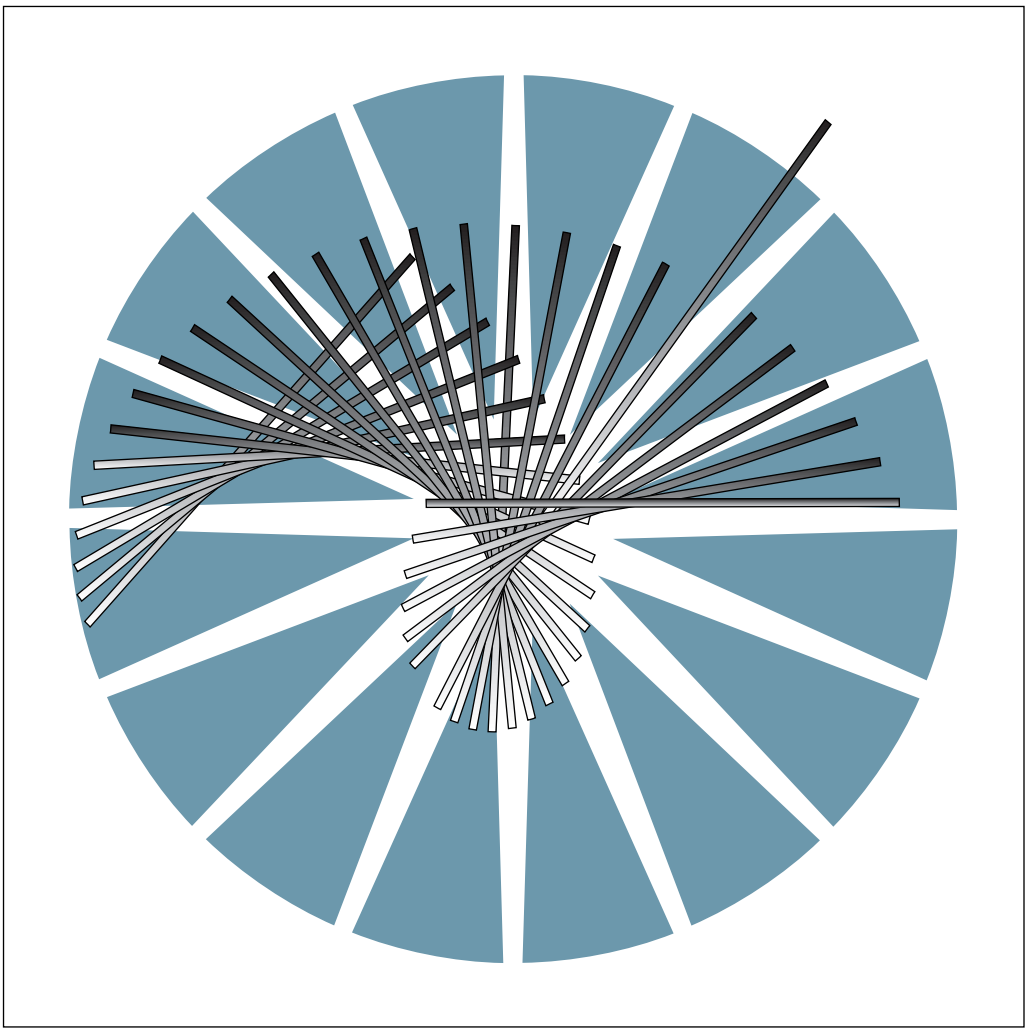
3745 Communication Controller Models A
3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Guide

(Part 3/3)



GA33-0457-0A

3745 Communication Controller Models A
3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Guide

(Part 3/3)

GA33-0457-0A

Note!

Before using this information and the product it supports, be sure to read the general information in “Notices” on page xliii.

| **Preliminary Second Edition (December 1997)**

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The Active Remote Couplers (ARCs) and the X.21 Interface, housed within the 3746 Model 900 and 3746 Model 950, are approved separately, each having their own independent approval number. These interface adapters, supplied by IBM, do not contain excessive voltages. An excessive voltage is one which exceeds 42.4 V peak ac or 60 V dc. They interface with the 3746 Model 900 or 3746 Model 950, using Safe Extra Low Voltages only.

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Operating System/2
OS/2
NetView
Nways
PS/2
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System/370
VTAM
3090

Safety

This product meets IBM™ Safety standards.

For more information, see the following manual: *IBM 3745 Communication Controller All Models*, *IBM 3746 Expansion Unit Model 900*, *IBM 3746 Nways Multinetwork Controller Model 950 Safety Information*, GA33-0400.

About this Guide

This guide applies to the IBM 3746 Nways™ Multiprotocol Controllers: the 3746 Model 950, 3746 Model 900 and 3745 Communication Controller Models A. Use it for configuration and installation planning, and to gather the information needed during the installation and network integration of 3746 Nways Multiprotocol Controllers operated in the APPN/High Performance Routing (APPN® /HPR) and Internet Protocol (IP) environments. There is also a general description of installation and upgrade scenarios.

Note: This guide contains information about major new features and their effect on existing features, and has been restructured since the last edition. If you are already familiar with the last issue, you are recommended to read this entire guide, not just the new features.

Information is provided about various parameters that have to be available to the IBM service representative and your network specialists for installation or upgrade of your machine. They relate to:

- 3745 Communication Controller Models A
- 3746 Models 900 and 950
- Controller Configuration and Management (CCM)
- Network Node Processor (NNP)
- Multiaccess Enclosure
- Service processor
- Distributed Console Access Facility (DCAF) and TME10 remote consoles
- Network management

There is also an introduction to the Controller Configuration and Management application (CCM), which is required for the definition of 3746 Nways Multiprotocol Controller resources.

Note: Your IBM marketing representative can obtain this 3746 publication, the related 3746 Controller Configuration and Management application (CCM), and the *IBM 3746 Nways Multiprotocol Controller Model 950, IBM 3746 Model 900 Network Node Controller Configuration and Management: User's Guide* from the “900NN950” package, which is available through the IBM worldwide source of marketing materials.

The 3746 *Planning Guide* available in this package may be a preliminary version of the next printed edition and, therefore, may be required for information about the latest 3746 enhancements.

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Who Should Use this Guide

This guide is intended for network planners, network specialist, and system programmers responsible for preparing the information that is needed for the installation and network integration of 3745 Communication Controller Models A and 3746 Expansion Unit Model 900 in an SNA environment, as well as the 3746-950 and 3746-900 as APPN/HPR network nodes and IP routers.

Your Task Responsibilities as a Customer

These are not IBM tasks!

The tasks in Table 0-1 are not performed by IBM personnel as part of the machine installation and basic operations. They can be performed by IBM on a fee basis.

Table 0-1 (Page 1 of 3). Customer Tasks

Task	Where to Find Information
Network design	Network design is not covered in this guide. Refer to the following IBM books for SNA, APPN/HPR, and IP network planning guidance: • *Planning for Integrated Networks*, SC31-8062 • The following IBM "redbooks": – *Subarea Network to APPN Network Migration Guide*, SG24-4656 – *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: APPN Implementation Guide*, GG24-2536 – *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: IP Implementation Guide*, SG24-4845 – *IBM Nways 2216 Multiaccess Connector Description*, SG24-4957 – *IBM 2216 Multiaccess Connector ESCON Solutions*, SG24-2137.
Physical planning: Before the IBM service representative arrive to install your controller, make sure that you have met the necessary requirements for the following: • Electric power • Floor space with service clearances • Space for the cables • The RSF switched line • The Controller Expansion (Feature 5023) • Other components (such as the service processor).	Chapter 44, "Physical Planning Details"

Table 0-1 (Page 2 of 3). Customer Tasks

Task	Where to Find Information
Controller hardware configuration definitions: Decide on what type of attachments (lines) and how many of each type you need.	This is input for the IBM ordering system (CF3745). Helpful information is found in "Line Weights and CLP Load" on page 18-9.
Software definitions and tuning: • ESCON port, host link, and station definitions; ESCON resource, TCP/IP, and VTAM tuning • Token-ring port and station definitions; PU and LU maximum limits; port sharing with NCP-controlled traffic; duplicate addresses; token-ring APPN, IP, and/or NCP resource tuning and VTAM tuning • Serial line (SDLC, PPP, frame-relay, and X.25) port and station definitions; location of CLPs, LICs, LCBs, and ARCs; maximum CLA line connectivity; CLP backups • Multiaccess Enclosure: hardware planning and configuration; software configuration and tuning • Use of the Controller Configuration and Management (CCM) application.	Refer to: • Chapter 15, "ESCON Adapters" • Chapter 22, "ESCON Channel Adapter" • Chapter 27, "3746 Base Frame ESCON Configuration Examples" • Chapter 16, "Token-Ring Adapters" • Chapter 18, "Serial Line Adapters" • Chapter 19, "3746 SDLC Support" • Chapter 20, "Multiaccess Enclosure" • Chapter 21, "Multiaccess Enclosure Adapters Overview" • Chapter 23, "Multiaccess Enclosure ISDN Support" • Chapter 26, "Multiaccess Enclosure Configuration" • Chapter 28, "Configuring the MAE ESCON Channel Adapter" • Chapter 25, "Welcome to the CCM" on page 25-1 • *IBM Controller Configuration and Management User's Guide*, SH11-3081. Also see: • *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: APPN Implementation Guide*, GG24-2536 (an IBM "redbook") • *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: IP Implementation Guide*, SG24-4845 (an IBM "redbook").
Filling out: • 3746 plugging sheets To keep a record of the processors and couplers (and their addresses) installed in the 3746 frame. • CCM worksheets To plan the non-MAE logical resource definitions. They can then be used when configuring the 3746 via the CCM. • Multiaccess Enclosure worksheets To plan the MAE logical resource definitions. They can then be used when configuring the MAE.	Refer to: • Chapter 43, "Plugging Sheets for the 3746 Nways Multiprotocol Controller" • Chapter 40, "CCM Worksheets for Controller Configuration Definitions." • Chapter 41, " Multiaccess Enclosure Worksheets."

Table 0-1 (Page 3 of 3). Customer Tasks

Task	Where to Find Information
NetView definitions in VTAM, the MOSS-E, NPM, CCM, MAE, NetView/360, NetView/AIX for: • APPN traffic • IP traffic • NetView alert path.	Refer to: • Chapter 29, "3746 Management Overview" on page 29-1 • Chapter 30, "3746 APPN/HPR Network Node Management" on page 30-1 • Chapter 31, "3746 IP Router Management" on page 31-1 • Chapter 32, "MAE APPN/HPR Network Node Management" on page 32-1 • Chapter 33, "MAE IP Router Management" on page 33-1.
Controller, service processor, and network node processor definitions. Some examples: • Link IPL port information • Service processor token-ring and IP LAN addresses • Password management • NetView alert reporting path definitions • DCAF LU definitions • Ethernet port definitions for SNMP.	Refer to Chapter 34, "Controller and Service Processor." Fill out the Chapter 38, "MOSS-E Worksheets for Controller Installation (3745)," which are used by the IBM service representative during the installation.
Remote console definitions (using DCAF): • Insure that the necessary hardware and software is available for the type of console attachment chosen • Service processor definitions for DCAF • DCAF installation and configuration on the remote console.	Refer to: • Chapter 35, "Customer Consoles and DCAF." • For the 3746-900, refer to the *3745 Console Setup Guide*, SA33-0158 • For the 3746-950, refer to the *IBM 3746 Nways Multiprotocol Controller Model 950 User's Guide*, SA33-0356.
Connection to the IBM remote support facility (RSF): • Service processor connection (modem) definitions • Customer definitions for RSF records.	Refer to Chapter 36, "Connecting to the IBM Remote Support Facility."
Problem determination through the MOSS-E and NetView	For the 3746-900, refer to: • *Problem Analysis Guide* accessed online from the MOSS-E • *3745 Models A: Alert Reference Guide*, SA33-0175 • *3745 All Models: Advanced Operators Guide*, SA33-0097.

Where to Find More Information

During your migration planning, it may be necessary to use, in addition to this guide, the following documents:

- *IBM 3745 Communication Controller Models A, IBM 3746 Nways Multiprotocol Controller, Models 900 and 950: Overview*, GA33-0180.
- IBM *3746 Nways Multiprotocol Controller Models 900 and 950: Controller Configuration and Management User's Guide*, SH11-3081.
  Preparing controller definitions prior to installation of your 3746 Nways Multiprotocol Controller is recommended. To obtain a stand-alone version of the Controller Configuration and Management that runs on an OS/2 workstation, contact your IBM marketing representative.
- *IBM 3746 Nways Multiprotocol Controller Model 950: User's Guide*, SA33-0356.
  For information about routine operations, installing and testing the communication line adapters, service processor, and remote consoles.
- *IBM 3745 Communication Controller: Console Setup Guide*, GA33-0158
  For information about remote console access to 3745/3746-900(s) via an SNA/subarea path.

Be sure to use the latest editions of these documents. This will ensure that you have the necessary information about the 3746 Nways Multiprotocol Controllers.

Also helpful is:

- *Planning for Integrated Networks*, SC31-8062.

The following *IBM International Technical Support Organization* “redbooks”, are generally helpful for 3746 Nways Multiprotocol Controller implementation:

- *APPN Architecture and Product Implementations Tutorial*, GG24-3669
- *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: APPN Implementation Guide*, GG24-2536
- *Subarea Network to APPN Network Migration Guide*, SG24-4656 (an IBM “redbook”)
- *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: IP Implementation Guide*, SG24-4845 (an IBM “redbook”)

The following Enterprise Systems Connection Architecture documentation may also be helpful:

- *Enterprise Systems Connection Migration*, GA23-0383
- *Planning for Enterprise Systems Connection Links*, GA23-0367

For the Distributed Console Access Facility (DCAF) for Version 1.3:

- *DCAF: Installation and Configuration Guide*, SH19-4068
- *DCAF: User's Guide*, SH19-4069
- *DCAF: Target User's Guide*, SH19-6839.

See also the “Bibliography” on page X-9.

World Wide Web

You can access the latest news and information about IBM network products, customer service and support, and information about microcode upgrades via the Internet at `http://www.ibm.com/`.

