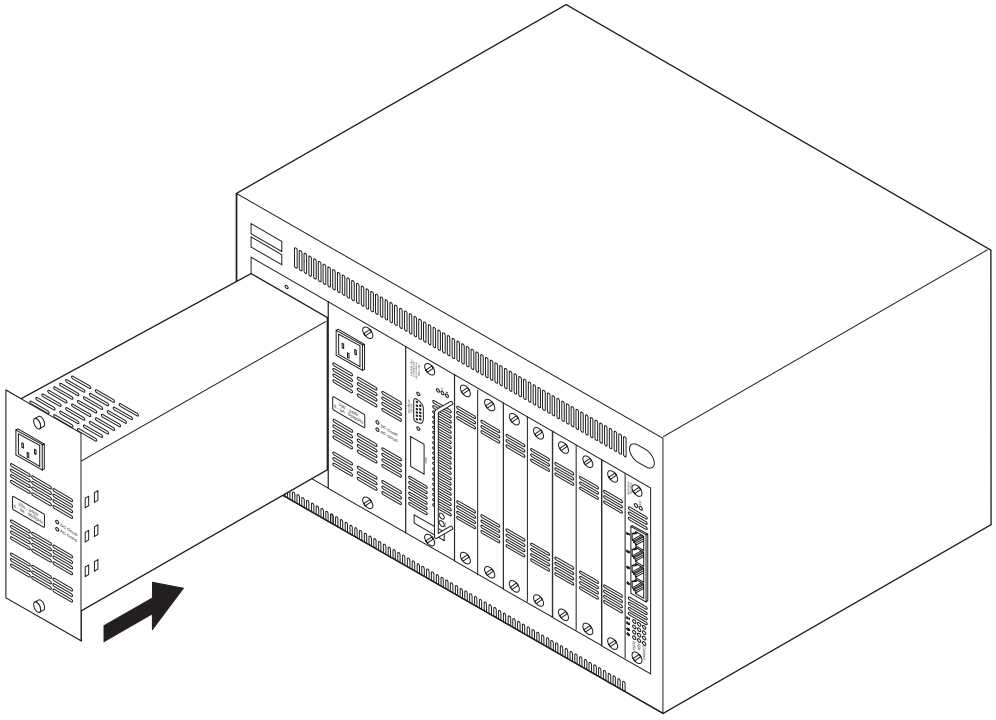


Figure 2-11. Inserting the Second Power Supply

Step 5. Secure the supply with the two thumbscrews attached to the faceplate. See Figure 2-12.

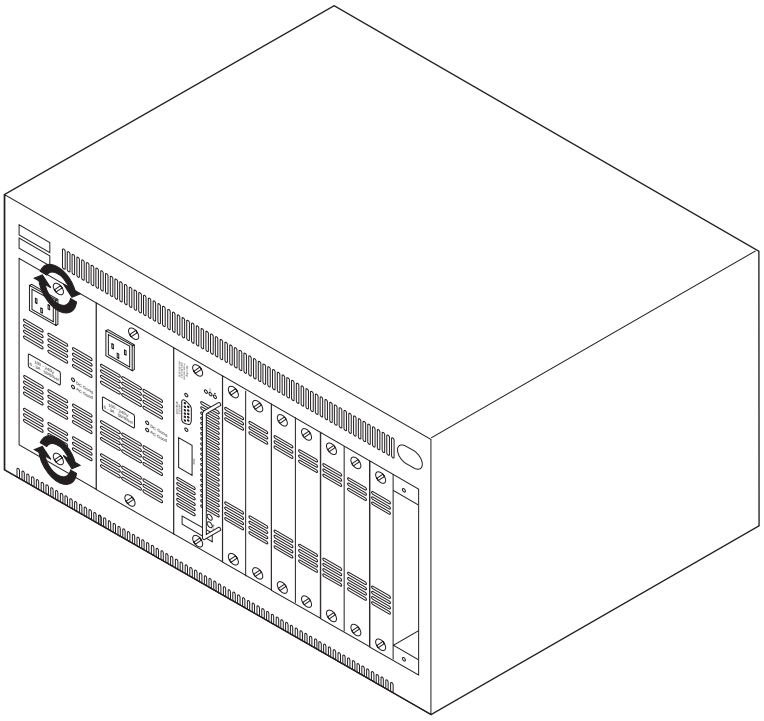


Figure 2-12. Securing the Second Power Supply

Step 6. If you are installing this power supply in an existing installation, skip to “Powering On the 8270” on page 2-24. Otherwise, continue with “Cabling” on page 2-21.

Cabling

This section provides instructions for connecting devices (such as hubs, servers, personal computers, and workstations) to an 8270. Remember these tips when connecting cables:

- Avoid stretching or bending the cables excessively.
- Avoid routing the cables near potential sources of electromagnetic interference, such as motorized devices and fluorescent lights.
- Avoid trip hazards by routing the cables away from aisles and other areas where people walk. If such routes cannot be avoided, use floor cable covers or similar material to secure and protect the cables.
- Be sure that the cables connected to the 8270 are supported so that the cable connectors are not excessively strained.
- Use a category 3 or better cable or 150-ohm, STP or STP-A cabling.
- Some attaching devices require impedance-matching baluns at each end. Be sure to use them if the attaching device requires them.

Connecting Devices to the Token-Ring Ports

If you *will* be using building wiring (in-the-wall cables) to connect devices to the 8270, go to “Connecting Devices to the Token-Ring Ports Using Building Wiring” on page 2-23.

If you *will not* be using building wiring, follow these steps to connect one or more devices to the Token-Ring ports on an 8270:

Step 1. Using the IBM 8270 Cabling Chart provided by your network administrator as a guide, connect the cables between the 8270 and other devices as illustrated in Figure 2-13 on page 2-22. It illustrates an RJ-45 connector on each end. Depending on the cable type you use, the device end of the cable might also have a 9-pin, D-shell or 150-ohm data connector.

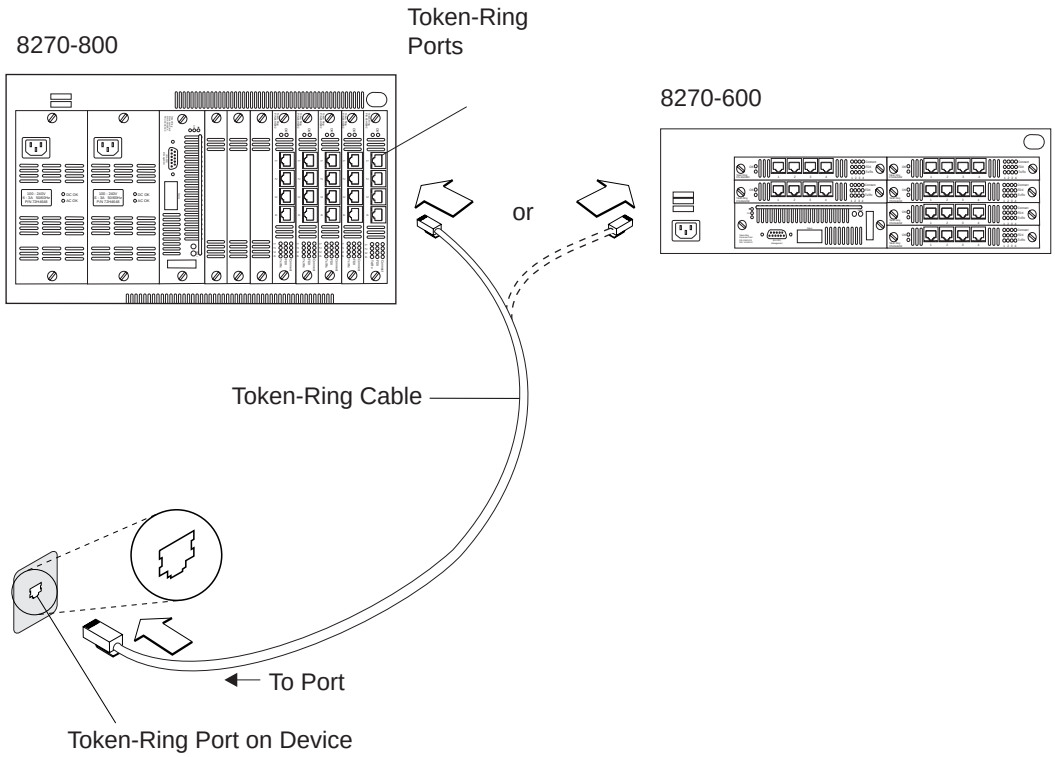


Figure 2-13. Connecting Devices to Token-Ring Ports

Step 2. Label each end of the cables so that it will be easy to find a device if you have to troubleshoot a network problem. You should also put the information on the Cable Destination area of the Service Information card.

Be sure that the label includes the room location of the device at the other end, a unique cable identification number, the MAC address of the connected device, and the number of the port to which the cable is attached.

Step 3. To continue installing the 8270, go to “Powering On the 8270” on page 2-24.

Connecting Devices to the Token-Ring Ports Using Building Wiring

If you will use building wiring (in-the-wall cables) to connect the device to the 8270-800, perform the following steps:

Step 1. Using the IBM 8270 Cabling Chart provided by your administrator as a guide, connect the cables between the devices and the faceplates as illustrated in Figure 2-14.

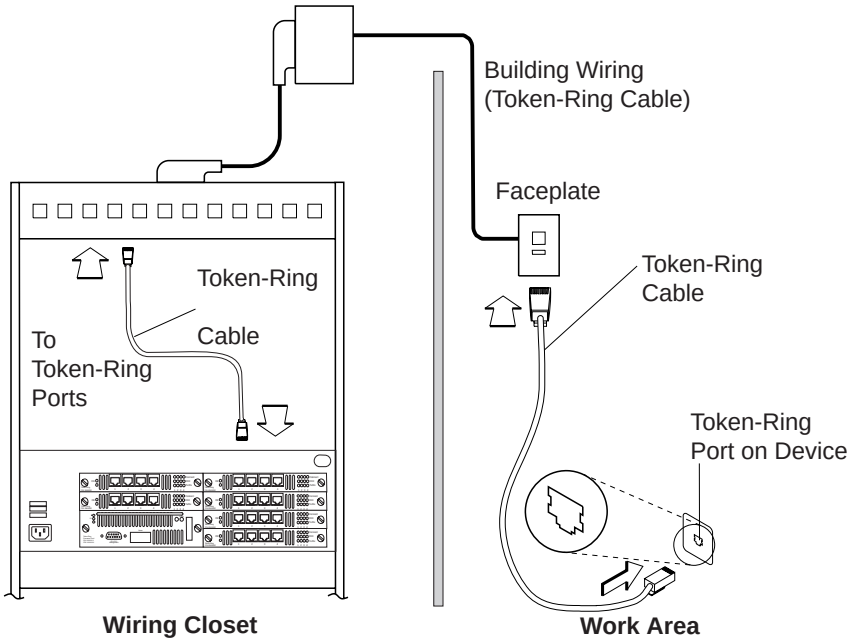


Figure 2-14. Connecting Devices to Token-Ring Ports Using Building Wiring

Step 2. Label the faceplates, so that it will be easier to find the devices if you have to troubleshoot a network problem.

Step 3. In the wiring closet, connect a cable to the Token-Ring connector on the patch panel or other equipment where the building wiring terminates.

Note: Do not connect these cables to the RI or RO port on a media access unit.

Step 4. Connect the other end of the cable to a Token-Ring port on the 8270-800.

Step 5. Label this cable.

Step 6. Dress the 8270 end of the cables, through the cable management bracket.

Step 7. To continue installing the 8270, continue with “Powering On the 8270” on page 2-24.

Powering On the 8270

The 8270 does not have a power switch. It is powered on by connecting the line cord to the 8270 and then to an ac outlet. See Figure 2-15. Be sure to connect the line cord to the power supply (1) before connecting it to the ac outlet (2). To power on the 8270-600 and to verify that it is operating correctly, see "Powering on the 8270-600." To power on the 8270-800 and to verify that it is operating correctly, see "Powering on the 8270-800" on page 2-25.

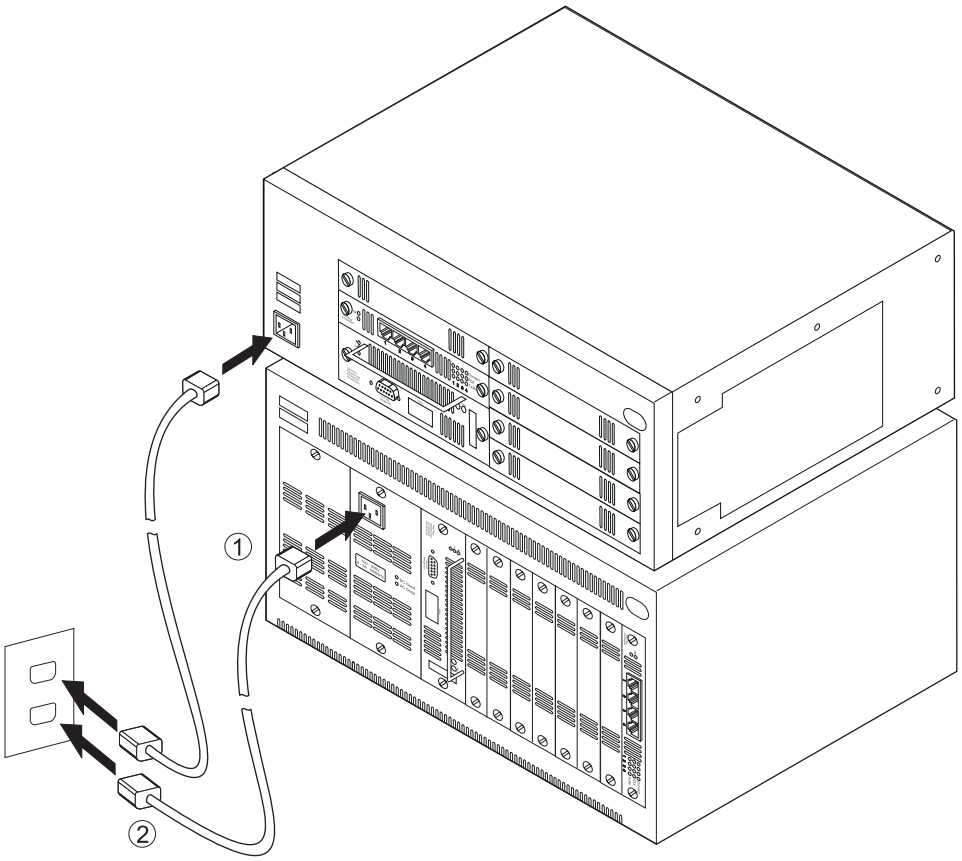


Figure 2-15. Powering On the 8270

Powering on the 8270-600

Verify that the Power (|) LED on the Token-Ring Processor Card is on. (See Figure 1-6 on page 1-6 for the location of the LEDs on the processor card.) If it is on, go to "Power-On Checkout" on page 2-26 to complete power-on checkout. If the LED is *not* on, check the following:

- Line cord is correctly installed.
- Power at the ac outlet.
- Token-ring processor card is correctly seated in the backplane socket.

If these actions do not correct the problem, see "Obtaining Service" on page 5-6

Powering on the 8270-800

Step 1. If the 8270-800 has two power supplies, two line cords must be connected; one for each supply. See Figure 2-16.

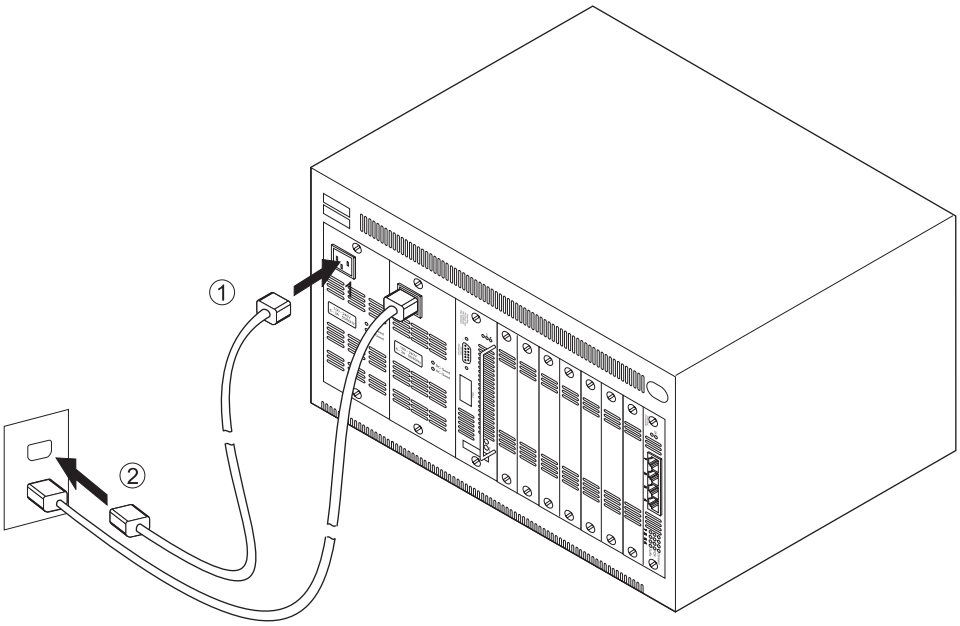


Figure 2-16. Powering On the 8270-800

Step 2. Verify that the following LEDs are on (both supplies, if two are installed):

AC OK on the power supply(8270-800 only)
DC OK on the power supply (8270-800 only)
Power (|) on the Token-Ring Processor Card

(See Figure 1-4 on page 1-4 for the location of the LEDs and connectors on the power supply. See Figure 1-6 on page 1-6 for the location of the LEDs on the processor card.)

If all of the above LEDs are on, go to “Power-On Checkout” on page 2-26.

Step 3. If the AC OK LED is *not* on, there is no ac power being supplied to the power supply module. Ensure that the line cord is correctly installed. If that is not the problem, check for power at the ac outlet. If the line cord is correctly installed and the ac outlet is active, the power supply is defective and should be replaced.

Step 4. If the AC OK LED is on but the DC OK LED is *not* on, the power supply is defective and should be replaced. See “Obtaining Service” on page 5-6

Step 5. If both power supply LEDs are on but the Power (|) LED on the processor card is *not* on, ensure that both the power supply module and the processor card are correctly seated in the 8270-800 backplane sockets. If this is not the problem, the power supply fuses protecting the processor card might be defective and should be checked. See “Obtaining Service” on page 5-6. If this is not the problem, the processor card is defective and should be replaced. See “Obtaining Service” on page 5-6

Power-On Checkout

Step 1. The 8270 automatically performs diagnostics when it is connected to a powered on. Diagnostics can last up to 8 minutes. You can get some idea about the progress of the diagnostics by observing the OK (green) and Fault (unlabeled) LEDs (amber) on the Token-Ring Processor Card. During the diagnostic period, the OK LED and the Fault LED blink in unison. If the diagnostics complete successfully, the Fault LED is off, and the OK LED is on. In addition, OK is displayed in the 4-character status display for 2 minutes.

Verify that the Fault LED (amber) on the processor card is off. If the Fault LED is on, press the **Reset** button. If the Fault LED remains on, the processor card is defective; contact your place of purchase.