CD-ROM Online Documentation

Starting with engineering change F12380, the Licensed Internal Code (LIC) is shipped on a CD-ROM. Also included on this CD-ROM is:

- 3745/3746 documentation
  (For example, the 3745 Model A and 3746 *Planning Guide*, 3746 NNP and service processor installation and maintenance guides, CCN *User's Guide*, 3746-950 *User's Guide*, and others. Refer to the “Bibliography” on page X-9 for the complete name and form number of these books.)

  The documentation is in the .PDF format. The Acrobat Reader™ for OS/2 is included on the CD-ROM. It lets you easily read the .PDF files and print all or part any book.
- 3746 presentations
  (For example, the latest Announcement, the Multiaccess Enclosure, Processors Type 3, and others.)

  They are available in:
  - .PRE format for Freelance for Windows™
  - .PRS format for Freelance for OS/2™
  - .PDF format for the Acrobat Reader.
- 3746 information pages
  (For example, details about the available presentations.)

  They are available in the .HTM format for use by any WEB browser. (The Netscape Navigator™ for OS/2 browser is available on the service processor.)
- .PRS format for Freelance for OS/2™
- .PDF format for the Acrobat Reader.

To Access the CD-ROM Information

The CD-ROM can be used on a service processor[1] .

To access the CD-ROM from the **service processor**:

Step 1. Install the CD-ROM in the service processor CD-ROM drive.

[1] The following service processors can be used:
- Service Processor 9585 (feature code 5021) equipped with:
  - Feature code 5051, a CD-ROM drive
  - Feature code 5028, 96 MB of memory
  - Feature code 5026, 2 GB hard disk drive.
- Service Processor, type 2 (feature code 5052).

Step 2. In the MOSS-E main window, open the **View** menu and select **Information**.

Step 3. Double click on **CD-ROM documentation**. Netscape Navigator automatically opens and displays the documentation home page.

Step 4. Click on any highlighted text (blue and underlined) to go to the material that interests you:

- Click on **File repository** to access the Freelance and .PDF presentations
- Click on **Documentation** to access 3745/3746 books.

  Then click on the icon marked PDF that corresponds to the item that interests you.

  The Acrobat Reader automatically opens and displays the file in the full screen mode. Use the **Page Up** and **Page Down** keys to move through the document.

  Press the **ESC** key to display the Reader menus that allow you to print all or part of the file.
- When you **Close** the Acrobat Reader, you return to the Netscape Navigator browser.
- When you **Close** the browser, you return to the MOSS-E **Documentation** menu.

Each presentation and book file has one or more of the following identifiers:

- Date
- Form number
- Engineering change level
- Revision code.

Check these identifiers on future releases of the CD-ROM to see if the documents that you use have been updated.

Part 3. Physical Planning Guide

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Chapter 38. MOSS-E Worksheets for Controller Installation (3745)

Complete these sheets and give them to:

- The IBM service representative (the MOSS-E parameters are needed during controller installation)
- The person doing additional controller configuration using the *IBM 3745 Communication Controller All Models, IBM 3746 Nways Multiprotocol Controller Connection and Integration Guide*, GA33-0129.

When applicable, default parameter values are included (in parentheses) in the tables of this appendix.

Controller Integration

The following parameters are discussed in “Controller Integration” on page 34-1.

Controller Names

Controller	Name

Set Power ON Schedule

Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Scheduling active	

MOSS-E Database Optimization

Optimize database	
If Weekly: Day of the week	
Time	

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Link IPL Ports

These parameters are discussed in “Loading the Control Program” on page 34-13.

Detailed information about the link IPL ports is found in the *3745 Advanced Operations Guide*, SA33-0143.

Make a copy of this page for each 3745 IPL port that you define.

Table 38-1. Initial Parameters	
Line address	
Direct attach or External clock	

Table 38-2. For TSS Lines with the External Clock Option		
	External Clock	**Direct Attach**
Duplex or Half-duplex		
Enable timer		
Transmit two flags		
NRZI		---
Switched line		---
Answer tone		---
Transmit flags between frames		
DX facility		
Ring indicator		---
Echo mode		---
Data rate		---
External line speed		---
Direct attach speed	---	

Table 38-3. For HPTSS Lines	
Enable timer	
Reply timer	
NRZI	
Transmit two flags	
Transmit flags between frames	
Echo mode	

Parameters Common to All Types of IPL Link Ports

Table 38-4. Common IPL Port Parameters	
SDLC controller address	
Disable timer	
Link activity timer	

Automatic Dump/Load Options

CCU A Auto dump/load	
CCU A Active load module	
CCU B Auto dump/load	
CCU B Active load module	

NCP Dump Transfer

The following parameters are discussed in “Dump Transfer Parameters” on page 34-15.

Destination address	
Long session/LU name	(MOSSEEMU)
LU local address	(03 or greater)

Service Processor Integration

Definition of Service Processor LAN Address

The following parameter is discussed in “Definition of Service Processor LAN Address” on page 34-8.

Network adapter address	

Service Processor LAN Management Definition

The following parameter is discussed in “Service Processor LAN Management Definition” on page 34-8.

C&SM LAN ID	(MOSSE)

Definition of the Service Processor in an SNA/Subarea Network

The following parameters are discussed in “Definition of Service Processor in APPN/HPR or SNA/Subarea Network” on page 34-8.

Network ID	(SYSTST)
Local node name	(MOSSNMVT)

Definition of Service Processor in an APPN/HPR Network

The following parameters are discussed in “Definition of Service Processor in APPN/HPR or SNA/Subarea Network” on page 34-8.

Network ID	(SYSTSTAP)
Local node name	(MOSSNMVT)

3746-900 Integration

Definition of 3746-900 LAN Address

The following parameter is discussed in “Definition of the 3746 Controller Address on the Service LAN (MOSS-E)” on page 34-17.

Token-ring local address (MAC address)	

Definition of Service LAN IP Addresses

The following parameter is discussed in “Service LAN IP Addresses (MOSS-E)” on page 34-18.

Table 38-5. For the Service Processor	
IP address	(192.9.200.1)
Subnet mask	(255.255.255.240)

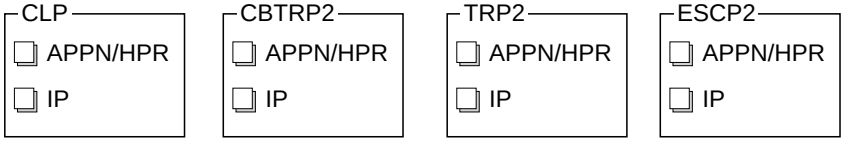
Table 38-6. For the Network Node Processor Model A	
IP address	(192.9.200.2)
Subnet mask	(255.255.255.240)

Table 38-7. For the Network Node Processor Model B	
IP address	(192.9.200.3)
Subnet mask	(255.255.255.240)

Table 38-8. For the 3746 Nways Multiprotocol Controller	
IP address	(192.9.200.4)
Subnet mask	(255.255.255.240)

Network Routing Protocol for Each Processor Type

The following parameters are discussed starting on page 34-22. Select a routing protocol for each type of processor that you have.



Password

The following parameters are discussed in “Passwords” on page 34-23.

Table 38-9. Service Processor Passwords

Mode	Password	Status	Attempts Threshold
Controller customer		---	
Controller maintenance			
Service processor customer		---	
Service processor maintenance			
Management password			

DCAF Remote Logon Password

Enable password	(Yes)
Password	(No default)

Disable Incoming Calls (to Service Processor)

The following parameter is discussed on page 34-26.

Enable/Disable Service Processor Incoming Calls	(Enable)

Parameter Definitions for Reporting Alerts to NetView

Network Node Processor Alerts

The following parameters are discussed on page 29-28.

Network identifier	(SYSTSTAP)
Control point name	

MOSS-E Alerts: Mainstream Path Definition

LAN destination address parameters are discussed on pages LAN destination address on page 29-29 and LAN destination address on page 29-30.

APPN/HPR Network

LAN destination address	

SNA/Subarea Network

LAN destination address	

MOSS-E Alerts: Alternate Path Definition

The following parameter is discussed on page 29-32.

Telephone number for alert reporting on the switched SDLC link	

Generate MOSS-E Alerts

The following parameter is discussed on page 29-33.

Problem management	(Generate alerts)

Performance Management CM/2 Parameters (NPM)

The following parameters are discussed on page 37-1.

NPM **netid**	
PU name for CM/2	
NPA LU name	

Service Processor Parameters for DCAF using CM/2

These parameters are defined in “Service Processor Parameters for DCAF” on page 35-6.

For LAN-Attached Consoles

LU name	(DCAFLAN)

For SNA-Attached Consoles

LU name	(DCAFSNA)
Destination address	(400000502080)

For APPN/HPR-Attached Consoles

LU name	(DCAFAPPN)
Destination address	(400000502080)

For IP-Attached Consoles

Service Processor IP Address	(192.9.200.1)

For Modem-Attached Consoles

LU name	(DCAFSDLC)

Parameter Definitions for RSF

The following parameters are discussed in “Parameter Definitions for RSF” on page 36-3.

Customer Information

Company Name	
Address	
System location	
Contact person	
Company telephone number for voice communications	
Company telephone number for modem communications	

Remote Support Facility Authorization

Enable/Disable Remote Support Facility	(Disable)

Set Automatic Microcode Download Option

Yes/No	(No)

Parameters for Ethernet Port (Bridge)

The following parameters are discussed in “Configuring the Ethernet Port” on page 17-2.

Location and Cable Type

Ethernet bridge name	
Ethernet bridge IP address	
Ethernet attachment type	□ 10 Base T □ *AUI*
TIC3 location (see “Enclosure Physical Positions and Logical Addresses” on page 42-15 for the coupler position)	
8229 location	□ controller expansion A □ controller expansion B

SNMP Community Name

Community name	
IP address (in dotted notation) of the community name owner	
Privilege	□ Read □ Write

SNMP Trap Community Name

Trap community name	
IP address (in dotted notation) of the network manager	
Authentication of failure traps	□ Enable □ Disable

Chapter 39. Parameter Cross-Reference Table

Table 39-1 shows the parameters that must have the same values across multiple system definitions. Extra space in the table is available to record the actual values that you used.

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Table 39-1. Identical Parameter List

MOSS-E	NCP	IOCP	VTAM	CCM
Long session ID/LUname			LU statement label	
LU local address			LU LOCADDR	
Network ID Pages 34-9, 34-10, 35-7			PU NETID	Network identifier Pages 34-17, 29-29, and 40-63
Local node name Pages 34-9, 34-10, and 35-7			PU CPNAME	Name Page 34-9
Token-ring local address (MAC address) Page 34-17 LAN destination address Pages 29-29 and 29-30	LINE LOCADD			
Network adapter address Pages 34-8 and 35-7				Remote MAC address Page 34-9
Unit address	PU ADDR	CNTLUNIT UNITADD IODEVICE UNITADD		
ESCC address	LINE ADDRESS			
Partition number		RESOURCE PARTITION CHPID PARTITION IODEVICE PART		
Control unit link address		CNTLUNIT LINK		
Hostlink Page 15-6	LINE HOSTLINK			

Chapter 40. CCM Worksheets for Controller Configuration Definitions

These worksheets are provided to help you with your planning before actually entering values into the Controller Configuration and Management (CCM) application. Correctly filled-out worksheets for each controller configuration can save you considerable time when you start using the CCM.

The online help for CCM gives detailed explanations of the parameters and their values. It also gives parameter dependencies. The *CCM User's Guide*, SH11-3081 helps you become familiar with navigating through CCM and entering the CCM parameters. The IBM *IBM 3746 Nways Multiprotocol Controller Model 950 and 3746-900 Network Node: Implementation Guide*, GG24-2536 and *IBM 3746 Nways Multiprotocol Controller Model 950 and IBM Model 900: IP Implementation Guide*, SG24-4845 (IBM “redbooks”) give sample configurations with examples of the related CCM panels.

Over three quarters of the parameters have default values.

Fill in the configuration information for each port, link, station, and DLUR (if necessary) worksheet before beginning the CCM configuration process.

As you proceed with a configuration in CCM, you will see that certain parameter fields are grayed out. Their values cannot be changed. This occurs because you have already made a choice that does not allow certain other parameters to be changed because either:

- CCM automatically sets the value.
- The parameter has no meaning for the type of configuration you have chosen.

Completing the Worksheets

To complete the worksheets, either check a box or write down a value.