Step 2. If a UFC has been installed and cabled, there are status LEDs that should be observed and verified on the UFC faceplate. Refer to the documentation provided with the UFC for information regarding the operation and status of the UFC.

Table 2-2 summarizes the normal state of the Status LEDs on the power supply, the Token-Ring Processor Card, and the UFCs after a successful power-on sequence.

Table 2-2. Normal State of Status LEDs

LED	Normal State
AC OK	On (8270-800 Only)
DC OK	On (8270-800 Only)
Power (|) (processor card)	On
OK (processor card and all UFCs)	On
Fault (processor card and all UFCs)	Off

If the LEDs are not in the normal state, go to Chapter 5, “Troubleshooting and Service.”

Note: UFC Slot 1 on the 8270-800 is intended for use with UFCs having two or fewer ports. If a 4-port UFC is intentionally installed in slot 1, ports 3 and 4 will not operate and the LEDs for those ports will not be on. In addition, the message S1X is permanently displayed in the 4-character status display. All other ports will operate correctly.

If diagnostics have been completed successfully and all of the LEDs are in the normal state, physical installation of the 8270 is complete.

To continue with the installation, go to Chapter 3, “Setting up a Console Session.”

Chapter 3. Setting up a Console Session

You can set up a console session locally by directly connecting a PC or other DTE to the EIA 232 port on the 8270. You also can set up a console session remotely by connecting a modem to the EIA 232 port and then dialing in from your remote station. To connect a terminal directly to the 8270, continue with “Connecting a Local Terminal.” To use a modem, go to “Connecting a Modem to Allow Remote Terminal Access” on page 3-2.

Connecting a Local Terminal

To connect a local terminal to the 8270, perform the following steps:

Step 1. Begin running your terminal emulation software on the PC or other DTE to which you will be connecting the 8270.

Step 2. Set the terminal as follows. See "Serial Link Configuration" in Chapter 3 of *8270 Models 600 and 800 Planning, Configuration, and Operation*.

Note: Some emulators do not have all of the options listed below.

Baud rate	1200, 2400, 4800, 9600, 19 200, 38 400, 57 600 (9600 is the default)
Parity	None
Data bits	8
Stop bits	1
Handshaking	None
Terminal emulation	VT100
Duplex	Full
Software flow control (XON/XOFF)	Off
Hardware flow control (RTS/CTS)	Off
Line wrap	Off
Screen scroll	On
CR translation	CR
Backspace (BS) translation	Destructive
Break length (milliseconds)	350
Enquiry (ENQ)	Off
EGA/VGA true underline	Off
Terminal width	890
ANSI 7- or 8-bit commands	7

Step 3. If you are using Microsoft Windows terminal emulation, set the Function, Arrow, and Ctrl Keys to act as terminal keys instead of Windows keys.

Step 4. Connect the EIA 232 port on the 8270 to your PC or DTE device using a null-modem cable or straight-through cable and null-modem adapter. The 8270 has a 9-pin, male connector. For pinout and cable information, see Appendix A, “Cable and Pin Information.”

Step 5. Press the **Reset** button. The Reset LED comes on. The 8270 will then perform a series of self-test diagnostics, which might last between 4 and 7 minutes.

Step 6. When the Reset LED goes off, diagnostics are complete.

Connecting a Modem to Allow Remote Terminal Access

You can monitor the 8270 remotely by using any Hayes-compatible modem. To connect a modem to the 8270, perform the following steps:

Step 1. Set up your modem according to its instructions. Place it near the 8270.

Step 2. Connect the cable from the EIA 232 port on the modem to the EIA 232 port on the 8270. (For cable information, see Appendix A, "Cable and Pin Information.")

Step 3. Set the modem as indicated below. If you uses settings other than the ones listed, you can cause the 8270 to reset when the modem is powered on.

Note: Some modems do not have all of these options. Also, some modems use slightly different names for the options.

Echo	Off
Result codes	Off
Auto-answer	On first ring
Wait for connection	45 seconds
Pause between calls	6 seconds
Auto baud detect	On
Drop DTR between calls	Yes
Send CR between calls	Yes
Send init if CD high	Yes
Maximum dial attempts	999

Step 4. Prepare your remote terminal by following steps 1 and 2 under "Connecting a Local Terminal" on page 3-1.

Step 5. Dial in to the 8270 modem from your remote site.

Chapter 4. Updating Software

This chapter contains customer procedures for downloading software upgrades to the 8270 flash EEPROM. Due to periodic updates to this code, customers should check for more recent code (a higher number) than that which is currently installed on your switch.

Note: The 8270 is not operational during a reset. Before starting this procedure, make sure that the network will not be affected.

The Interface Description on the Switch Information panel shows the hardware and software version of the 8270. The port microcode level applies to code related to physical port function.

Download the Diskette Image from the Internet

The following files for the 8270 code upgrade can be downloaded from http://www.networking.ibm.com/support by downloading the self-extracting file, 8270xxxx.exe. The file contains:

	File name	Contents
a.	TRS_Bxxx.GZ	Main image
b.	TRS_Bxxx.BT	Boot image
c.	TRS_Bxxx.SOL	Token-Ring microcode image
d.	TRSxxxxx.DEF	MIB tree definitions
e.	TRSxxxxx.MIB	MIB definitions for private MIB
f.	TRSxxxxx.TRP	MIB definitions for traps
g.	DTRCxxxx.MIB	MIB definitions for source-routing
h.	READ.ME	Release Notes

where xxx refers to the Release Number.

Refer to the READ.ME file in the diskette image for the latest information about the 8270 software and download procedures.

Items a through c are software modules that reside in the switch. Items d through g are network management files that should be given to your network administrator.

If you have an ATM UFC in your 8270, download the latest release of software for it also.

Download the Code into the 8270

There are three ways to download software to the 8270: “Initiating a Download with the System Request Menu” on page 4-2, “Serial Port or TFTP Downloading with the Download Menu” on page 4-3, and “BootP” on page 4-5.

Initiating a Download with the System Request Menu

Important: Before beginning, make sure that the baud rate of the terminal session and the 8270 are both set to 9600. Although this rate is slow, it helps prevent potential problems.

This section provides information on initiating the download procedure with the System Request Menu.

Follow these steps to begin a software upgrade:

Step 1. If you have not already done so, start a console session and advance to the Copyright panel, if possible.

Step 2. Press and release the **System Request** button. The console will display the System Request menu.

```
                System Request Menu

          1. Xmodem download of boot image
          2. Xmodem download of main image
          3. Xmodem download of Token-Ring microcode image

          4. Clear Non-Volatile RAM
          5. Reset the system


          0. Exit and continue


        Choice=>
```

Figure 4-1. System Request Menu

Step 3. Select your download option from the console and continue with the procedure.

Step 4. The following messages appear:

```
SYSREQ:  Beginning Xmodem download of main(or boot) image
SYSREQ:  Waiting for binary file....
```

Step 5. Use a terminal emulator program on your PC to download the binary file using Xmodem protocol.

The download takes approximately 5 minutes at 9600 baud.

When the download is complete, the following messages appear:

```
SYSREQ:  Beginning Xmodem download of main image
SYSREQ:  Waiting for binary file.... Done
SYSREQ:  Preparing Flash....Done.
SYSREQ:  Saving Main Image into Flash...Done


SYSREQ:  Press any key to return to System Request menu.
```

Step 6. Reset the switch after each module is loaded; this helps ensure error-free downloads. Select option 5 to reset the system.

Serial Port or TFTP Downloading with the Download Menu

Important: Before beginning, make sure that the baud rate of the terminal session and the 8270 are both set to 9600. Although this rate is slow, it helps prevent potential problems.

This section provides information on initiating the download procedure with the Download menu.

Follow these steps to begin a software upgrade:

Step 1. If you are downloading via the serial port, insert the upgrade disk in your terminal drive. Make sure that your terminal emulator supports Xmodem protocol.

Step 2. If you are downloading via TFTP, copy all three image files to the TFTP server and prepare the TFTP server.

Step 3. If you have not already done so, start a console session and advance to the Main Menu. For information on starting a console session, refer to *Planning, Configuration, and Operation*.

Step 4. Select **Download** on the Main Menu.

```
                                Download


                           Serial Link Download

                           TFTP Download...









  Return

                           Return to previous menu
        Use cursor keys to choose item.  Press <ENTER> to confirm choice.
                     Press <CTRL><N> to return to Main Menu.
```

Figure 4-2. Download Menu

Step 5. When the Download menu appears (see Figure 4-2), select **Serial Link Download** or **TFTP Download...**.

Step 6. If you chose Serial Link Download, go to step 8.

Step 7. If you chose TFTP Download, go to step 13.

Step 8. Select **Main Image**, **Boot Code**, **Token-Ring Microcode**, **UFC Image**, or **Other**. If you select UFC Image, you will be prompted to select the UFC for which you are downloading code.

Step 9. Confirm the download when you are prompted to do so by the following message:

```
Please confirm new code download via serial port (Y or N):
```

Step 10. The following messages appear:

```
Console:  Beginning Xmodem download of main image
Console:  Waiting for binary file....
```

Step 11. Use the file transfer function of your terminal emulator program to download the binary file using Xmodem protocol.

The download takes approximately 5 minutes at 9600 baud.

Attention: Do not interrupt the download or the boot image will be corrupted and need to be reloaded. During the download, the 8270 OK LED will blink.

When the download is complete, the following messages appear:

```
Console:  Beginning Xmodem download of main image
Console:  Waiting for binary file.... Done
Console:  Preparing Flash....Done.
Console:  Saving Main Image into Flash...Done


Please confirm switch reset (Y or N):
```

Step 12. Confirm the reset. The procedure is complete.

Step 13. When the TFTP Download panel appears (see Figure 4-3 on page 4-5), fill in the fields and then select **Execute Network Download**.

Step 14. Confirm the download when you see the message:

```
Please confirm new code download via network (Y or N):
```

Attention: Do not interrupt the download or the boot image will be corrupted and need to be reloaded. During the download, the 8270 OK LED will be blinking.

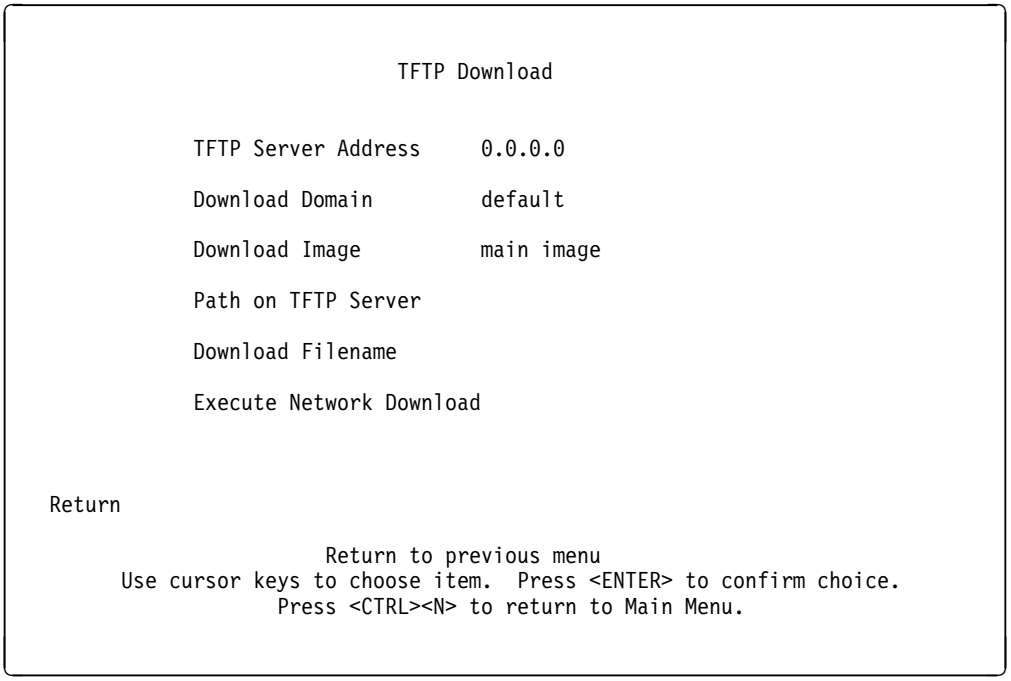


Figure 4-3. TFTP Download Panel

Step 15. Press **Enter** when you see the message:

```
Download  complete - reset switch to activate new software.
Press <Enter> to continue......
```

Step 16. Reset the 8270, as instructed, to activate the new code. Reset the switch after each module is loaded; this helps ensure error-free downloads.

BootP

The Bootstrap Protocol (referred to as *BootP*) function allows the 8270 to participate in RFC 951-compliant environments. BootP uses User Datagram Protocol (UDP) to formulate a network request to allow a device to configure its IP address for a given logical 8270.

Step 1. Edit the BOOTPTAB file on the BootP server (see “Editing the BOOTPTAB File” on page 4-7).

Step 2. Initiate the BootP daemon (*BOOTPD*) on the BootP server.

Step 3. Make sure that the IP State in the IP Configuration Menu is set to BootP When Needed or BootP Always.

Step 4. Initiate the BootP transfer by resetting the 8270. A BootP is automatically initiated after diagnostics have been completed.

Note: Do not configure multiple BootP servers to a single 8270.

The BootP sequence consists of IP address determination and bootfile selection, if configured, using BootP request and reply.

In order for you to utilize the BootP function, a BootP server must be configured on the network. This BootP server must reside on the same subnet as the 8270. A typical implementation might consist of a BootP daemon (BOOTPD or *IN.BOOTPD*) or something similar. BOOTPD reads a startup file called *BOOTPTAB*. This file

contains various strings that describe how BootP clients are configured. An entry is made in the BOOTPTAB file for each BootP client (in this case, the 8270) on the network. Figure 4-4 on page 4-7 displays an example of a BOOTPTAB file for configuring two 8270s.

The 8270 BootP function has been tested in the following environments:

- Solaris** with an HP version of CMU BOOTP
- Santa Cruz Operation (SCO**) UNIX with an SCO BOOTP
- LattisNet** DOS Network Management Station
- IBM NetView for AIX

Editing the BOOTPTAB File

Figure 4-4 shows an example of a BOOTPTAB file.

```
#Blank lines and lines beginning with '#' are ignored.
#Legend:
#       first field--hostname (may be full domain name)
#       bf--bootfile
#       bs--bootfile size
#       cs--cookie servers
#       ds--domain name servers
#       gw--gateway address list
#       ha--host hardware address
#       hd--bootfile home directory
#       hn--send hostname
#       ht--hardware type
#       im--impress servers
#       ip--host IP address
#       lg--log servers
#       lp--LPR servers
#       ns--IEN-116 name servers
#       rl--resource location protocol servers
#       sm--subnet mask
#       tc--template host (points to similar host entry)
#       to--time offset (seconds)
#       ts--time servers
#       vm--vendor magic cookie selector

#Be certain to include backslashes where they are needed.
#Define different master entries for each 8270 (or domain).

S82701:\
        hn:\
        ht=token-ring:\
        vm=rfc1048:\
        ha=0004AC281340:\
        ip=134.177.169.111:\
        sm=255.255.0.0:\
        gw=134.177.169.201:\
        bf=/etc/TRS_Bxxx.gz:


S82702:\
        hn:\
        ht=token-ring:\
        vm=rfc1048:\
        ha=1005A2B12A0:\
        ip=134.177.169.48:\
        sm=255.255.0.0:\
        gw=134.177.169.201:\
        bf=/etc/TRS_Bxxx.gz:
```

Figure 4-4. Example of a BOOTPTAB File

Configure the BOOTPTAB file to the 8270 to which the BootP server is attached. Associate the MAC address and the IP address for Domain 0 as listed in the Master Address Table.

Note: Do not use the MAC address in the Switch Information panel.

The Master Address Table displays the address for Domain 0 (default). In the example given, the address for the 8270 is the *Switch Base MAC Address* (`00044A 281320`) on the Switch Information panel. The address that is loaded for Domain 0 in the BOOTPTAB file is `00044A 281340`. If another 8270 is configured, the address associated with that 8270 is entered in the BOOTPTAB file in the BootP server associated with that 8270. (In this example, the second 8270 has the Domain 0 address `10005A 2B12A0` which corresponds to switch base address `10005A 2B1280`)

If the 8270 has domains configured, a BootP server is attached to each configured domain. The BOOTPTAB file contains the address for that specific domain.

Note: BootP has a limitation with respect to the gateway entry. The server device IP address is written into the "gw" gateway address filed when the configuration is downloaded. Thus, you must configure the gateway address on the 8270 at the end of the download sequence. Refer to your UNIX operating system environment manual for further information.

BootP and TFTP Limitations

- Do not configure multiple TFTP servers to download code updates using TFTP to a single 8270 (or to multiple domains).
- When you use domains, BootP configures the IP address of the BootP-connected network.
- The IBM BootP implementation does not need or handle any BootP extensions.
- If the download is interrupted or corrupted, you must download a new image using the serial port download (see "Serial Port or TFTP Downloading with the Download Menu" on page 4-3).
- If the network broadcast traffic is 200 packets per second or more, the TFTP request might not be initiated by the 8270. You must reset the 8270 and download a new image using the serial port download (see "Serial Port or TFTP Downloading with the Download Menu" on page 4-3).
- The BootP function might not work if BootP request and reply frames must cross Token-Ring segments.

Error Messages

During the BootP download procedure, the 8270 might encounter certain error conditions. When this occurs, the 8270 sends error messages to the console.

Chapter 5. Troubleshooting and Service

This chapter contains procedures that help you troubleshoot problems with an 8270 and its connections to other devices.

Be sure to read “Safety Information” on page vii before proceeding.

Obtaining Software

You can obtain updated versions of IBM software through either the Internet or the IBM Bulletin Board System.

- Internet

  You can access updated versions of the software through FTP or the World Wide Web.

  – FTP: `lansupport.raleigh.ibm.com`

  – WWW: `http://www.networking.ibm.com/`

    This is the IBM Networking Home Page. From here, you can access product announcements, publications information, and information regarding hardware and software updates.

- IBM Bulletin Board System

  Using a modem, you can access the IBM BBS to obtain latest versions of software. Set your modem and communications software to 8 data bits, no parity, and 1 stop bit. Dial one of the following numbers:

  United States: (919) 517-0001
  Toronto: (905) 316-4255
  Toronto: (416) 956-7877
  Vancouver: (604) 664-6464
  Montreal: (514) 938-3022
  Halifax: (902) 420-0300

Troubleshooting in a Network

The 8270 console and SNMP management agent give you access to important statistics and other information about the network. To use this information and the TokenProbe feature to analyze and isolate network level problems, refer to *Planning, Configuration, and Operation*.

Start of Troubleshooting Process

If one or more devices (such as PCs) connected to an 8270 are unable to communicate with other devices in the network, use the following steps to start the troubleshooting process:

Step 1. Locate the 8270 to which the device is connected. Use the network sketch, the label on the cable connected to the device, or other network records to help you locate the 8270.

Step 2. You should also have available any documentation associated with the UFCs that are installed in the 8270.