Note: Refer to the CCM online help for definitions of the parameters. You can find the start page for each group of worksheets as follows:

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3745/3746 Parameters

Table 40-1. 3745/3746 Parameters	
Parameter	Possible Values
3746 Model	□ 900 □ *950*
3745 identifier	_____ (alphanumeric characters)
Mode of operations	□ Single □ Twin backup □ Twin dual □ Twin standby

ESCON Configuration Sheets

To quickly locate a worksheet:

ESCON Port Configuration

Table 40-2. ESCON Port Identification	
Port number: _____	
Network:	□ *APPN* □ IP □ SNA Subarea
Fiber Status	□ *Enable* □ Transmit OLS □ Disable
Port name APPN	_____ alphanumeric characters
Port name IP	_____ alphanumeric characters
Automatic reactivation (APPN)	□ *Yes* □ No
Automatic reactivation (IP)	□ *Yes* □ No
NPA eligible	□ Yes □ *No*
Port attached to an ESCD?	□ *Single* □ Chained □ None
ESCD number	_____hexadecimal (default: *0*)
ESCD model	□ *9032* □ 9033
Control Unit Link Address (LINK)	_____hexadecimal (80 - FB, default: *80*)

ESCON Port – Host Link Configuration

Table 40-3. ESCON Host Link Identification	
Port number: _____	
Network	□ *APPN (A)* □ IP (I) □ SNA/Subarea (S)
Host Link Name (APPN)	_____ (alphanumeric characters)
Host Link Name (IP)	_____ (alphanumeric characters)
Host mode?	□ *Basic* □ LPAR □ EMIF
Host name	_____ (alphanumeric characters)
Partition name	_____ (alphanumeric characters)
CHPID	_____hexadecimal (0-FF, default: *0*)
Partition number	□ *Dynamic* □ Defined If defined: _____hexadecimal (1-A, default: *1*)
Host Link Address (HLA)	□ *Dynamic* □ Defined If defined: _____hexadecimal (80-FB, default: *80*)

ESCON Host Link – APPN Parameters

Table 40-4. ESCON Host Link – APPN Parameters	
Port number: _____ **Port name:** _____	
Automatic reactivation	□ *Yes* □ No
NPA eligible	□ Yes □ *No*
Maximum received PIU size	_____bytes (525-8000, default= *2058*)
Maximum sent PIU size	_____bytes (525-8000, default= *2058*)
HPR support	□ *ERP required* □ No HPR support
Propagation delay	□ *Minimum* □ LAN □ Telephone □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Relative cost per byte	_____ (0-255, default: *0*)
Relative cost per unit of time	_____ (0-255, default: *0*)

Table 40-5. APPN User Defined Parameters	
Port number: _____ **Port name:** _____	
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)

ESCON Port – Station Configuration

Table 40-6. ESCON Station Identification	
Port number: _____ **Port name :** _____ **Host link name:** _____	
Network	□ *APPN (A)* □ IP (I) □ SNA/Subarea (S)
Access Method	□ VTAM □ TPF
Name	_____ (alphanumeric characters)
PU type	□ 1 □ *2.1* □ 5
Unit address (UA)	_____hexadecimal (default: *1*)
IPL through that station	□ *Yes* □ No
On which CCU	□ *CCU-A* □ CCU-B
IP address	_____ (IP dotted notation)
IP subnet mask	_____ (IP dotted notation)
Comments	_____ _____

ESCON Station – APPN Parameters

Table 40-7. ESCON Station – APPN Parameters	
Port number: _____ **Port name:** _____ **Station name:** _____	
Activated at startup	□ *Yes* □ No
CP-CP session support	□ *Yes* □ No
Automatic re-activation	□ *Yes* □ No
Re-activation timer	_____ seconds (1-255, default: *30*)
NPA eligible	□ Yes □ *No*
HPR support	□ *ERP required* □ No HPR support
TG Characteristics	
Propagation delay	□ *Minimum* □ LAN □ Telephone □ Packet Switched Network □ Satellite □ Maximum □ Use port values as defaults
Security	□ *Non secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation □ Use port values as defaults
Effective capacity	_____bps (0-144000000, default: *144000000*)
Relative cost per byte	_____ (0-255, default: *0*)
Relative cost per unit of time	_____ (0-255, default: *0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)

ESCON Station – APPN/IP DLC Parameters

Table 40-8. ESCON Station – APPN/IP DLC Parameters	
Port number: _____ **Port name:** _____ **Station name:** _____ **Number:**_____	
Channel Adapter Slowdown Timer (CASDL)	_____tenths of a second (0-8400, default: *1800*)
Attention timer (TIMEOUT)	_____tenths of a second (0-8400, default: *1800*)
Delay timer (DELAY)	_____tenths of a second (0-4200, default: *1*)
Total transmit threshold	_____ (1–65025, default: *61440*)
Total retry threshold	_____ (1–65025, default: *61440*)

ESCON Port – IP Access Controls

Table 40-9. IP Access Controls	
Port number: _____ **Port name:** _____	
Packet filter type (PFT)	□ *Input (I)* □ Output (O)
Access control type	□ *Permit/Inclusive (I)* □ Deny/Exclusive (E)
Source Network IP address	_____ (IP dotted notation)
Source Mask address	_____ (IP dotted notation)
Destination Network IP address	_____ (IP dotted notation)
Destination Mask address	_____ (IP dotted notation)
Protocol number: From	_____numerical (0 – 255, default: 0)
Protocol number: To	_____numerical (0 – 255, default: 255)
Port number: From	_____numerical (0 – 65535, default: 0)
Port number: To	_____numerical (0 – 65535, default: 65535)

Serial Line Configuration Sheets

To quickly locate a configuration sheet:

Serial Line Port Configuration

Table 40-10. Serial Line Port Configuration Parameters	
Port number: _____ **Port name:** _____	
DLC type	□ Frame relay □ PPP □ *SDLC* □ X.25
Network	□ *APPN* □ IP □ FRFH
Port (number)	_____
APPN name	_____ (alphanumeric characters)
IP name	_____ (alphanumeric characters)
Comments	_____ _____

SDLC Port – DLC Parameters

Table 40-11 (Page 1 of 2). SDLC Port – DLC Parameters	
Default values are different for LIC11 and LIC12. They are not shown in Table 40-11. Refer to the online help for further information.	
Port number: _____ **Port name:** _____	
Port type	□ Leased □ Switched
Interface	□ V.24 □ V.25B □ V.35 □ X.21
Clocking	□ Internal □ Direct □ External
Data rate	□ High □ Low
Speed	_____Kbps (0.6, 1.2, 2.4, 4.8, *9.6*, 19.2, 32, 38.4, 55.855, 64, 256)
Link station role	□ Negotiable □ Primary □ Secondary
Transmit/Receive Capability	□ Half Duplex □ Full Duplex
Limited resource	□ Yes □ No
Transmit request to send on (DUPLEX)	□ Yes □ No
Transmit NRZI	□ Yes □ No
Echo defeat	□ Yes □ No
Half duplex send priority (HDXSP)	□ Yes □ No
Link session priority (LSPRI)	□ Yes □ No
Multipoint capable (MULTI)	□ Yes □ No
Monitor ring indicator (RING)	□ Yes □ No
Generate answer tone (ANSTONE)	□ Yes □ No
Interframe gap (ADDIFG)	□ Yes □ No
Enable timer (ENABLTO)	_____tenths of seconds (1-16320)

Table 40-11 (Page 2 of 2). SDLC Port – DLC Parameters	
Default values are different for LIC11 and LIC12. They are not shown in Table 40-11 on page 40-12. Refer to the online help for further information.	
Disable timer (DSABLTO)	_____tenths of seconds (1-16320)
Reply timer (REPLYTO)	_____tenths of seconds (1-600)
Activity timer (ACTIVTO)	_____tenths of seconds (1-4200)
Dial timer (DIALTO)	_____tenths of seconds (1-16320)
Transmit delay timer (XMITDLY)	_____tenths of seconds (1-600)
Retry timer (RETRYTO)	_____tenths of seconds (1-16320)
Poll pause (PAUSE)	_____tenths of seconds (0-255)
CPoll rate (SERVLIM)	_____numerical (1-255)
Dial attempt (REDIAL-m)	_____numerical (0-255)
Dial pause per attempt (REDIAL-t1)	_____seconds (0-765)
Dial sequence (REDIAL-n)	_____numerical (0-255)
Dial pause per sequence (REDIAL-t2)	_____seconds (0-765)

SDLC Port – APPN Parameters

Table 40-12. SDLC Port - APPN Parameters	
Port number: _____ **Port name :** _____ **Host link name:** _____	
Accept any incoming call	□ *Yes* □ No If Yes Maximum number of incoming calls: _____
Automatic reactivation	□ Yes □ *No*
NPA eligible	□ Yes □ *No*
Maximum receive PIU size	_____bytes (99-8000, default= *2058*)
Maximum sent PIU size	_____bytes (99-8000, default= *2058*)
HPR support	□ *ERP required* □ No HPR support
Propagation delay	□ Minimum □ LAN □ *Telephone* □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non-secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Relative cost per byte	_____ (0-255, default:*0*)
Relative cost per unit of time	_____ (0-255, default:*0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)

SDLC Port – Station Configuration

Table 40-13. SDLC Station Configuration	
Port number: _____ **Port name:** _____	
Name	_____ (alphanumeric characters)
PU type	□ 1 □ 2 □ *2.1*
Destination Address	_____hexadecimal (01 - FE, default: *1*)
Call request	□ *CRN* □ CRI □ CRS □ None
Dial number	_____
Comments	_____ _____

SDLC Station – APPN Parameters

Table 40-14 (Page 1 of 2). SDLC Station – APPN Parameters	
Port number:_____ **Port name:**_____ **Host link name (APPN):**_____ **Host link name (IP):**_____	
Activated at startup	□ *Yes* □ No
CP-CP session support	□ Yes □ *No*
Automatic re-activation	□ *Yes* □ No
Re-activation timer	_____ seconds (1-255, default:*30*)
NPA eligible	□ Yes □ *No*
HPR support	□ *ERP required* □ No HPR support
TG characteristics	
Propagation delay	□ Minimum □ LAN □ *Telephone* □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non-secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Effective capacity (LIC11)	_____bps (0-9600, default:*9600*)
Effective capacity (LIC12)	_____bps (0-2047800, default:*2047800*)
Relative cost per byte	_____ (0-255, default:*128*)
Relative cost per unit of time	_____ (0-255, default:*128*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)
Multilink Transmission Group (MLTG) and Activate on Demand (AOD) Parameters	

Table 40-14 (Page 2 of 2). SDLC Station – APPN Parameters	
	□ MLTG □ AOD
MLTG name	_____
TG number	_____ (default=1)
AOD Parameters:	
Adjacent node Network ID	_____
Adjacent node Control point name	_____
Adjacent node type	□ NN □ EN □ LEN
Dependent LU Requester (DLUR) Parameters	
Adjacent node identifier	_____(hexadecimal)
XID receipt supported	□ *Yes* □ No
Primary Dependent LU Server (DLUS): Primary DLUS Network identifier	_____
Primary DLUS Server name	_____
Backup DLUS	□ Yes □ *No*
Backup DLUS: Network identifier	_____
Server name	_____

Adjacent Node – Remote LUs

Table 40-15. Adjacent Node – Remote LUs	
Remote LU	
Network Identifier Remote LU name	_____ _____
Wildcard Entry (WE)	□ Full (F) □ Partial (P) □ *No* (N)
Adjacent Node	
Network Identifier Control point name	_____ _____
Comments	_____ _____

SDLC Station – DLC Parameters

Table 40-16. SDLC Station – DLC Parameters	
Port number: _____ **Port name:** _____ **Station name:** _____	
Full Duplex Data (DATMODE)?	□ Yes □ No
Limited Resource	□ Yes □ No
Modulo	□ *8* □ 128
Group poll (GP3174)	□ Yes □ *No*
Group poll address (group address)	_____hexadecimal (01-FE)
Polling weight	_____ (1–255, default: *1*:)
Maximum transmitted frames before acknowledgment received (MAXOUT)	_____ (1–7, default: *1*)
Maximum number of frames (PASSLIM)	_____ (1–254, default: *254*)
RNR limit (RNRLIMIT)	_____seconds (60–5400, default: *180*)
Total transmit threshold	_____seconds (1–65025, default: *61440)*
Total retry threshold	_____seconds (1–65025, default: *61440)*
Immediate retry (IRETRY)	□ Yes □ *No*
Infinite retries	□ *Yes* □ No
Retries per retry sequence (RETRIES-m)	_____seconds (0–128, default: *15*)
Retry sequences (RETRIES-n)	_____seconds (0–127, default: *0*)
Pause between retry sequences (RETRIES-t)	_____seconds (0–255, default: *0*)

Frame-Relay Port – DLC Parameters

Table 40-17. Frame-Relay Port – DLC Parameters	
Port number: _____ **Port name:** _____	
Port type	□ *Leased* □ Switched
Interface	□ *V.24* □ V.25B □ V.35 □ X.21
Clocking	□ Internal □ Direct □ External
Data rate	□ High □ Low
Speed	_____Kbps (0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 32, 38.4, 55.855, 64, 256, default=9.6)
Transmit NRZI	□ Yes □ *No*
Interframe gap (ADDIFG)	□ Yes □ *No*
Limited resources	□ Yes □ No
Bandwidth Management	□ COMRATE □ CIR
Maximum frame size (MAXFRAME)	_____bytes (282 – 8050, default: *2106*)
Data block size (DATABLK)	_____bytes (265 – 16732, default: *2048*)
Enable timer (ENABLTO)	_____tenths of seconds (1 – 16320, default: *22*)
Disable timer (DSABLTO)	_____tenths of seconds (1 – 16320, default: *30*)
Boundary node identifier	_____hexadecimal (1 – 7FFFFFFFFFFF, default: *4FFF00000000*)
Local SAP (LSAP)	_____hexadecimal (04 – 9C, default: *8*)

Frame-Relay Port - LMI Parameters

Table 40-18. Frame-Relay Port – LMI Parameters	
Port number: _____ **Port name:** _____	
Category	□ ANSI □ *ITU-T* □ No
Echo	□ Primary □ Secondary □ *Neither*
LMI NPA eligible	□ *Yes* □ No
Remote LMI support	□ *Negotiable* □ Network to user
Maximum number of DLCIs	_____numerical (1 – 418, default: *48*)
Link integrity verification polling timer (TIMERS - t391)	_____seconds (5 – 30, default: *10*)
Polling verification timer (t392)	_____seconds (5 – 30, default: *15*)
Status polling counter (SPOLL)	_____numerical (1 – 255, default: *6*)
Error Threshold (ERRORT - n392)	_____numerical (1 – 10, default: *3*)
Monitored event counts (n393)	_____numerical (1 – 10, default: *4*)

Frame-Relay Port - CIR Parameters

Table 40-19. Frame-Relay Port – CIR Parameters	
Port number: _____ **Port name:** _____	
Minimum information rate	_____% of CIR (default: *25%*)
Adaptation precision	_____numerical (6 – 10, default: *7*)
CLLM support	□ Yes □ *No*
Recovery interval timer (ty)	_____seconds (5 – 30, default: *11*)

Frame-Relay Port - APPN Parameters

Table 40-20. Frame-Relay Port – APPN Parameters	
Port number: _____ **Port name:** _____	
Accept any incoming call	□ *Yes* □ No If Yes Maximum number of incoming calls: _____ (0-3000, default: *3000*)
Automatic reactivation	□ *Yes* □ *No*
NPA eligible	□ Yes □ *No*
Maximum receive PIU size	_____bytes (99-8000, default= *2106*)
Maximum sent PIU size	_____bytes (99-8000, default= *2106*)
HPR support	□ *No ERP preferred* □ No HPR support □ ERP required □ ERP not allowed
Propagation delay	□ *Minimum* □ LAN □ Telephone □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non-secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Relative cost per byte	_____ (0-255, default:*0*)
Relative cost per unit of time	_____ (0-255, default:*0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)

Frame-Relay DLCI/COMRATE Parameters

Table 40-21. Frame-Relay DLCI/COMRATE Parameters	
Port number: _____ **Port name:** _____	
Configure a DLCI	
Network	□ APPN □ IP □ FRFH
DLCI number	_____numerical (16-991)
DLCI IP name	_____numerical
Remote IP address	_____numerical
Communication rate (COMRATE)	Per APPN station □ Default value _____bits (16384-1048576) IP □ Default value _____bits (16384-1048576)

Frame-Relay DLCI/CIR Parameters

Table 40-22. Frame-Relay DLCI/CIR Parameters	
Port number: _____ **Port name:** _____	
Configure a DLCI	
Network	□ APPN □ IP □ FRFH
DLCI number	_____numerical (16-991)
DLCI IP name	_____numerical
Remote IP address	_____numerical
Use default DLCI values	□
Measurement interval (Tc)	_____tenths seconds (1-255)
Committed burst size (Bc)	_____bits (0-1048576)
Excess burst size (Be)	_____bits (0-1048576)
Excess burst size (Be)	_____bits (0-1048576)
APPN BRS	□ Yes □ No
IP BRS	□ Yes □ No

Frame-Relay DLCI/CIR - Bandwidth Reservation System (BRS) Parameters

Table 40-23. Frame-Relay DLCI/CIR – BRS Parameters	
Port number: _____ **Port name:** _____ **DLCI number:** _____	
Configure a DLCI	
APPN/HPR ERP	_____%
HPR non ERP	_____%
IP	_____%
IP sockets (Port number) Socket:_____(1-20000) BRS:_____	

DLCI Remote IP Addresses

Table 40-24. DLCI Remote IP Addresses

Port number: _____ **Port name:** _____ **DLCI IP name:** _____ **DLCI number:** _____
Remote IP addresses

APPN over Frame-Relay - Station Configuration

Table 40-25. APPN over Frame-Relay – Station Configuration	
Port number: _____ **Port name:** _____ **DLCI number:** _____	
Name	_____ (alphanumeric)
Type □ FRTE PU 1 or 2 □ *FRTE PU 2.1*	
Frame format (FF)	□ *Routed* □ Bridged
Remote MAC address (LAA)	_____hexadecimal
Remote SAP (RSAP)	_____hexadecimal (02 – FE, default: *4*
Comments	_____ _____

Frame-Relay Station Configuration – APPN Parameters

Table 40-26 (Page 1 of 2). Frame-Relay Station – APPN Parameters	
Port number:_____ **Port name:**_____ **Host link name (APPN):**_____ **Host link name (IP):**_____	
Activated at startup	□ Yes □ *No*
CP-CP session support	□ *Yes* □ No
Automatic re-activation	□ *Yes* □ No
NPA eligible	□ Yes □ No
HPR support	□ *No ERP preferred* □ ERP not allowed □ ERP required □ No HPR support
TG characteristics	
Propagation delay	□ *Minimum* □ LAN □ Telephone □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Effective capacity (LIC11)	_____kbps (0-9.6, default: *9.6*)
Effective capacity (LIC12)	_____kbps (0-2047.8, default: *2047.8*)
Relative cost per byte	_____ (0-255, default: *0*)
Relative cost per unit of time	_____ (0-255, default: *0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)
Multilink Transmission Group (MLTG) and Activate on Demand (AOD) Parameters	
	□ MLTG □ AOD

Table 40-26 (Page 2 of 2). Frame-Relay Station – APPN Parameters	
MLTG name	_____
TG number	_____ (default=1)
AOD Parameters: Adjacent node Network ID Adjacent node Control point name	 _____ _____
Adjacent node type	□ NN □ EN □ LEN
Dependent LU Requester (DLUR) Parameters	
Adjacent node identifier	_____(hexadecimal)
XID receipt supported	□ *Yes* □ No
Primary Dependent LU Server (DLUS): Primary DLUS Network identifier Primary DLUS Server name	 _____ _____
Backup DLUS	□ Yes □ *No*
Backup DLUS: Network identifier Server name	 _____ _____

Frame-Relay/FRTE Station/DLC parameters

Table 40-27. Frame-Relay/FRTE Station	
Port number:_____ **Port name:**_____ **Host link name (APPN):**_____ **Host link name (IP):**_____	
Window increment (DYNWIND - nw)	_____numerical (1 – 8, default: *4*)
Window decrement for congestion (DYNWIND - dwc)	_____numerical (1 – 16, default: *1*)
Discard eligibility	□ None/Yes □ *Full/No*
T1 reply timer (LOCALT0):	_____tenths of a second (6–200,default: *100*)
T2 acknowledgment timer (LOCALT2):	_____tenths of a second (0–20,default: *2*)
Inactivity timer (TITIMER):	_____seconds (60–254,default: *60*)
Maximum transmitted frames before acknowledgment received (MAXOUT):	_____numerical (1–127,default: *8*)
Maximum received frames before acknowledgment transmitted (MAXIN):	_____numerical (1–127,default: *6*)
RNR limit (RNRLIMIT):	_____seconds (60–5400,default: *180*)
Authorize infinite retries?	□ *Yes* □ No
Retries per retry sequence (RETRIES-m):	_____numerical (1–128,default: *6*)
Retry sequences (RETRIES-n):	_____numerical (0–127,default: *0*)
Pause between retry sequences (RETRIES-t):	_____seconds (0–255,default: *0*)

IP over Frame-Relay

Table 40-28. IP over Frame-Relay	
Port number: _____ **Port name:** _____	
Automatic reactivation	□ *Yes* □ No
General	□ Enable orphan circuits □ Enable multicast emulation □ Enable protocol broadcast □ Enable congestion monitor
Down time	_____seconds (0 – 300, default: *0*)
IP address:	_____ (IP dotted notation)
Enable next hop awareness (NHA)	□
Subnet mask:	_____ (IP dotted notation)

Frame-Relay Frame-Handler (FRFH) Set Configuration Parameters

Table 40-29. Frame-Relay Frame&dashHandler Set Configuration Parameters	
FRFH set name	_____
NPA eligible	□ Yes □ *No*
Port DLCI name Primary partners	 A _____ B_____
Substitute partners	C_____ D_____

PPP Port – Parameters

Table 40-30 (Page 1 of 2). PPP Port – Parameters	
Port number: _____ **Port name:** _____	
Port type	□ *Leased* □ Switched
Interface	□ *V.24* □ V.25B □ V.35 □ X.21
Clocking	□ Internal □ Direct □ *External*
Data rate	□ *High* □ Low
Speed	_____Kbps (0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 32, 38.4, 55.855, 64, 256, default=9.6)
Transmit NRZI	□ Yes □ *No*
Interframe gap (ADDIFG)	□ Yes □ *No*
Automatic re-activation	□ Yes □ *No*
Maximum transmission unit	_____bytes (576 – 4088, default: *2048*)
Port IP Address: □ Unnumbered IP address IP address Subnet mask	 _____ (IP dotted notation) _____ (IP dotted notation)
LCP parameters	
Retry timer	_____milliseconds (200 – 30000, default: *3000*)
Config tries	_____numerical (1 – 100, default: *20*)
NAK tries	_____numerical (1 – 100, default: *10*)
Terminate tries	_____numerical (1 – 100, default: *10*)
Down time	_____seconds (0 – 300, default: *0*)
Enable timer (ENABLETO)	_____ts (1 – 16320, default: *22*)
Magic number	□
Number of slots	_____num (1 – 16, default: *16*)
IP compression	□

Table 40-30 (Page 2 of 2). PPP Port – Parameters	
Send IP address	□
Request IP address	□

PPP Port - BRS Parameters

Table 40-31. PPP Port – BRS Parameters	
Port number: _____ **Port name:** _____	
Enable Bandwidth Reservation for this port	□
Configure a Bandwidth Reservation Class (BRC)	
Class name	_____
Bandwidth percentage	_____numerical (1 – 99, default: *40*)

PPP Port - BRS Protocol and Application Assignment

Table 40-32. PPP Port – BRS Protocol – Application Assignment

Protocol or Application	**Class Name or Bandwidth**	**Priority**
IP	_____	□ *Normal*
	(defaut: *DEFAULT*)	□ Urgent
		□ High
		□ Low
Rlogin	_____	□ *Normal*
	(defaut: *DEFAULT*)	□ Urgent
		□ High
		□ Low
Telnet	_____	□ *Normal*
	(defaut: *DEFAULT*)	□ Urgent
		□ High
		□ Low
SNMP	_____	□ *Normal*
	(defaut: *DEFAULT*)	□ Urgent
		□ High
		□ Low
Multicast	_____	□ *Normal*
	(defaut: *DEFAULT*)	□ Urgent
		□ High
		□ Low

X.25 Port – DLC Parameters

Table 40-33. X.25 Port – DLC Parameters	
Port number: _____ **Port name:** _____	
Port type	□ *Leased* □ Switched
Interface	□ V.24 □ V.25B □ V.35 □ *X.21*
Clocking	□ Internal □ Direct □ *External*
Data rate	□ *High* □ Low
Speed	_____Kbps (0.6, 1.2, 2.4, 4.8, *9.6*, 19.2, 32, 38.4, 55.855, 64, 256)
Limited resource	□ Yes □ *No*
Transmit NRZI	□ Yes □ *No*
Interframe gap (ADDIFG)	□ Yes □ *No*
Enable timer (ENABLTO)	_____tenths of seconds (1-16320, default: *22*)
Disable timer (DSABLTO)	_____tenths of seconds (1-16320, default: *30*)

X.25 Port – LAPB Parameters

Table 40-34. X.25 Port – LAPB Parameters	
Port number: _____ **Port name:** _____	
DTE to DTE	□ Yes □ *No*
ILAPB role	□ *DTE* □ DCE
Modulo	□ 128 □ *8*
K (MWINDOW) Frame window size	_____numerical (1-7, default: *7*)
N1 (FRMLGTH) Maximum frame size	_____bytes (35-4100, default: *131*)
T1 (TPTIMER) Reply timer	_____tenths of seconds (5-255, default: *50*)
T2 Acknowledgement timer	_____tenths of seconds (0-255, default: *5*)
T4 Inactivity timer	_____seconds (1-65535, default: *60*)
N2 (NPRETRY) Maximum transmission attempts	_____numerical (1-255, default: *7*)

X.25 Port – PLP Parameters

Table 40-35 (Page 1 of 2). X.25 Port – PLP Parameters	
Port number: _____ **Port name:** _____	
X.25 local DTE address	_____
PLP role	□ *DTE* □ DCE □ Negotiable
X.25 version	□ *ITU-T 93* □ CCITT 80 □ CCITT 84 □ CCITT 88
Accounting required	□ Yes □ *No* If yes: Segment tax unit: □ Packet unit □ 32 □ *64* □ 128
Logical Channel Numbers (LCN) (1-4095)	
Permanent Virtual Circuits (PVCs) Lowest Highest	 _____ _____
DTE incoming channels (SVCs) Lowest Highest	 _____ _____
Two-way channels (SVCs) Lowest Highest	 _____ _____
DTE outgoing channels (SVCs) Lowest Highest	 _____ _____
PLP modulo	□ *8* □ 128
SVC defaults	
Packet window calling to called	_____numerical (1-7, default: *2*)
Packet window called to calling	_____numerical (1-7, default: *2*)
Packet size calling to called	_____bytes (default: *128*)
Packet size called to calling	_____bytes (default: *128*)
PLP Port Timers (seconds (1-255))	
Restart timer (T20)	_____bytes (default: *180*)
Call timer (T21)	_____bytes (default: *200*)
Reset timer (T22)	_____bytes (default: *180*)

Table 40-35 (Page 2 of 2). X.25 Port – PLP Parameters	
Clear timer (T23)	_____bytes (default: *180*)
PLP Port Maximum Retries (numerical (0-255))	
Restart retry (R20)	_____bytes (default: *1*)
Reset retry (R22)	_____bytes (default: *1*)
Clear retry (R23)	_____bytes (default: *1*)

X.25 Port – APPN Parameters

Table 40-36. X.25 Port – APPN Parameters	
Port number: _____ **Port name:** _____	
Accept any incoming call	□ *Yes* □ No If Yes Maximum number of incoming calls: _____
Automatic reactivation	□ *Yes* □ No
NPA eligible	□ Yes □ *No*
Maximum receive PIU size	_____bytes (99-8000, default= *2058*)
Maximum sent PIU size	_____bytes (99-8000, default= *2058*)
HPR support	□ *ERP required* □ No HPR support
Propagation delay	□ Minimum □ LAN □ Telephone □ *Packet Switched Network* □ Satellite □ Maximum
Security	□ Non-secure □ *Public Switched* □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Relative cost per byte	_____ (0-255, default:*64*)
Relative cost per unit of time	_____ (0-255, default:*0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)

IP over X.25 – Port Parameters

Table 40-37. IP over X25 – Port Parameters	
Port number: _____ **Port name:** _____	
Automatic reactivation	□ *Yes* □ No
Maximum transmission unit	_____bytes (576-4096, default: *2048*)
No idle timer Idle timer	□ _____seconds (1-255, default: *30*)
IP address	_____
Subnet mask	_____

X.25 Station Configuration

Table 40-38. X.25 Station Parameters	
Port number: _____ **Port name:** _____	
Network	□ *APPN* □ IP
Station name	_____
PVC SVC	□ □
TOA/NPI	□ Yes □ No
TOA	□ *Network dependent (0)* □ International (1) □ National (2)
NPI	□ *X.121 (3)* □ E164 (1)
Remote DTE address	_____
LCN	_____
PU type	□ 2 □ *2.1*
Comments	_____ _____

X.25 Station – DLC Parameters

Table 40-39. X.25 Station DLC Parameters	
Port number: _____ **Port name:** _____ **Network:** _____ **Station name:** _____ **X.25 remote DTE address:** _____ **PVC logical channel number:** _____	
PVC packet window size in	_____numerical (1-7, default: *2*)
PVC packet window size out	_____numerical (1-7, default: *2*)
PVC packet size in	_____bytes (32-4096, default: *128*)
PVC packet size out	_____bytes (32-4096, default: *128*)
QLLC retry count	_____seconds (0-255, default: *3*)
QLLC retry timer	_____seconds (1-255, default: *30*)
Limited resources	□ *Yes* □ No
Use port values as default	□