Step 3. If you have set up a console session (see Chapter 3, “Setting up a Console Session” on page 3-1), you can use it to determine whether diagnostics have been completed correctly. A list of normal diagnostic messages can be found in *Planning, Configuration, and Operation*.

Step 4. Observe the LEDs and the 4-character display on the 8270 front panel. Ignore the UFC LEDs at this time. Figure 1-5 on page 1-5 and Figure 1-6 on page 1-6 illustrate the location of these indicators. For explanations of the LEDs, see Table 1-1 on page 1-5 and Table 1-2 on page 1-7. For explanations of the messages in the 4-character display, see “Status Display” on page 1-7. Review these sections before proceeding with the troubleshooting process.

Step 5. If the 4-character display message indicates a fan (Fx) or fuse (!x) failure, (8270-800 only), see “Obtaining Service” on page 5-6.

Attention: (8270-800 Only)–fuses 3 and 4 control power to the Token-Ring Processor Card. If either fuse 3 or fuse 4 fails, the Token-Ring Processor Card becomes inoperative and cannot display and status messages. The symptom of failure of fuse 3 or 4 is that the Power (|) LED on the Token-Ring Processor Card is not on, while the AC OK and DC OK LEDs on the power supply are on.

Step 6. Otherwise, in Table 5-1 on page 5-3, locate the symptom that best describes the communication problem and the LED pattern you observed. Then, go to the section that contains the recommended actions for resolving the problem and follow that procedure.

Choosing a Troubleshooting Procedure

Use Table 5-1 on page 5-3 to determine which troubleshooting procedure you should use. Unless otherwise stated, references to the OK and Fault LEDs are those on the Token-Ring Processor Card.

Table 5-1. Symptom, LED State, and Recommended Procedure

Symptom and LED State	Action:
(8270-600 Only) The Fault (unlabeled) LED (amber) and the OK LED are off. The fan is not running.	Go to "Procedure A" on page 5-3
(8270-800 Only)–Both the AC OK and DC OK LEDs are off. This applies to either or both power supplies if the second power supply is installed.	Go to "Procedure A" on page 5-3
(8270-800 Only)–The AC OK LED is on and the DC OK LED is off. This applies to either or both power supplies if the second power supply is installed.	The power supply is defective. See "Obtaining Service" on page 5-6.
The Fault (unlabeled) LED (amber) is on or the OK LED is off.	Go to "Procedure B" on page 5-3
None of the devices connected to the 8270 can communicate, the Fault (unlabeled) LED (amber) is off, and the Power (|) LED is on.	Go to "Procedure C" on page 5-4
A single device connected to the 8270 is having trouble communicating.	Go to "Procedure D" on page 5-4
A UFC's Fault LED (amber) is on or a device connected to a UFC is experiencing problems.	Refer to service and troubleshooting information in the UFC documentation.

Note: Throughout this manual, *segment* refers to a single cable or interconnected cables between an 8270 Token-Ring port and the device at the other end.

Procedure A

Use this procedure if all of the LEDs are off:

Step 1. Verify that the ac power outlet to which the 8270 power supply is connected is active. If an uninterruptible power supply (UPS) is being used to provide ac power to one or both supplies, ensure that the UPS is working correctly.

Step 2. Verify that the line cord is correctly installed.

Step 3. (8270-800 only)—Verify that the power supply is correctly installed in the chassis.

Step 4. If all of the preceding conditions are satisfied, the power supply is defective. See "Obtaining Service" on page 5-6.

Procedure B

Use this procedure if the Fault (unlabeled) LED (amber) is on:

Step 1. Reset the 8270 by disconnecting the line cord from the ac outlet, waiting 10 seconds, and reconnecting the line cord to the ac outlet. If the problem is corrected, resume using the 8270.

Step 2. If you have just downloaded new microcode, clear NVRAM and reset the 8270 using instructions found in *Planning, Configuration, and Operation*.

Note: Clearing NVRAM erases all configuration parameters. If you are using the TokenPipe feature, be sure to disconnect the affected ports or disable them on the Port Configuration panel and reset the switch ***before*** clearing NVRAM. If you are using the Spanning Tree option, it will be turned off and port costs and priorities will be lost, which can result in

loops. Temporarily disconnect the parallel ports, and then use the Spanning Tree panels to reestablish port costs and priorities. If you are using an SNMP manager, reconfigure all IP and SNMP parameters. If in doubt, disconnect all ports then reconnect them one at a time.

If the problem is corrected, resume using the 8270.

Step 3. One or more bad ports can cause this symptom, and the remaining ports might continue to operate.

a. Reset the 8270 and monitor the diagnostic messages for port failures. Try to correct any individual port problems that are detected.

b. For failing UFC ports, use the UFC documentation to try to correct the problem.

c. If the problem is corrected, resume using the 8270.

Step 4. If the problem is not corrected, the 8270 is defective. See “Obtaining Service” on page 5-6.

Procedure C

Use this procedure if all devices connected to the 8270 are having communication problems, the Fault (unlabeled) LED is off, and the OK LED is on:

Step 1. Reset the 8270 by disconnecting the line cord from the ac outlet, waiting 10 seconds, and reconnecting the line cord to the ac outlet.

a. If the problem goes away, resume using the 8270.

b. If the status LEDs indicate a failure, go to “Procedure B” on page 5-3.

c. If the problem persists, check all the configuration parameters.

d. If the problem has still not been resolved, go to “Procedure D” and try to get individual ports working.

Procedure D

Use this procedure if one device connected to the 8270 is having a communication problem, the Fault (unlabeled) LED is off, the OK LED is on and other attached devices can communicate through the 8270:

Step 1. Check the port (UFC) LEDs.

a. If the Connect LED is on, the problem is probably external to the 8270-800. Go to step 2.

b. If the Connect LED is off, the port is probably disabled. Check that the port configuration matches that of the attached device, and then go to step 3.

c. If the Connect LED is blinking, go to step 4.

Step 2. If the Connect LED on the failing port is on, and the attached device still cannot communicate:

a. If the attached device is directly connected, it might be set up incorrectly. Go to step 4.

b. In a shared environment, check the segment cabling and the media access unit.

c. Go to step 5.

Step 3. Perform the following steps when the Connect LED is off:

a. Using the local console on the console of the SNMP manager, check to see whether the failing port is disabled. If it is, enable it. A port will disable itself when the Config Loss parameter is exceeded. This can be caused by poor cables, a faulty station connected to the 8270, or a bad port on the 8270.

b. If the port is not disabled, disconnect the port cable. If the LED does not start flashing within a few seconds, the port is bad and the 8270 needs service. Try moving the cable to another port with a flashing Connect LED until service can be arranged. If the 8270 can be temporarily removed from service, connect a console and reset the 8270 with diagnostics to see whether the port passes diagnostics and initializes. If it does not, the problem is in the 8270. See "Obtaining Service" on page 5-6.

Step 4. Restart the communications program on the failed connected device.

a. If the communications program appears to start without errors, observe the Connect LED on the 8270 port. If it is on, the problem might have gone away. Check the Config Loss parameter in the Port Configuration Menu for possible causes of the failure.

b. If the problem persists, try another identically configured port on the 8270. If the new port works, there is a problem with the failed port. See "Obtaining Service" on page 5-6.

Step 5. If the 8270 is connected to a Token-Ring concentrator, perform the following steps:

a. Verify that the 8270 duplex setting matches that of the attached device.

b. Verify that the concentrator is operating correctly.

c. Verify that only one cable interconnects the two devices. In other words, only one port on the 8270 should be connected to a port on the concentrator. (If Spanning Tree is operational, it will not allow this configuration. It will disable traffic through the port, but the port will remain open.

Step 6. For each device that is having a communication problem, connect its segment to another Token-Ring port on the 8270. Try each of the remaining ports to determine whether the problem will go away.

a. If the problem goes away, the problem might be in the 8270. See "Obtaining Service" on page 5-6.

b. If the problem persists, continue with Step 7.

Step 7. The problem does not appear to be in the 8270 and the cables and devices connected to the 8270. The problem might be in the network applications or other software running on the devices that are having the communication problem. Refer to the software documentation for software problem determination procedures, or consult your network administrator for assistance.

Obtaining Service

There are no user-serviceable parts inside the 8270 chassis. Refer all internal service requirements to qualified personnel. Qualified service personnel should see Chapter 6, “Service Procedures for Qualified Personnel” on page 6-1.

8270-600: The 8270-600 processor card and UFCs are individually replaceable by the user.

8270-800: In addition to the processor card and the UFCs, the 8270-800 power supplies are individually replaceable by the user.

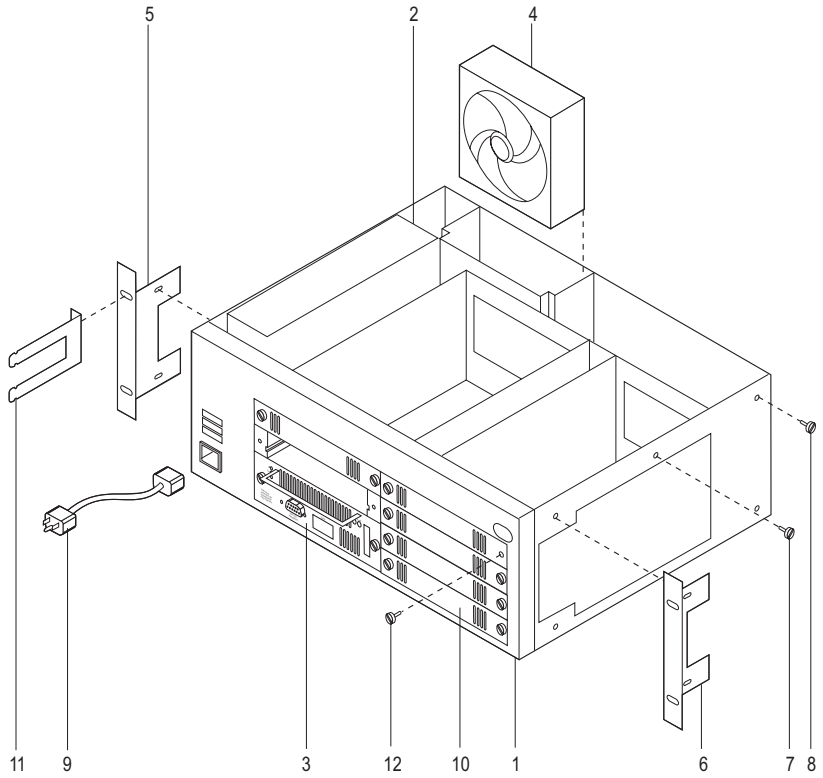
Assistance: If you need assistance in troubleshooting your 8270, call IBM at **1-800-IBM-SERV (426-7378)** in the United States and Canada. See “Warranty” on page B-5 for information concerning service for the product.