X.25 Station – APPN Parameters

Table 40-40 (Page 1 of 2). X.25 Station – APPN Parameters	
Port number: _____ **Port name:** _____ **Station name:** _____	
Activated at startup	□ *Yes* □ No
CP-CP session support	□ Yes □ *No*
Automatic re-activation	□ *Yes* □ No
Re-activation timer	_____ seconds (1-255, default:*30*)
NPA eligible	□ Yes □ *No*
HPR support	□ *ERP required* □ No HPR support
TG characteristics	
Propagation delay	□ Minimum □ LAN □ Telephone □ *Packet Switched Network* □ Satellite □ Maximum
Security	□ Non-secure □ *public Switched* □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Effective capacity (LIC11)	_____bps (0-9600, default:*9600*)
Relative cost per byte	_____ (0-255, default:*64*)
Relative cost per unit of time	_____ (0-255, default:*0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)
Multilink Transmission Group (MLTG) and Activate on Demand (AOD) Parameters	
	□ MLTG □ AOD
MLTG name	_____

Table 40-40 (Page 2 of 2). X.25 Station – APPN Parameters	
TG number	_____ (default=1)
AOD Parameters:	
Adjacent node Network ID	_____
Adjacent node Control point name	_____
Adjacent node type	□ NN □ EN □ LEN
Dependent LU Requester (DLUR) Parameters	
Adjacent node identifier	_____(hexadecimal)
XID receipt supported	□ *Yes* □ No
Primary Dependent LU Server (DLUS): Primary DLUS Network identifier	_____
Primary DLUS Server name	_____
Backup DLUS	□ Yes □ *No*
Backup DLUS: Network identifier	_____
Server name	_____

X.25 Station – Adjacent Node – Remote LUs

Table 40-41. X.25 Station – Adjacent Node – Remote LUs	
Remote LU	
Network Identifier Remote LU name	_____ _____
Wildcard Entry (WE)	□ Full (F) □ Partial (P) □ *No* (N)
Adjacent Node	
Network Identifier Control point name	_____ _____
Comments	_____ _____

IP over X.25 – Station Parameters

Table 40-42. IP over X.25 – Station Parameters	
Port number: _____ **Port name:** _____ **Station name:** _____ **X.25 remote DTE address:** _____ **PVC logical channel number:** _____	
Automatic reactivation	□ Yes □ *No*
Remote IP address	_____numerical

X.25 Station – SVC Call Requests User Facilities and Data

Table 40-43. X.25 Station – SVC Call Requests User Facilities and Data

Port number: _____ **Port name:** _____ **Network:** _____ **Station name:** _____ **X.25 remote DTE address:** _____	
Protocol identifier	□ *x'CB'* □ x'C3' □ x'CC'
Window size negotiation facility	□ In _____numerical (1-7, default *2*) Out _____numerical (1-7, default *2*)
Packet size negotiation facility	□ In _____bytes (*128*) Out _____bytes (*128*)
Request reverse charging facility	□
Request inter-network call redirection and deflection (ICRD) control facilities	□
ICRD status selection	□ *Prevention requested* □ Allowance requested
Add calling DTE address	□
Throughput class negotiation facility Format	□ □ *Basic* □ Extended In _____Kbps (default: *9.6*) Out _____Kbps (default: *9.6*)
Closed user group selection facility With outgoing access Format	□ □ □ *Basic* □ Extended _____numerical (1-99, default: *0*)

X.25 Station – SVC Call Requests User Facilities and Data (UFD)

Table 40-44. X.25 Station – SVC Call Requests User Facilities and Data (UFD)

Port number: _____ **Port name:** _____ **Network:** _____ **Free UFD space (hex):** _____ **Station name:** _____ **X.25 remote DTE address:** _____	
NUI selection facility	□ Size (min-max) _____hex (1-218)
RPOA selection facility Format	□ □ Basic □ *Extended* _____numerical (1000-9999, default: *1000*) Size (min-max) _____bcd (4-216)
Transit delay selection and indication facility	□ _____milliseconds (0-65534, default: *1*)
Non-standard user facilities (marker(s) requested)	□ Size (min-max) _____hex (1-218, default: *00*)
Call user data PI	□ _____hex (2-30)

X.25 Station – SVC Calling DTE Address

Table 40-45. X.25 Station – SVC Calling DTE Address	
Port number: _____ **Port name:** _____ **Network:** _____ **Station name:** _____ **X.25 remote DTE address:** _____	
Calling DTE address	
TOA	□ *Network dependent (0)* □ International (1) □ National (2)
NPI	□ *X.121 (3)* □ E.164 (1)
Calling DTE address	_____

Serial Port – IP Access Controls

Table 40-46. Serial Port – Access Controls	
Port number:_____ **Port name:**_____	
Packet filter type	□ *Input (I)* □ Output (O)
Access control type	□ *Permit/Inclusive (I)* □ Deny/Exclusive (E)
Source Network IP address	_____ (IP dotted notation)
Source Mask address	_____ (IP dotted notation)
Destination Network IP address	_____ (IP dotted notation)
Destination Mask address	_____ (IP dotted notation)
Protocol number: From	_____numerical (0 – 255, default: 0)
Protocol number: To	_____numerical (0 – 255, default: 255)
Port number: From	_____numerical (0 – 65535, default: 0)
Port number: To	_____numerical (0 – 65535, default: 65535)

Token-ring Configuration Sheets

To quickly locate a worksheet:

Token-Ring Port Configuration

Table 40-47. Token-Ring Port Identification	
Port number: _____	
Network	□ *APPN* □ IP
APPN Name	_____ (alphanumeric characters)
IP Name	_____ (alphanumeric characters)
Speed	□ 4 Mbps □ *16* Mbps
Local MAC address (LAA or UAA)	_____hexadecimal
APPN Local SAP (LSAP)	_____hexadecimal (04 - 9C, default: *8*)
IP maximum transmission unit	_____bytes (516 - 17749, default: *2052*)
Comments	_____ _____

Token-Ring Port Configuration – DLC Parameters

Table 40-48. Token-Ring Port Configuration – DLC Parameters	
Port number: _____ **Port name:** _____	
Limited resources	□ *Yes* □ No
T1 reply timer (LOCALT0):	_____tenths of a second (6–200,default: *100*)
T2 acknowledgment timer (LOCALT2):	_____tenths of a second (0–20,default: *2*)
Inactivity timer (TITIMER):	_____seconds (60–254,default: *60*)
Maximum transmitted frames before acknowledgment received (MAXOUT):	_____seconds (1–127,default: *8*)
Maximum received frames before acknowledgment sent (MAXIN):	_____seconds (1–127,default: *6*)
RNR limit (RNRLIMIT):	_____seconds (60–5400,default: *180*)
Authorize infinite retries?	□ *Yes* □ No
Retries per retry sequence (RETRIES-m):	_____seconds (0–128,default: *6*)
Retry sequences (RETRIES-n):	_____seconds (0–127,default: *0*)
Pause between retry sequences (RETRIES-t):	_____seconds (0–254,default: *0*)

Token-Ring Port Configuration – APPN Parameters

Table 40-49. Token-Ring Port Configuration – APPN Parameters

Port number: _____ **Port name :** _____ **Host link name:** _____	
Accept any incoming call	□ *Yes* □ No If yes Maximum number of incoming calls _____ (0-1250, default: 1250)
Automatic reactivation	□ *Yes* □ No
NPA eligible	□ Yes □ No
Maximum receive PIU size	_____bytes (99-8000, default: *2058*)
Maximum sent PIU size	_____bytes (99-8000, default: 2058)
HPR support	□ *No ERP preferred* □ ERP not allowed □ ERP required □ No HPR support
Propagation delay	□ Minimum □ *LAN* □ Telephone □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non-secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Relative cost per byte	_____ (0-255, default: *0*)
Relative cost per unit of time	_____ (0-255, default: *0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)

Token-Ring Port – Connection Network Configuration

Table 40-50. Connection Network Parameters	
Port number: _____ **Port name:** _____	
Network identifier	_____ (alphanumeric characters)
CN name	_____ (alphanumeric characters)

Token-Ring Port – Station Configuration

Table 40-51. Token-Ring Station Identification	
Port number: _____ **Port name:** _____	
Name	_____ (alphanumeric characters)
Remote MAC address (LAA or UAA)	_____(hexadecimal)
Remote SAP (RSAP)	_____hexadecimal (02–FE, default:*4*)
Comments	_____ _____

IP over Token-Ring Parameters

Table 40-52. IP over Token-Ring Parameters	
Port number: _____ **Port name:** _____	
Automatic reactivation	□ *Yes* □ No
Enable source routing	□ *Yes* □ No
RIF timer	_____decimal (0–4096, default: *120*)
IP address	_____ (IP dotted notation)
IP subnet mask	_____ (IP dotted notation)

IP Access Controls

Table 40-53. IP Access Controls	
Port number: _____	
Packet filter type (PFT)	□ *Input (I)* □ Output (O)
Access control type	□ *Permit/Inclusive (I)* □ Deny/Exclusive (E)
Source Network IP address	_____ (IP dotted notation)
Source Mask address	_____ (IP dotted notation)
Destination Network IP address	_____ (IP dotted notation)
Destination Mask address	_____ (IP dotted notation)
Protocol number: From	_____numerical (0 – 255, default: 0)
Protocol number: To	_____numerical (0 – 255, default: 255)
Port number: From	_____numerical (0 – 65535, default: 0)
Port number: To	_____numerical (0 – 65535, default: 65535)

Token-Ring Station – DLC Parameters

Table 40-54. Token-Ring Station – DLC Parameters	
Port number: _____ **Port name:** _____ **Station name:** _____	
Limited resources	□ Yes □ No
Use port values as default	□
T1 reply timer (LOCALT0):	_____tenths of a second (6–200, default: *100*)
T2 acknowledgment timer (LOCALT2):	_____tenths of a second (0–20, default: *2*)
Inactivity timer (TITIMER):	_____seconds (60–254, default: *60*)
Maximum transmitted frames before acknowledgment received (MAXOUT):	_____ (1–127, default: *8*)
Maximum received frames before acknowledgment sent (MAXIN):	_____ (1–127, default: *6*)
RNR limit (RNRLIMIT):	_____seconds (60–5400, default: *180*)
Authorize infinite retries?	□ *Yes* □ No
Retries per retry sequence (RETRIES-m):	_____ (0–128, default: *6*)
Retry sequences (RETRIES-n):	_____ (0–127, default: *0*)
Pause between retry sequences (RETRIES-t):	_____ (0–254, default: *0*)

Token-Ring Station – APPN Parameters

Table 40-55 (Page 1 of 2). Token-Ring Station – APPN Parameters	
Port number:_____ **Port name:**_____ **Host link name (APPN):**_____ **Host link name (IP):**_____	
Activated at startup	□ *Yes* □ No
CP-CP session support	□ *Yes* □ No
Automatic re-activation	□ *Yes* □ No
NPA eligible	□ Yes □ No
HPR support	□ *No ERP preferred* □ ERP required □ ERP not allowed □ No HPR support
TG characteristics	
Propagation delay	□ Minimum □ *LAN* □ Telephone □ Packet Switched Network □ Satellite □ Maximum
Security	□ *Non secure* □ Public Switched □ Underground Cable □ Secure Conduit □ Guarded Conduit □ Encrypted □ Guarded Radiation
Effective capacity	_____bps (0-15999900, default:*15999900*)
Relative cost per byte	_____ (0-255, default: *0*)
Relative cost per unit of time	_____ (0-255, default: *0*)
User defined 1	_____ (0-255, default: *0*)
User defined 2	_____ (0-255, default: *0*)
User defined 3	_____ (0-255, default: *0*)
Multilink Transmission Group (MLTG) and Activate on Demand (AOD) Parameters	
	□ MLTG □ AOD
MLTG name	_____

Table 40-55 (Page 2 of 2). Token-Ring Station – APPN Parameters	
TG number	_____ (default=1)
AOD parameters	
Adjacent node Network ID	_____
Adjacent node Control point name	_____
Adjacent node type	□ NN □ EN □ LEN
Remote LU	
Network Identifier	_____
Remote LU name	_____
Wildcard Entry (WE)	□ Full (F) □ Partial (P) □ *No* (N)
Adjacent Node	
Network Identifier	_____
Control point name	_____
Comments	_____ _____
Dependent LU Requester (DLUR) Parameters	
Adjacent node identifier	_____(hexadecimal)
XID receipt supported	□ *Yes* □ No
Primary Dependent LU Server (DLUS): Primary DLUS Network identifier	_____
Primary DLUS Server name	_____
Backup DLUS	□ Yes □ *No*
Backup DLUS: Network identifier	_____
Server name	_____

Network Node, Focal Point, and DLUR Worksheets

Network Node and DLUR Configuration Parameters

Table 40-56 (Page 1 of 2). NN/FP/DLUR Configuration	
Network Node and Focal Point Parameters	
Network Node: Network Identifier Control point name	 _____ _____
Comments	_____ _____
Network Management Focal Point Network Identifier Control point name	 _____ _____
HPR Support	□ HPR base (ANR) □ No HPR support □ HPR transport tower □ HPR control flow tower
Dependent LU Requester (DLUR) Parameters	
Primary dependent LU server (DLUS) Network Identifier Control point name	 _____ _____
Backup DLUS?	□ Yes □ *No*
Backup DLUS Network identifier Control point name	 _____ _____
DLUR retry parameters	
No retries	□ Yes □ No
Short retries	
No short retries	□ Yes □ No
Number of short retries	_____ (1-32767, default: *5*)
Waiting time before short retries	_____seconds ([1])–120, default: *10*)
Long retries	
No long retries	□ Yes □ No
Number of long retries	_____ (1-32767, default: *5*)
Waiting time before long retries	_____seconds (30 – 1200, default: *30*)
Backup Focal Point Parameters	

Table 40-56 (Page 2 of 2). NN/FP/DLUR Configuration
Network Identifier _____ Control point name _____

Network Node Characteristics

Table 40-57. Network Node Characteristics	
Number of destination LUS location cache entries	_____numerical (10 – 32765, default: *5000*)
Route addition resistance	_____numerical (0 – 255, default: *128*)
Number of times TRS tree is used before recalculation	_____numerical (2 – 15, default: *10*)

RTP Parameters

Table 40-58. RTP Parameters	
Maximum number of sessions per RTP connection	_____numerical (1 – 65535, default: *100*)
Maximum number of sessions of RTP retries	_____numerical (0 – 10, default: *6*)
RTP liveness timer	_____seconds (60 – 3600, default: *180*)
Low path switch timer	_____seconds (0 – 7200, default: *480*)
Medium path switch timer	_____seconds (0 – 7200, default: *240*)
High path switch timer	_____seconds (0 – 7200, default: *120*)
Network path switch timer	_____seconds (0 – 7200, default: *60*)

IP Configuration Sheets

To quickly locate a confiuration sheet:

IP General Parameters

Table 40-59. IP General Parameters	
Enable forwarding of directed broadcast	□
Enable per packet multipath (for OSPF only)	□
Enable source-routing	□
Enable same subnet	□
Routing table entries in the NN	_____numerical (64 – 5000, default: 768)
Number of destination addresses in the cache per processor	_____numerical (64 – 5000, default: 64)
Reassembly buffer size	_____bytes (2048 – 65535, default: 12288)
IP default ttl value	_____numerical (1 – 255, default: 60)
Router_ID (optional)	_____ (IP dotted notation, default: 0.0.0.0.)