Chapter 6. Service Procedures for Qualified Personnel

Parts Listing

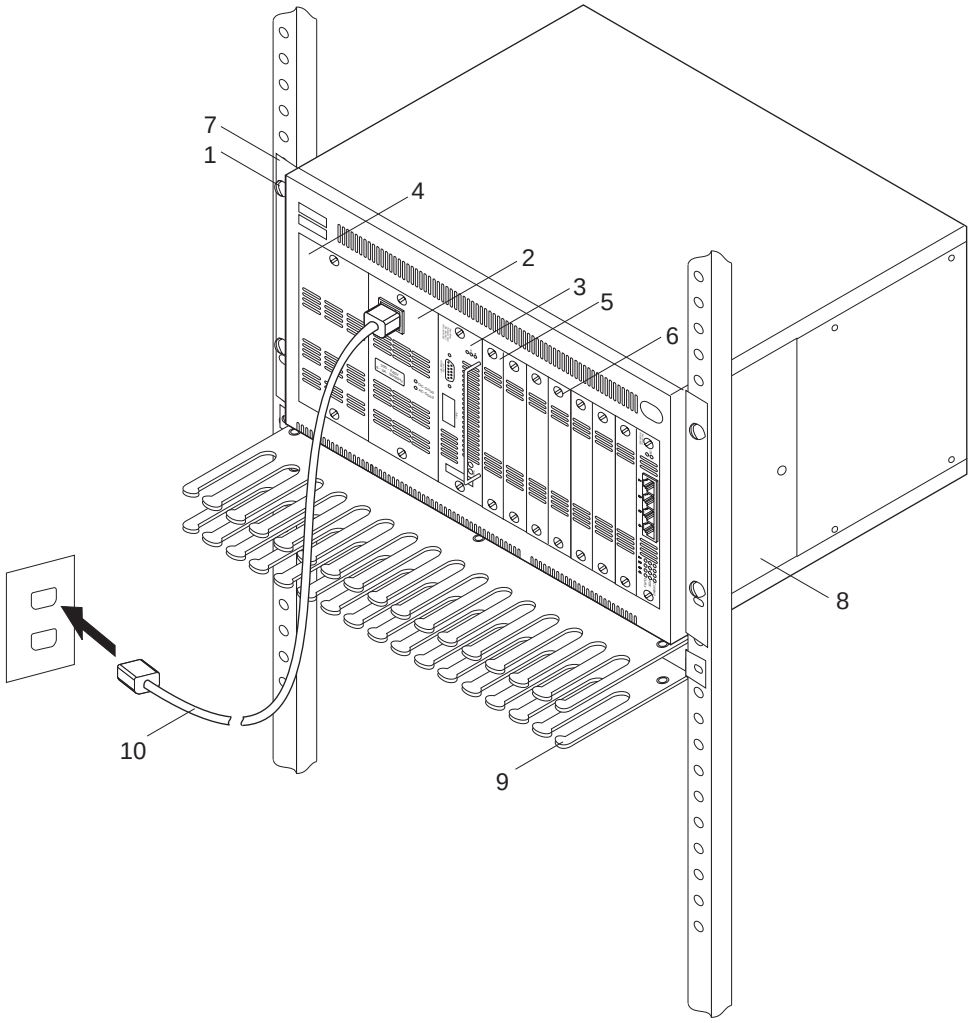
The following drawings and tables identify all of the replaceable parts associated with the 8270.

Assembly 1: 8270-600



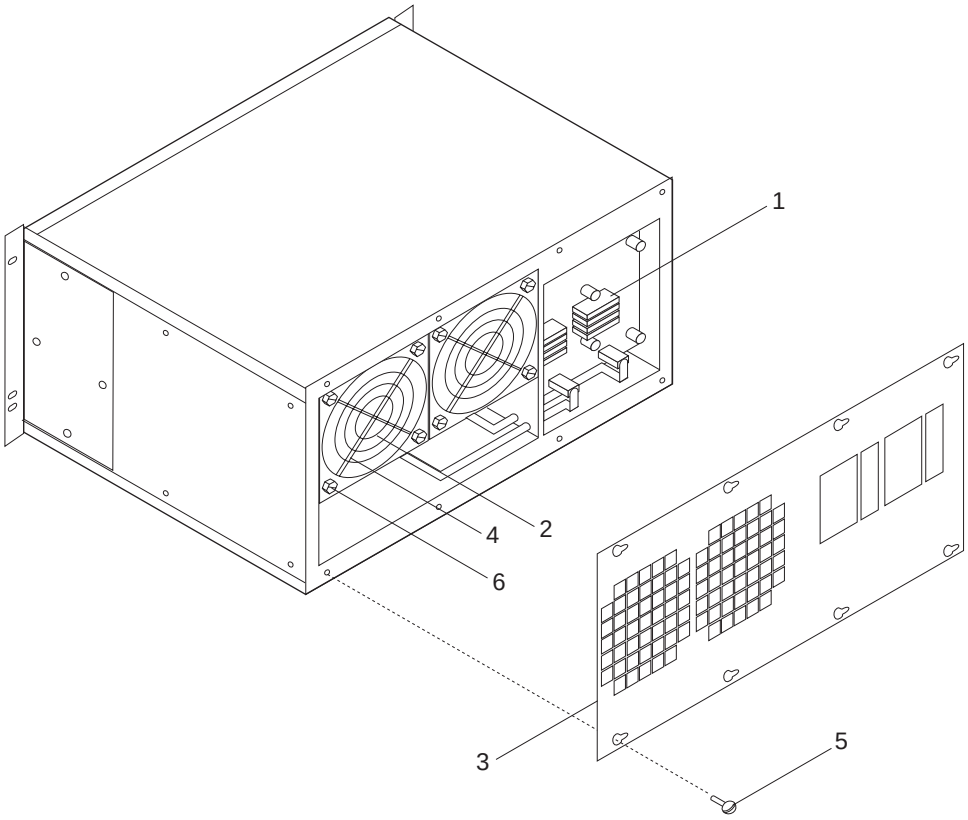
Asm–Index	Part Number	Units	Description
1–1	02L1387	1	Chassis, 8270-600; includes backplane, power supply, and fan
–2	85H4705	1	Power supply, 150 watts
–3	02L1415	1	Token-Ring Processor Card
–4	72H3414	1	Fan
–5	02L1368	1	Rack mount bracket "A", left side
–6	02L1369	1	Rack mount bracket "B", right side
–7	04H6236	2	Screw, M4x6mm, center-post torx-T20
–8	92G8546	6	Screw, M4x8mm, slot head, black
–9	Note1	1	Line cord, Note: See Assembly Note1: See “Assembly 4: Line Cords” on page 6-4
–10	42H4288	5	Cover, UFC slot
–11	13H8966	1	Cable management bracket
–12	42H0242	10	Thumbscrew, M4x8mm

Assembly 2: Front View 8270-800



Asm–Index	Part Number	Units	Description
2–1	72H3422	1	Chassis, 8270-800
–2	85H5041	Note1	Power supply, 300 watts Note1: 1 or 2
–3	72H4661	1	Token-Ring Processor Card
–4	42H4284	1	Cover, power supply slot
–5	42H4288	7	Cover, UFC slot
–6	42H0242	16	Thumbscrew, M4x8mm
–7	42H4285	1	Bracket A, rack-mount, left side
–8	42H4286	1	Bracket B, rack-mount, right side
–9	72H4660	1	Bracket, cable management
–10	Note2	Note3	Line cord Note2: See “Assembly 4: Line Cords” on page 6-4 Note3: 1 or 2

Assembly 3: Rear View 8270-800



Asm–Index	Part Number	Units	Description
3–1	85H5043	7	Fuse, 15 A
–2	72H3414	2	Fan
–3	42H4287	1	Cover, rear service
–4	41H7725	2	Guard, fan
–5	92G8546	18	Screw, M4X8mm, slot head, black Service cover and rack-mount brackets
–6	1621159	8	Screw, M3X45mm, pan head Fan mount

Assembly 4: Line Cords

Asm–Index	Part Number	Units	Description
4–1	34G0232	1	Line Cord,125V,2.8m - Japan
–2	13F9940	1	Line Cord,250V,2.8m - Australia, New Zealand, China
–3	13F9959	1	Line Cord,125V,1.8m - Philippines, South Korea, Taiwan
–4	13F9979	1	Line Cord,250V,2.8m - Angola, Austria, Belgium, Bulgaria, Czech Republic, Egypt, Finland, France, Germany, Greece, Hungary, Iceland, Indonesia, Iran, Lebanon, Luxembourg, Mozambique, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sudan, Sweden, Syria, Turkey, Yugoslavia, Zaire
–5	13F9997	1	Line Cord,250V,2.8m - Denmark
–6	14F0015	1	Line Cord,250V,2.8m - Bangladesh, Myanmar, Namibia, Pakistan, South Africa, Sri Lanka, Swaziland, Zimbabwe
–7	14F0033	1	Line Cord,250V,2.8m - Bahrain, Brunei, Cyprus, Ghana, Hong Kong, Iraq, India, Ireland, Jordan, Kenya, Kuwait, Libya, Macao, Malaysia, Malawi, Malta, Nigeria, Oman, Quatar, Sierra Leone, Singapore, Somalia, Tanzania, Uganda, United Arab Emirates, U.K., Yemen, Zambia
–8	14F0051	1	Line Cord,250V,2.8m - Switzerland
–9	14F0069	1	Line Cord,250V,2.8m - Ethiopia, Italy
–10	14F0087	1	Line Cord,250V,2.8m - Israel
–11	1838574	1	Line Cord,250V,2.8m - Thailand
–12	6952301	1	Line Cord,125V,1.8m - U.S.A., Canada, Liberia, Saudi Arabia
–13	6952300	1	Line Cord,125V,2.8m - U.S.A., Canada, Liberia, Saudi Arabia

There are no customer-serviceable parts inside the 8270 chassis. The following procedures are for qualified service personnel only.