IP Static Routes

Table 40-60. IP Static Routes	
Configure a Static Route	
Default route	□
Destination network	_____ (IP dotted notation)
Destination mask	_____ (IP dotted notation)
Next hop address Next hop address Next hop address Next hop address	_____ (IP dotted notation) _____ (IP dotted notation) _____ (IP dotted notation) _____ (IP dotted notation)
Cost (administrative distance) Cost (administrative distance) Cost (administrative distance) Cost (administrative distance)	_____numerical (1 – 16, default: 1) _____numerical (1 – 16, default: 1) _____numerical (1 – 16, default: 1) _____numerical (1 – 16, default: 1)

IP Access Controls

Table 40-61. IP Access Controls	
Configure an Access Control Entry	
Packet filter type	□ *Input (I)* □ Output (O)
Access control type	□ *Permit/Inclusive (I)* □ Deny/Exclusive (E)
Source Network IP address	_____ (IP dotted notation)
Source Mask address	_____ (IP dotted notation)
Destination Network IP address	_____ (IP dotted notation)
Destination Mask address	_____ (IP dotted notation)
Protocol number: From	_____numerical (0 – 255, default: 0)
Protocol number: To	_____numerical (0 – 255, default: 255)
Port number: From	_____numerical (0 – 65535, default: 0)
Port number: To	_____numerical (0 – 65535, default: 65535)

PPP NCP Default Parameters

Table 40-62. PPP NCP Default Parameters	
Retry timer	_____ ms (200 – 30000, default: *3000*)
Config tries	_____ numerical (1 – 100, default: *20*)
NAK tries	_____ numerical (1 – 100, default: *10*)
Terminate tries	_____ numerical (1 – 100, default: *10*)

IP Filters

Table 40-63. IP Filters	
Addresses	
IP address:	_____ (IP dotted notation)
Subnet mask:	_____ (IP dotted notation)

BOOTP Forwarding

Table 40-64. BOOTP Forwarding	
Enable BOOTP forwarding	□
General	
Maximum hops	_____numerical (1 – 16, default: *4*)
Minimum time before forwarding	_____seconds (0 – 255, default: 1)
BOOTP Forwarding Address	
BOOTP server address:	_____ (IP dotted notation)

OSPF Configuration Sheets

To quickly locate a worksheet:

OSPF General/Multicast Parameters

Table 40-65. OSPF General/Multicast Parameters	
General OPPF Parameters	
Enable OSPF	□
Number of AS external routes	_____numerical (0 – 4000, default: 100)
Number of OSPF routers	_____seconds (0 – 4000, default: 50)
Multicast	
Enable intra-area multicasting	□
Enable inter-area multicasting	□
Group address	_____ (IP dotted notation)

OSPF Imported/Default Routes

Table 40-66. OSPF Imported/Default Routes	
Import static routes Enable routes import Import RIP routes Import BGP routes Import direct routes Import subnet routes Enable BGP auto-tag generation	□ □ □ □ □ □ □
Compare RIP/static routes to OSPF routes	□ 1 □ **2**
Originate Default Route	
Always originate default route	□
Originate default route if BGP routes available	□
From AS number	_____numerical (1 – 65535, default: 1)
To network IP address	_____ (IP dotted notation)
Originate as type	□ 1 □ **2**
Default route cost	_____numerical (1 – 65535, default: 1)
Forwarding network IP address	_____ (IP dotted notation)

OSPF Area Configuration

Table 40-67. OSPF Area Configuration	
Configure an OSPF Area	
Area number	_____ (IP dotted notation)
Stub area	□
Authentication (A)	□
Default cost	_____numerical (1 – 65535, default: 1)
Import summaries (IS)	□

OSPF Area Ranges

Table 40-68. OSPF Area Ranges	
OSPF area: _____	
Configure an Area Range	
IP address:	_____ (IP dotted notation)
IP subnet mask:	_____ (IP dotted notation)
Advertise (A)	□

OSPF/RIP Parameters Per IP Address

Table 40-69. OSPF/RIP Parameters Per IP Address	
IP Address: _____	
Add OSPF (O)	□
Add RIP (R)	□

OSPF Parameters Per IP Address

Table 40-70. OSPF Parameters Per IP Address	
IP Address: _____	
General Parameters	
Area number	_____ (IP dotted notation, default: 0.0.0.0)
Authentication key	_____ (alphanumeric characters)
Cost (TOS 0)	_____numerical (1 – 65535, default: 1)
Priority	_____numerical (0 – 255, default: 1)
Timers (Seconds)	
Retransmit interval	_____seconds (1 – 65535, default: 5)
Transmit delay	_____seconds (1 – 65535, default: 1)
Dead interval	_____seconds (2 – 65535, default: 40)
Hello interval	_____seconds (1 – 255, default: 10)
Multicast Externals	
Enable multicast	□
Forward/receive as unicasts	□
IGMP polling interval	_____seconds (1 – 65535, default: 60)
IGMP timeout	_____seconds (1 – 65535, default: 180)
Non-Broadcast	
Non-broadcast	□
Polling interval	_____seconds (1 – 65535, default: 120)

OSPF Neighbors

Table 40-71. OSPF Neighbors	
IP Address: _____	
Neighbor Addresses	
Neighbor IP address	_____ (IP dotted notation)
Designated router eligible (E)	□

OSPF Virtual Links

Table 40-72. OSPF Virtual Links	
Configure an OSPF Virtual Link	
Router ID (neighbor IP address)	_____ (IP dotted notation)
Retransmit interval (RI)	_____seconds (1 – 65535, default: 10)
Transmit delay (TD)	_____seconds (1 – 65535, default: 5)
Dead interval (DI)	_____seconds (2 – 65535, default: 180)
Hello interval	_____seconds (1 – 255, default: 30)
Authentication key	_____ (alphanumeric characters)
Link's transit area	_____ (IP dotted notation, default: 0.0.0.0)

RIP Configuration Sheets

RIP General Parameters

Table 40-73. RIP General Parameters	
Enable RIP	□
Originate Default Route	
Always originate default route	□
Originate default route if BGP routes available	□
From AS number	_____numerical (1 – 65535, default: 1)
To network number	_____ (IP dotted notation)
Originate default route if OSPF routes available	□
Default route cost	_____numerical (1 – 16, default: 1)
Route Acceptance	
Network address	_____ (IP dotted notation)

RIP Parameters Per IP Address

Table 40-74. RIP Parameters Per IP Address	
IP Address: _____	
Broadcast address style	□ Network □ *Local-wire*
Address fill style	□ Zeroes □ *Ones*
Interface tag (AS number)	_____numerical (1 – 65535, default: 1)
Send RIP routes	□ (default: √)
Send net routes	□ (default: √)
Send subnet routes	□ (default: √)
Send host routes	□ (default: √)
Send static routes	□
Send default routes	□
Receive RIP	□ (default: √)
Receive net routes	□ (default: √)
Receive subnet routes	□ (default: √)
Receive host routes	□ (default: √)
Override static routes	□
Override default routes	□

BGP Configuration Sheets

To quickly locate a worksheet:

BGP General Parameters/Excluded AS

Table 40-75. BGP General Parameters/Excluded AS	
Enable BGP	□
Send subnet routes	□
AS number	_____numerical (1 – 65535, default: 1)
TCP segment size	_____bytes (28 – 65535, default: 2024)
Excluded Autonomous Systems (AS)	
AS no. to exclude	_____numerical (1 – 65535, default: 1)

BGP Receive Policies

Table 40-76. BGP Receive Policies	
Configure a Receive Policy	
Policy type	□ *Inclusive (I)* □ Exclusive (E)
Address match (AM)	□ *Exact (E)* □ Range (R)
Network IP address	_____ (IP dotted notation)
Network mask	_____ (IP dotted notation)
IGP metric	_____numerical (1 – 65535, default: 1)
Originating AS number	_____numerical (0 – 65535, default: 0)
Adjacent AS number	_____numerical (0 – 65535, default: 0)

BGP Send Policies

Table 40-77. BGP Send Policies	
Configure a BGP Send Policy	
Policy type	□ *Inclusive (I)* □ Exclusive (E)
Address match (AM)	□ *Exact (E)* □ Range (R)
Network IP address	_____ (IP dotted notation)
Network mask	_____ (IP dotted notation)
Tag	_____numerical (0 – 65535, default: 0)
Adjacent AS number	_____numerical (0 – 65535, default: 0)

BGP Originate Policies

Table 40-78. BGP Originate Policies	
Configure a BGP Originate Policy	
Policy type	□ *Inclusive (I)* □ Exclusive (E)
Address match (AM)	□ *Exact (E)* □ Range (R)
Network IP address	_____ (IP dotted notation)
Network mask	_____ (IP dotted notation)
Tag	_____numerical (0 – 65535, default: 0)

BGP Aggregate Routes

Table 40-79. BGP Aggregate Routes	
Aggregate Routes	
Network IP address	_____ (IP dotted notation)
Network mask	_____ (IP dotted notation)

BGP Neighbors

Table 40-80. BGP Neighbors	
Configure a BGP Neighbor	
IP address:	_____ (IP dotted notation)
Enable neighbor	□ (default: √)
AS number	_____numerical (1 – 65535, default: 1)
Initialization timer	_____seconds (0 – 65535, default: 12)
Connect retry timer	_____seconds (0 – 65535, default: 120)
Hold timer	_____seconds (0 – 65535, default: 90)
TCP segment size	_____bytes (28 – 65535, default: 2024)

ARP Configuration Sheet

Table 40-81. ARP Parameters	
General Parameters	
Enable ARP net routing	□
Enable ARP subnet routing	□
Enable auto refresh	□
Refresh timer	_____minutes (0 – 1000, default: 5)
Configure an ARP entry	
Port number	_____ (default: 2080)
Remote IP address	_____ (IP dotted notation)
Remote MAC address	_____ (12 hexadecimal characters)

SNMP Configuration Sheet

Table 40-82. SNMP Port Identification	
Access type	□ *Read* □ Trapdest
Community Name	_____ (alphanumeric characters)
UDP transport IP network address	_____ (IP dotted notation)
UDP transport Mask address	_____ (IP dotted notation)

Chapter 41. Multiaccess Enclosure Worksheets

This chapter contains a number of planning worksheets that will help you in the configuration of the multiaccess enclosure. You will find these handy when going through the configuration process described in Chapter 26, “Multiaccess Enclosure Configuration” on page 26-1. The worksheets are:

- Service LAN IP Addresses Configuration Worksheet
- Quick Configuration Worksheet
- Initial Configuration Worksheet
- Token-Ring Configuration Worksheet
- LLC Configuration Worksheet
- Ethernet Configuration Worksheet
- Point-to-Point Protocol Configuration Worksheet
- Frame Relay Configuration Worksheet
- X.25 Configuration Worksheet
- SDLC Configuration Worksheet
- ISDN Configuration Worksheet
- ATM Configuration Worksheet

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Service LAN IP Addresses Worksheet

The worksheet in this chapter lists the parameters that are needed during the multiaccess enclosure installation.

Default parameter values are included (in parentheses) in the table. Complete this sheet and give it to the IBM service representative.

Definition of the Service LAN IP Addresses

Table 41-1. IP Addresses and Subnet Mask	
Client IP address (multiaccess enclosure)	(192.9.200.5)
Server IP address (Service Processor)	(192.9.200.1)
Gateway IP address	(192.9.200.1)
Subnet mask	(255.255.255.240)

LAN link from the MAE to the 3746

Table 41-2. LAN link to 3746	
LAN link to 3746 required	□ Yes **Note** □ No **Note**

Note: For explanation refer to “ Overview of the Multiaccess Enclosure Environment” on page 26-2.

Quick Configuration Worksheet

Completed by: _____	Date: _____
Multiaccess Enclosure Name: _____	

Adapter Type?	□ Token-Ring	□ Ethernet	□ Other _____
Port (Interface) Number	_____		
Bridging			
Configure **Bridging**?	□ YES	□ NO	
Configure SRT Bridging?	□ YES	□ NO	
Bridge No. (*0–F*)	□ A †	□ Other _____	
Configure Interface ___ (*0–xx*)?	□ YES	□ NO	
Configure Source Routing on this interface?	□ YES	□ NO	
Segment No. (*1–FFF*)	□ A †	□ Other _____	
Save this configuration?	□ YES	□ NO	
Protocols			
Configure **Protocols**?	□ YES	□ NO	
Configure IP?	□ YES	□ NO	
Configure Interface ___ (*0–xx*)?	□ YES	□ NO	
Configure IP on this interface?	□ YES	□ NO	
IP address	_____	Address Mask	_____
Enable Dynamic Routing?	□ YES	□ NO	
Enable OSPF?	□ YES	□ NO	
Save this configuration?	□ YES	□ NO	

IPX		
Configure **IPX**?	□ YES	□ NO
Configure Interface ___ (*0–xx*)?	□ YES	□ NO
Configure IPX on this interface?	□ YES	□ NO
Token-Ring encapsulation (*frame*) type?		
□ TOKEN—RING MSB †		
□ TOKEN—RING LSB		
□ TOKEN—RING_SNAP MSB		
□ TOKEN—RING_SNAP LSB		
Ethernet encapsulation (*frame*) type?		
ETHERNET_8022		
ETHERNET_8023		
ETHERNET_ii		
ETHERNET_SNAP		
Network No. (*1–FFFFFFFE*)	_____	
Enable IPXWAN?	□ YES	□ NO
Host No. for Serial Lines	_____	
Configure IPXWAN Node ID?	□ YES	□ NO
Node ID (*1–FFFFFFFE*)	□ 1 †	□ Other _____
Save this configuration?	□ YES	□ NO

DNA (DECNet)				
Configure **DNA**?	□ YES	□ NO		
Highest Node No. (*1–1023*)	□ 32 †	□ Other _____		
Router Level	□ Proteon Level1 †	□ Proteon Level2	□ DEC Level1	□ DEC Level2
Highest Area (*1–63*)	□ 63 †	□ Other _____		
Node address	_____	Address Mask	_____	
Configure DNA on Interface ___?	□ YES	□ NO		
Max Routers (*1–33*)?	□ 16 †	□ Other _____		
Save this configuration?	□ YES	□ NO		
Note: † = default				

Initial Configuration Worksheet

Table 41-3. Initial Configuration Worksheet

□ Add	□ Device	□ Token-Ring	Slot #: _____ Port #: _____
		□ Ethernet	Slot #: _____ Port #: _____
		□ ATM	Slot #: _____
		□ ISDN (T1/J1)	Slot #: _____
		□ ISDN (E1)	Slot #: _____
		□ X.21	Slot #: _____ Port #: _____
		□ V.35/V.36	Slot #: _____ Port #: _____
		□ EIA-232E/V.24	Slot #: _____ Port #: _____
		□ Dial Circuits	

Token-Ring Configuration Worksheet

□ Accept all defaults

Table 41-4. Token-Ring Configuration Worksheet		
□ Frame	□ Token-Ring	□ MSB □ LSB
	□ Token-Ring_SNAP	□ MSB □ LSB
□ Media	□ Shielded † □ Unshielded	
□ Packet-Size	□ 4 Mbps	□ 2052 † □ 4399
	□ 16 Mbps	□ 1470 □ 2052 □ 4399 □ 8130 □ 11407 □ 17749
□ Set	□ Physical-address	□ _____
	□ RIF-Timer	□ 120 † □ _____
□ Source-Routing	□ Enable † □ Disable	
□ Speed	□ 4 Mbps † □ _____	
□ LLC Config	□ Yes □ No	

LLC Configuration Worksheet

□ Accept all defaults

Table 41-5. LLC Configuration Worksheet

□ Set	□ n2-max-retry	□ max-retry value	□ 8 † □ _____
	□ n3-frames_rcvd-before-ack	□ Number I-frames received before sending Ack	□ 1 † □ _____
	□ rw-receive-window	□ Receive window	□ 2 † □ _____
	□ t1-reply-timer	□ Reply timer	□ 1 † □ _____
	□ t2-receive-ack-timer	□ Receive Ack timer	□ 1 † □ _____
	□ ti-inactivity-timer	□ Inactivity timer	□ 30 † □ _____
	□ tw-transmit window	□ Transmit window	□ 2 † □ _____
	□ nw-acks-to-inc-ww	□ Acks needed to increment Ww	□ 1 † □ _____

Ethernet Configuration Worksheet

□ Accept all defaults

Table 41-6. Ethernet Configuration Worksheet	
□ ConnectorType	□ BNC (10Base2) □ RJ-45 (10BaseT)
□ Frame	□ Ethernet_11 □ Ethernet_8022 □ Ethernet_8023 □ Ethernet_SNAP
□ IP-Encapsulation	□ Ethernet (e) □ IEEE 802.3 (i)

Point-to-Point Protocol Configuration Worksheet

□ Accept all defaults

Table 41-7 (Page 1 of 2). Point-to-Point Protocol Configuration Worksheet

□ Disable	□ ccp □ chap □ spap □ dial-in-access □ lower-dtr □ pap		
□ Enable	□ ccp □ chap □ spap □ dial-in-access □ lower-dtr □ pap		
□ Set bcp	□ Tinygram Compression	□ No † □ Yes	
□ Set ccp options	□ STAC: # histories □ STAC: check mode	□ 1 † □ 0 □ 3 = Seq. † □ 0 = none □ 1 = LCB □ 2 = CRC	
□ Set dial-in-access parameters	□ Number of minutes online allotted □ Default IP address □ Enable ARP-SUBNET-ROUTING?	□ 0 = unlimited † □ _____ □ 0.0.0.0 † □ _____ □ Yes † □ No	

Table 41-7 (Page 2 of 2). Point-to-Point Protocol Configuration Worksheet

□ Set	□ HDLC cable	□ RS-232 DTE □ RS-232 DCE □ v.35 DCE □ v.35 DTE □ v.36 □ x.21 DCE □ x.21 DTE	
	□ HDLC clocking	□ external	
	□ HDLC encoding	□ internal	
	□ HDLC idle	□ NRZ †	
	□ HDLC mode	□ NRZ1	
	□ HDLC speed (2400–2048000)	□ Flag †	
		□ Mark	
	□ HDLC transmit-delay	□ Asynchronous	
	□ IPCP	□ Synchronous	
		□ _____	
		□ 0 †	
		□ _____	
		□ IP compression	
		□ Number of slots	□ Yes †
		□ Send our IP address	□ No
		□ Request their IP address	□ 16 † □ _____
	□ LCP options	□ Maximum Receive Unit	□ Yes † □ No
		□ Magic Number	□ Yes †
		□ Protocol Field Compression	□ No □ 2048 †
		□ Addr/Cntl Field Compression	□ _____ □ Yes †
	□ LCP parameters	□ Config tries	□ No
		□ NAK tries	□ No †
		□ Terminate tries	□ Yes
		□ Retry timer	□ No † □ Yes □ 20 † □ _____ □ 10 † □ _____ □ 10 † □ _____ □ 3000 † □ _____
□ Set (cont.)	□ name _____	□ Enter Password	□ _____
	□ NCP parameters	□ Enter Password again	□ _____ □ 20 †
		□ Config tries	□ _____
		□ NAK tries	□ 10 †
		□ Terminate tries	□ _____
		□ Retry timer	□ 10 † □ _____ □ 3000 † □ _____

Frame Relay Configuration Worksheet

□ Accept all defaults

Table 41-8 (Page 1 of 2). Frame Relay Configuration Worksheet

□ Add	□ Permanent-Virtual-Circuit	□ Circuit Number □ Committed Information Rate in bps □ Committed Burst Size in bits □ Excess Burst Size in bits □ Assign Circuit Name □ Is circuit required for interface operation □ Does the circuit belong to a required PVC group □ What is the group name □ Protocol name or number □ IP Address □ Host Number (in hex) □ Network Number □ Node Number □ Node Address □ Circuit Number □ PVC group name	□ 16 † □ _____ □ 64000 † □ _____ □ 64000 † □ _____ □ 0 † □ _____ □ _____ □ No † □ Yes □ No † □ Yes □ _____ □ _____ □ _____ □ _____ □ _____ □ _____ □ 0.0 † □ _____
	□ Protocol-Address		□ 16 † □ _____ □ _____
	□ PVC-Group		
□ Change	□ Permanent-Virtual-Circuit □ Protocol-Address □ PVC-Group		
□ Disable	□ Cir-Monitor □ Congestion-Monitor □ Dn-Length-Field □ LMI □ Multicast-Emulation □ No-PVC □ Orphan-Circuits □ Protocol-Broadcast		

Table 41-8 (Page 2 of 2). Frame Relay Configuration Worksheet

□ Enable	□ Cir-Monitor □ Congestion-Monitor □ Dn-Length-Field □ LMI □ Multicast-Emulation □ No-PVC □ Orphan-Circuits □ Protocol-Broadcast		
□ Remove	□ Permanent-Virtual-Circuit □ Protocol-Address □ PVC-Group	□ Circuit Number □ Protocol name or number □ PVC group name	□ _____ □ _____ □ _____
□ Set	□ cable x21 □ clocking □ encoding □ frame-size □ idle □ ir-adjustment □ line-speed □ lmi-type □ n1-parameter □ n2-parameter □ n3-parameter □ p1-parameter □ t1-parameter □ transmit-delay	□ DTE □ DCE □ external □ internal □ NRZ † □ NRZ1 □ 2048 † □ _____ □ flag † □ mark □ IR adjustment % decrement □ Minimum IR as % of CIR □ Line speed □ ANSI □ REV1 □ CCITT □ Parameter N1 □ Parameter N2 □ Parameter N3 □ Parameter P1 □ Parameter T1 □ Transmit Delay Counter	□ 25 † □ _____ □ 25 † □ _____ □ 64000 † □ _____ □ 6 † □ _____ □ 3 † □ _____ □ 4 † □ _____ □ 64 † □ _____ □ 10 † □ _____ □ 0 † □ _____

X.25 Configuration Worksheet

□ Accept all defaults

Table 41-9 (Page 1 of 4). X.25 Configuration Worksheet

□ Add	□ Address	□ Protocol	□ IP †
		□ Enc Priority 1	□ IPX
		□ Enc Priority 2	□ CC
		□ Enc Priority 3	□ SNAP
		□ CUD Field Usage	□ NULL
		□ IP Address	□ CC
		□ IPX Host Number (in hex)	□ SNAP
		□ X.25 Address	□ NULL
		□ Protocol	□ CC
		□ Current HTF address	□ SNAP
		□ Protocol	□ NULL
			□ Standard †
			□ Proprietary
			□ _____
			□ _____
			□ _____
			□ IP †
		□ Window size	□ _____
		□ Default Packet Size	□ _____
		□ Maximum Packet Size	□ IP †
		□ Circuit Idle Time	□ XTP
	□ htf-address	□ Maximum Vcs	□ DECnet
	□ protocol		□ IPX
			□ Banyan VINES
			□ 2 †
			□ _____
			□ 128 †
			□ _____
			□ 128 †
			□ _____
			□ 30 †
			□ _____
			□ 10 †
			□ _____
□ Add (cont.)	□ pvc	□ Protocol	□ IP †
			□ XTP
			□ DECnet
			□ IPX
			□ Banyan VINES
			□ CC
		□ Enc Type	□ SNAP
		□ Packet Channel	□ NULL
		□ Destination X.25 Address	□ _____
		□ Window Size	□ _____
		□ Packet Size	□ 2 †
			□ _____
			□ 128 †
			□ _____

Table 41-9 (Page 2 of 4). X.25 Configuration Worksheet

□ Change	□ Address	□ Protocol	□ IP †
		□ Enc Priority 1	□ IPX
		□ Enc Priority 2	□ CC
		□ Enc Priority 3	□ SNAP
		□ CUD Field Usage	□ NULL
		□ IP Address	□ CC
		□ IPX Host Number (in hex)	□ SNAP
		□ X.25 Address	□ NULL
		□ Protocol	□ CC
		□ Change HTF address	□ SNAP
		□ New HTF address	□ NULL
		□ Protocol	□ Standard †
			□ Proprietary
			□ _____
			□ _____
			□ _____
			□ IP †
			□ _____
		□ Window size	□ _____
		□ Default Packet Size	□ _____
		□ Maximum Packet Size	□ IP †
	□ htf-address	□ Circuit Idle Time	□ XTP
	□ protocol	□ Maximum Vcs	□ DECnet
		□ Protocol	□ IPX
			*□ Banyan VINES
			□ _____
			□ _____
			□ _____
			□ _____
		□ Packet Channel	□ _____
		□ Destination X.25 Address	□ IP †
		□ Window Size	□ XTP
		□ Packet Size	□ DECnet
	□ pvc		□ IPX
			□ Banyan VINES
			□ _____
			□ _____
			□ _____
			□ _____

Table 41-9 (Page 3 of 4). X.25 Configuration Worksheet			
□ Delete	□ Address □ Protocol □ PVC	□ Protocol □ IP Address □ IPX Host Number (in hex) □ Protocol □ Protocol □ Destination X.25 Address *	□ IP † □ IPX □ _____ □ _____ □ IP † □ XTP □ DECnet □ IPX □ Banyan VINES □ IP † □ XTP □ DECnet □ IPX □ Banyan VINES □ _____
□ Disable	□ ddn-address-translations □ incoming-calls-barred □ lower-dtr □ outgoing-calls-barred		
□ Enable	□ ddn-address-translations □ incoming-calls-barred □ lower-dtr □ outgoing-calls-barred		
□ National Disable	□ accept-reverse-charges □ ccitt □ flow-control-negotiation □ frame-ext-seq-mode □ osi-84 □ osi-88 □ packet-ext-seq-mode □ request-reverse-charges □ suppress-calling-addresses □ throughput-class-negotiation		
□ National Enable	□ accept-reverse-charges □ ccitt □ flow-control-negotiation □ frame-ext-seq-mode □ osi-84 □ osi-88 □ packet-ext-seq-mode □ request-reverse-charges □ suppress-calling-addresses □ throughput-class-negotiation		

Table 41-9 (Page 4 of 4). X.25 Configuration Worksheet

□ National Restore	□ all □ accept-reverse-charges □ call-req □ ccitt □ clear-req □ disconnect-procedure... □ dp-timer □ flow-control-negotiation □ frame-ext-seq-mode □ frame-window-size □ network-type □ n2-timeouts □ osi-84 □ osi-88 *□ packet-size... □ packet-ext-seq-mode □ request-reverse-charges □ reset □ restart □ standard-version □ suppress-calling-addresses □ throughput-class-negotiation *□ t1-timer □ t2-timer		
□ National Set	□ call-req □ clear-req □ disconnect-procedure □ dp-timer □ frame-window-size □ network-type □ n2-timeouts □ packet-size □ reset □ restart □ standard-version □ t1-timer □ t2-timer		
□ Set	□ address □ cable □ calls-out □ clocking □ default-window-size □ encoding □ equipment-type □ htf addr □ inter-frame-delay □ mtu □ national-personality □ pvc □ speed □ svc □ throughput-class □ vc-idle		