Replacing a Fan in an 8270-600

The following procedure describes how to replace a chassis cooling fan.

Step 1. Disconnect ac power.

Step 2. Remove top cover of the chassis by removing 6 screws.

Step 3. Disconnect fan cable from backplane card. The connector has a latch that needs to be depressed to release the connector.

Step 4. Slide the fan up out of the fan cage.

Step 5. Slide replacement fan into the fan cage. Orient the fan so that the air exits the rear of the chassis.

Step 6. Reconnect fan cable to backplane card.

Step 7. Reinstall top cover.

Step 8. Reconnect ac power.

Replacing a Power Supply in an 8270-600

Step 1. Disconnect ac power.

Step 2. Remove top cover of the chassis by removing 6 screws.

Step 3. Remove the four screws that hold the power supply in the chassis.

Step 4. Lift the supply slightly and unplug the ac and dc cables to separate the power supply from the chassis.

Step 5. Plug the cables into the new supply before inserting it into the chassis.

Step 6. Reinstall the four screws that hold the power supply in the chassis.

Step 7. Reinstall the top cover of the chassis.

Step 8. Reconnect ac power.

Replacing a Fan in an 8270-800

The following procedure describes how to replace a chassis cooling fan. These fans can be replaced while 8270-800 power is on (hot-plugged).

Step 1. Remove the screw in the bottom right corner of the rear cover.

Step 2. Loosen but do not remove the remaining seven screws that retain the rear cover.

Step 3. Slide the rear cover to the right and remove it from the chassis.

Step 4. Disconnect the fan cable connector from the fuse panel (see Figure 6-1 on page 6-6) and pull it through the access hole.

Step 5. Remove the four screws retaining the fan guard and the fan.

Step 6. Remove the fan guard and the fan.

Step 7. Position the fan guard and the replacement fan, and reinstall the four screws that retain them.

Step 8. Route the fan cable and replug the connector.

Step 9. Reinstall the rear cover.

Step 10. Reconnect the ac power if it was disconnected.

Replacing a Fuse in an 8270-800

The following procedure describes how to replace a fuse.

Step 1. Ensure that ac power to the 8270-800 is disconnected.

Step 2. Remove the screw in the bottom right corner of the rear cover.

Step 3. Loosen but do not remove the remaining 7 screws that retain the rear cover.

Step 4. Slide the rear cover to the right and remove it from the chassis.

Step 5. The fuse panel is located on the right side (as viewed from the rear) of the chassis (see Figure 6-1). There are seven fuses labeled 1 through 4 and 6 through 8. There is no fuse 5. Replace the defective fuse or fuses.

Step 6. Reinstall the rear cover.

Step 7. Reconnect the ac power.

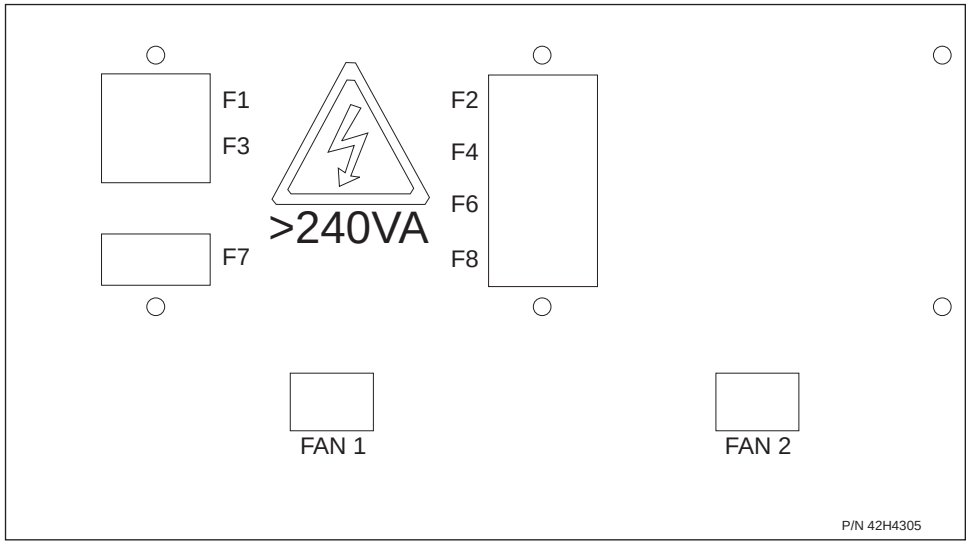


Figure 6-1. 8270-800 Fuse and Fan Connector Panel

Table 6-1. Fuse Power Control

Fuse	Controls
3 and 4	Token-Ring Processor Card UFC Slot 1 UFC Slot 2
1 and 2	UFC Slot 3 UFC Slot 4 UFC Slot 5
6	Fans
7 and 8	UFC Slot 6 UFC Slot 7 UFC Slot 8

Appendix A. Cable and Pin Information

This appendix provides information on cables that can be used with the 8270. It also provides minimum pinout information so that you can verify that the cables that you are using are correctly wired.

Connecting to the Management (EIA 232) Port

Table A-1 lists the type of cables that are used when connecting to the EIA 232 port on the 8270.

Table A-1. Connecting to the EIA 232 Port

Cable Function	Cable Type or Cable Solution
Connect a modem to the EIA 232 port	Connect one end of a straight-through, EIA 232 modem cable to the EIA 232 port and the other to the modem.
Connect a PC or other DTE device to the EIA 232 port	Connect one end of a crossover, EIA 232 cable to the EIA 232 port and the other end to the PC or DTE device. Attach a null-modem adapter to the EIA 232 port. Then, attach a straight-through modem cable to the null-modem adapter.

Note: Use a properly shielded and terminated cable to maintain product EMC compliance.

Twisted-Pair Cable Pinouts

When connecting devices to the Token-Ring ports on the 8270, you must use a straight-through cable. Diagrams of these cables follow.

Straight-Through 100-Ohm and 120-Ohm Cable

The 8270 RJ-45 connector makes ground available on the shield and on pins 1, 2, 7, and 8. Shielded cables will provide continuity for ground to any shielded connector on the other end of the cable.

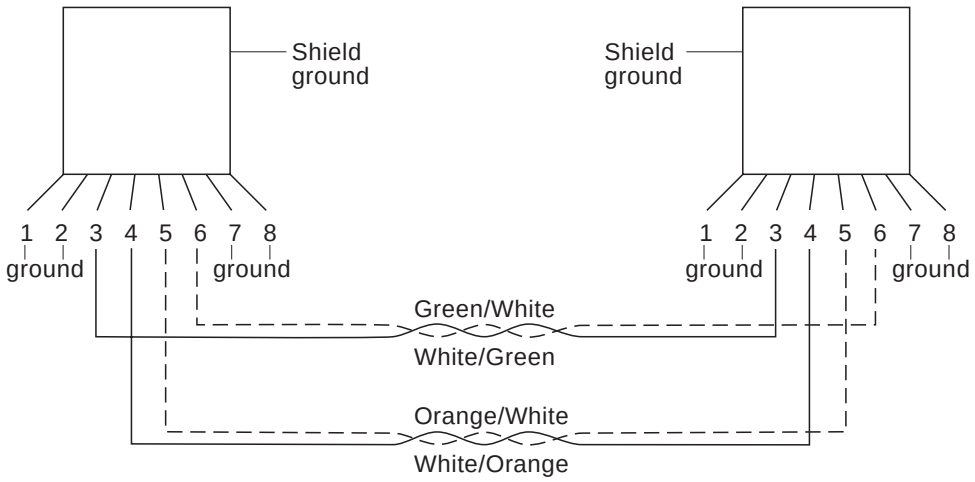


Figure A-1. Straight-Through Cable

150-Ohm Data Connector-to-RJ-45 Straight-Through Cable

RJ-45 Pins	IBM Cabling System Data Connector Color Code
1	ground
2	ground
3	Black
4	Red
5	Green
6	Orange
7	ground
8	ground
Shield	Shield

Figure A-2. 150-Ohm Data Connector-to-RJ-45 Straight-Through Cable

EIA 232 Port and Cable Pinouts

The 8270 has an EIA 232 port wired as a DTE. For this reason, you cannot use a straight-through modem cable to directly connect a terminal to the EIA 232 port.

For a terminal connection, you can use either a null-modem cable or a modem cable with a null-modem adapter attached. For a modem connection, you can use a standard modem cable.

This section provides pinout information for the cables you can use to connect to the EIA 232 port.

EIA 232 Port Pinout

Pin	Signal Name
Shell	CHS GND
3	TXD
2	RXD
7	RTS
8	CTS
6	DSR
5	SIG GND
1	CD
4	DTR
9	RI

Figure A-3. Pinout of the EIA 232 Port

EIA 232 Modem Cable Connections

Use a straight-through modem cable to connect the EIA 232 port of the 8270 to a modem.

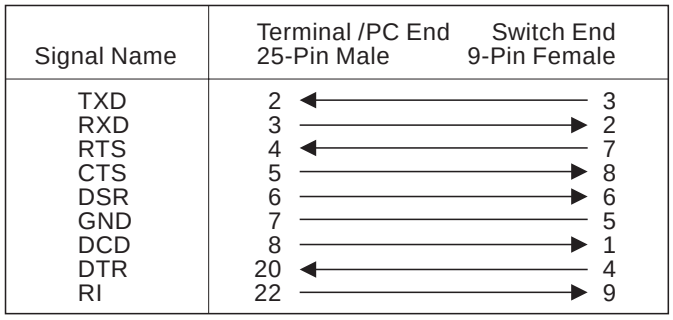


Figure A-4. EIA 232 Modem Cable for Terminal with 25-Pin Connector

EIA 232 Null-Modem Connections

Use a null-modem (crossover) cable as shown in Figure A-5 to connect the EIA 232 port to a terminal (DTE) with a 25-pin connector. Alternatively, you can use a modem cable and a null-modem adapter. DTR (pin 20) and RTS (pin 4) must be on, or high, on your terminal or in your terminal emulation program.

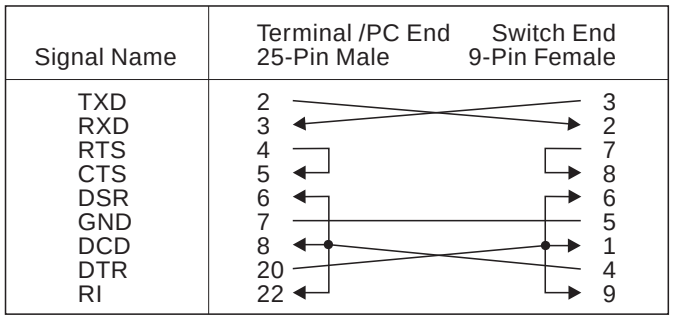


Figure A-5. EIA 232 Null-Modem Cable for Terminal with 25-Pin Connector

Use a null-modem (crossover) cable as shown in Figure A-6 on page A-4 to connect the EIA 232 port to a terminal (DTE) with a 9-pin connector. Alternatively, you can use a modem cable and a null-modem adapter. DTR (pin 4) and RTS (pin 7) must be on, or high, on your terminal or in your terminal emulation program.

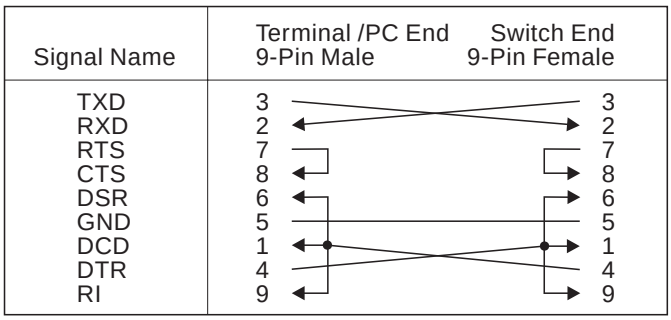


Figure A-6. EIA 232 Null-Modem Cable for Terminal with 9-Pin Connector

Cabling Recommendations

Table A-2 and Table A-3 list the supported cable types.

Table A-2. Copper Cable Types

Cable Type	Impedance
Type 1 and 1A	150 ohms
Type 2 and 2A	150 ohms
Type 8	150 ohms
Type 9	150 ohms
Type 3	100 ohms
Category 3	100 and 120 ohms
Category 4	100 and 120 ohms
Category 5	100 and 120 ohms

Table A-3. Multimode Optical Fiber Cable Types

Cable Type
65.5/125-micron fiber
50/125-micron fiber
100/140-micron fiber

If you are installing new cabling for data applications, IBM recommends that you use the following types of cable:

- For lobe cabling from the telecommunications closet to the wall outlet, IBM recommends 150-ohm, STP or four-pair category 5 cable that meets the international cable standard (ISO/IEC 11801) or the North American cabling standard (EIA/TIA 568A).
- For backbone cabling, IBM recommends 62.5/125-micron, multimode, optical fiber cable that meets the international cable standard (ISO/IEC 11801) or the North American cabling standard (EIA/TIA 568A).

Length Recommendations for Dedicated-Media LAN Segments

The IBM Token-Ring Network dedicated-media connections support only one attached entity (workstation or 8270) per connection.

For all supported cable types except optical fiber, the recommended maximum cable lobe length is 190 m (624 ft) plus a 10-m (33-ft) total allowance for the patch cords in the office and telecommunications closets.

In the IBM Token-Ring Network, the section of cable that attaches a device to an access unit is called a *lobe*.

Lobe Wiring Rules for Dedicated-Media LAN Segments

Table A-4, Table A-5, and Table A-6 specify the maximum supported lobe lengths for the indicated types of cables. An additional 10 m (33 ft) per lobe length is allowed to accommodate patch cables, unless otherwise specified.

The maximum lengths reflect the longest lengths supported by the transmission characteristics of IEEE 802.5-compliant adapters. The recommended distances for the various cable types are set by North American and international commercial building wiring standards. These standards state that standards-compliant horizontal copper cabling shall not exceed 90 m (295 ft), leaving 10 m (33 ft) total for required patch cabling in both the office and telecommunications closet. For optical fiber, the recommended maximum cable lobe length is 2000 m (1.2 miles). It is good practice to follow the cabling standards guidelines when installing building cabling to help ensure a longer useful life for your cabling infrastructure, migration to new technologies, and maximum flexibility for your network configuration.

Table A-4. Lobe Lengths for 150-Ohm, Shielded Media

Ring Speed	Types 1 and 1A Types 2 and 2A	Type 8	Type 9
4 Mbps	750 m (2460 ft)	376 m (1234 ft)	500 m (1640 ft)
16 Mbps	290 m (951 ft)	146 m (479 ft)	200 m (656 ft)

Note: Subtract 10 m (33 ft) from the allowed Type 1 or 2 distance each time a 2.4-m (8-ft) patch cable is replaced by a Type 6, 9-m (30-ft) patch cable on that lobe.

Table A-5. Lobe Lengths for 100-/120-Ohm, Shielded or Unshielded Cable

Ring Speed	Type 3	Category 3
4 Mbps	100 m (328 ft)	250 m (820 ft)
16 Mbps	Not Supported	100 m (328 ft)

Note: Unshielded media requires appropriate filtering.

Table A-6. Lobe Lengths for 100-/120-Ohm, Shielded or Unshielded Cable

Ring Speed	Category 4	Category 5
4 Mbps	350 m (1148 ft)	350 m (1148 ft)
16 Mbps	200 m (656 ft)	200 m (656 ft)

Note: Unshielded media requires appropriate filtering.

Cable Length and Lobe Wiring Rules for Shared-Media LAN Segments

The types of cables that can be used are the same as those described in “Lobe Wiring Rules for Dedicated-Media LAN Segments” on page A-5 for dedicated-media segments. The acceptable distances are defined by the hub or concentrator attached to the 8270 port.

Number of Attaching Devices

The IBM Token-Ring Network supports up to 260 attaching devices or nodes on a single network when using 150-ohm shielded media (type 1, 1A, 2, or 2A). When cable segments in the network are 100 or 120 ohm, this number is decreased to 132 (72 if using any 4-Mbps-only adapters or filters).

Appendix B. Notices and Product Warranty

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the user's responsibility.

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Electronic Emission Notices

Federal Communications Commission (FCC) Statement

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 and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus conforms with Canadian ICES-003.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A à la norme NMB-003 du Canada.

European Community (CE) Mark of Conformity

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richlinie 89/336)

Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse B.

EN 50082-1 Hinweis:
"Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern."

Anmerkung:
Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

CISPR22 Compliance Statement

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class B equipment were derived for residential environments to provide reasonable protection against interference with licensed communication devices.

Statement of Compliance with the United Kingdom Telecommunications Act 1984

The 8270 is manufactured to the International Safety Standard EN 60950 and as such is approved in the UK under the General Approval number NS/G/1234/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces, housed within the 8270 are approved separately. Each one has it's own independent approval number. These interface adapters, supplied by IBM do not use or contain excessive voltages. An excessive voltage is one which exceeds 42.4V peak ac or 60V dc. They interface with the 8270 using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the IBM adapters, it is essential that other optional cards, not supplied by IBM, do not use mains voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by IBM.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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警告使用者:
這是甲類的資訊產品，在
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能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

Power Line Harmonics Compliance Statement

Confirmed Harmonics Guideline (JEIDA).

高調波ガイドライン適合品

Lithium Battery Notice

The Token-Ring processor card in this product contains a small imbedded lithium battery. Please dispose of it according to your local ordinances.

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Warranty

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Machine IBM 8270 Token-Ring LAN Switch

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Tell Us What You Think!

8270 Models 600 and 800
Installation and Service Guide

Part Number 02L1408

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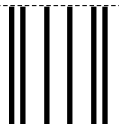

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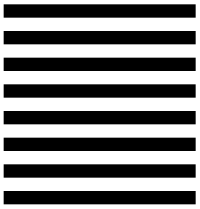

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