SDLC Configuration Worksheet

□ Accept all defaults

Table 41-10. SDLC Configuration Worksheet

□ Add	□ Station	□ Enter station address □ Enter station name □ Include station in group poll list □ Enter max packet size □ Enter receive window □ Enter transmit window	□ _____ □ _____ □ Yes † □ No □ _____ □ _____ □ _____
□ Delete	□ Station	□ Name or address	□ _____
□ Disable	□ Link □ Station	□ Name or address	□ _____
□ Enable	□ Link □ Station	□ Name or address	□ _____
□ Set	□ link cable □ link clocking □ link duplex □ link encoding □ link frame-size □ link group poll □ link idle □ link inactivity □ link inter-frame delay □ link modulo □ link name □ link poll □ link role □ link rts-hold □ link snrm □ link spee □ link type □ link xid/test □ station address		

ISDN Configuration Worksheet

□ Accept all defaults

Table 41-11. ISDN Configuration Worksheet

□ Add	□ accounting-entry	□ _____	
□ Disable	□ PS1		
□ Enable	□ PS1		
□ Remove	□ accounting-entry	□ _____	
□ Set	□ e1-identifier	□ _____	
	□ frame-size	□ 1024 †	
	□ local-address-name	□ 2048	
	□ multipoint-selection	□ 4096	
	□ retries-call-address	□ _____	
	□ service-profile-id	□ pp †	
		□ mp	
		□ 2 †	
		□ _____	
		□ Enter B-channel Number	□ 1 †
		□ Enter Service Profile ID	□ _____
	□ timeout-call-address	□ 0 †	□ 123 †
	□ switch-variant	□ _____	□ _____
		□ net3	
		□ ins64	
		□ vn3	
		□ 5ess	
		□ dms100	
		□ usni1	
		□ usni2	
	□ dn0	□ _____	
	□ dn1	□ _____	
	□ t1	□ _____	
	□ tei	□ Auto †	
		□ None	
		□ _____	

Chapter 42. Familiarizing Yourself with the Installation Sheets

This chapter contains examples of the 3746-900 and 3746-950 installation sheets produced by the 3746 Configurator (CF3745). Explanations of terms and abbreviations are provided after the samples. Use your installation sheets to fill out the plugging sheets and cable labels.

Enclosure Examples

Notes for the 3746-900 and 950 Enclosure Examples

1. For a LIC11, the B number on this line is the LCBB ID number. Refer to page 42-14.
2. For a LIC12, the number on this line is line group ID number. Refer to page 42-13.
3. The number in the lower line (8922, 8223, and so on) corresponds to the specific code that identifies the feature and the position.
4. The 07 number at the top and bottom of the figure is marked on the enclosure to help you identify it.

Legend

The following abbreviations are used in the enclosure examples.

```
Features:
  CBSP  = Controller Bus (CCU-A) and Service Processor
  CBSP2 = Controller Bus (CCU-A) and Service Processor Type 2
  CBC   = Controller Bus Coupler (CCU-B has TRP/TRP2 with CBC)
  TRP   = Token-Ring Processor
  TRP2  = Token-Ring Processor Type 2
  TIC3  = Token-Ring Interface Coupler Type 3
  ESCP  = Enterprise System Connection Processor
  ESCP2 = Enterprise System Connection Processor Type 2
  ESCC  = Enterprise System Connection Coupler type 1
  ESCC2 = Enterprise System Connection Coupler type 2
  CLP   = Communication Line Processor
  LIC11 = Line Interface Coupler type 11
  LIC12 = Line Interface Coupler type 12

Status()
 Base = Basic Feature
   I  = Installed (Active) Feature
   S  = Spare (Backup) Feature
   F  = Coupler slot free on a given processor
   N  = ESCON coupler slot not available
```

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3746-900 Basic Enclosure Example

3746–900 PROCESSOR EXPANSION FRAME

REAR SIDE

07N – A1

P	N	M	L	K	J	H	G	F	E
PORT	PORT 2304	PORT 2272	PORT 2240	PORT	PORT	PORT	PORT 2112	PORT 2080	PORT 2048
	ESCC2	B1 LIC11	8 LIC12	See notes on page 42-1.			TIC3	TIC3	CBC
(N)	(I)	(I)	(I)	( )	( )	(F)	(I)	Base	Base
	8922	8223	8224				8628	N/A	N/A

B A S E E N C L O S U R E – T O P V I E W

ESCP2	CLP		TRP2	CBSP2
(I)	(I)	( )	(I)	(Base)
8811	8202	——	8614	N/A

SLOT 6 (P)	SLOT 5 (M)	SLOT 4 (K)	SLOT 3 (H)	SLOT 2 (F)

07G – A1

FRONT SIDE

3746-900 Expansion Enclosure Example

3746–900 PROCESSOR EXPANSION FRAME

FRONT SIDE

07M – A1

P	N	M	L	K	J	H	G	F	E	D	C
PORT 2720	PORT 2688	PORT	PORT 2624	PORT	PORT	PORT 2528	PORT 2496	PORT 2464	PORT 2432	PORT	PORT 2368
B3 LIC11	7 LIC12		B2 LIC11				ESCC	TIC3	TIC3		TIC3
(S)	(I)	(F)	(I)	( )	( )	(N)	(I)	(S)	(S)	(F)	(I)
8229	8330	——	8232			8835	8936	8637	8638	——	8640

E X P A N S I O N E N C L O S U R E T O P – V I E W

CLP	CLP		ESCP	TRP	TRP
(I)	(I)	( )	(I)	(S)	(I)
8205	8206		8808	8609	8610

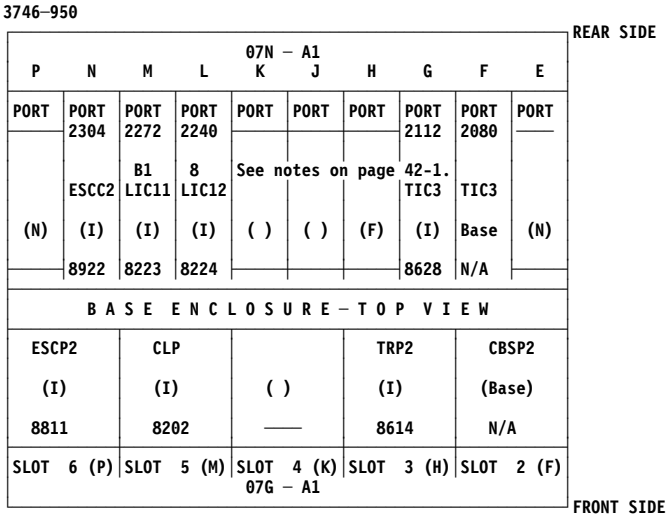
SLOT 12 (P)	SLOT 11 (M)	SLOT 10 (K)	SLOT 9 (H)	SLOT 8 (F)	SLOT 7 (D)

07E – A1

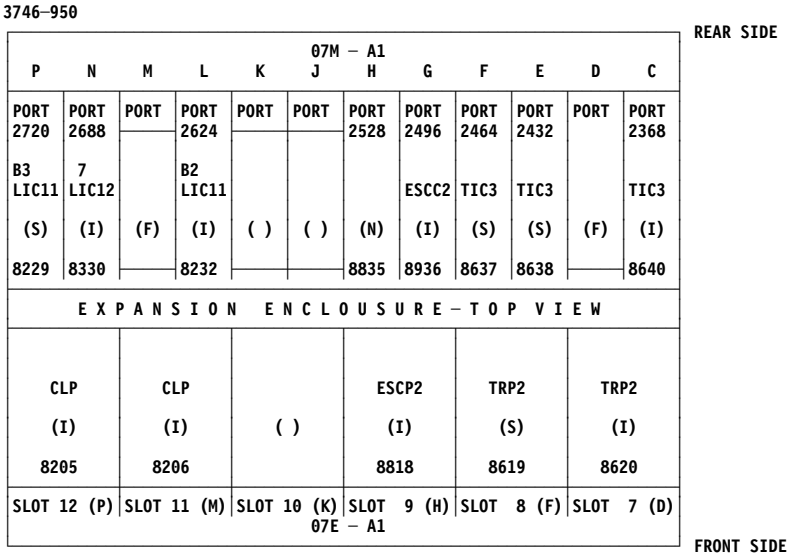
REAR SIDE

Note: The figure shows the first expansion frame. A second, optional expansion enclosure may be fitted and has the frame identifier 07L-A1. See note 4 on page 42-1 above.

3746-950 Basic Enclosure Example



3746-950 Expansion Enclosure Example



Note: The figure shows the first expansion frame. A second, optional expansion enclosure may be fitted and has the frame identifier 07L-A1. See note 4 on page 42-1 above.

3746-950 with Multiaccess Enclosure

Below you will find the installation sheets for a configuration of a Multiaccess Enclosure with four production token rings, one Ethernet, one ATM and one ESCON adapter. These have been slightly modified to make them more readable. Please note that we have selected this NN configuration in order to emphasize the independence of the multiaccess enclosure from NCP.

Installation Sheets

The schematic diagram of the configuration is below:

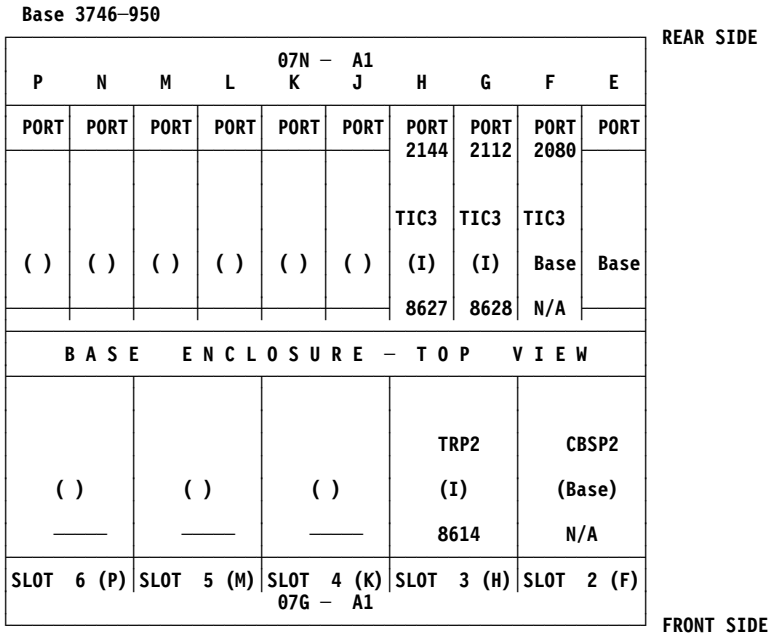


Figure 42-1. Base 3746-950 with Token-Ring Connection to Multiaccess Enclosure

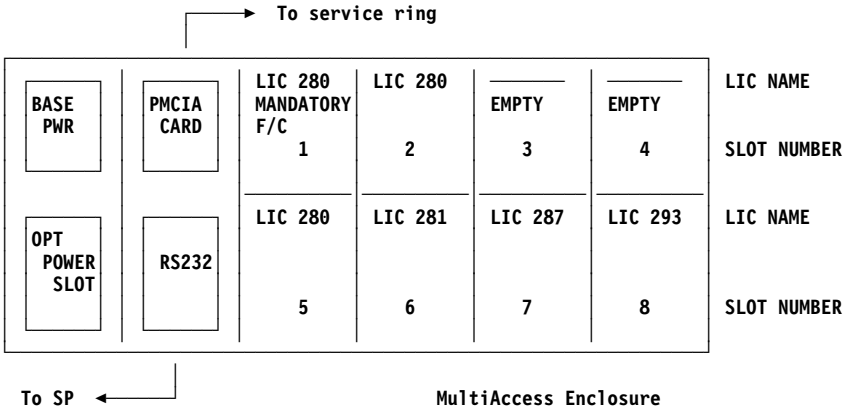


Figure 42-2. Multiaccess Enclosure with Token-Ring Connection to Base 3746-9x0.

```
*** 3746-900/950 CABLE GROUP INFORMATION ***
CABLE
GROUP  QTY  DESCRIPTION
7003     2  TOKEN-RING INTERFACE COUPLER TYPE 3 [1]

Features:
  CBSP2 = Controller Bus (CCU-A) and Service Processor Type 2
  TRP2  = Token-Ring Processor Type 2
  TIC3  = Token-Ring Interface Coupler Type 3

Status():
 Base = Basic Feature
   I  = Installed (Active) Feature
   S  = Spare (Backup) Feature
   F  = Coupler slot free on a given processor
Legend for LIC Lines

                      LIC
Adapter Name          NAME
--------------------- -------
2-Port Token-Ring     LIC 280 (including slot 1 already plugged)
2-Port Ethernet       LIC 281
1-Port ESCON Channel  LIC 287
1-Port Single-mode ATM LIC 293


POWER PLUG INFORMATION

3746-950 POWER PLUG IS: NON-LOCKING PLUG # NEMA 6-15P
CUSTOMER MUST INSTALL:  RECEPTACLE # NEMA 6-15R
```

Notes:

1. [1] The customer should insure that these are ordered with the correct length.
2. Note that there is no warning about usage tier since no NCP is required.
3. These sheets also provide valuable documentation for the customer and it is recommended that they be kept near the SP console.

Hardware Configuration Report

This hardware report corresponds to the above installation sheets.

Notes:

1. **1** One of the three-Token ring adapters is necessary configuration for communication with the 3746 Mod 9x0. It is included automatically.
2. **2** This token-ring and the two TIC3s are required for communication with the Multiaccess Enclosure.

Cable Group Examples

Example of Cables for the 3745 (HSS, ELA, TRA)

Cable Group	Qty	Interface	Port No.
5831	1	HSS N/A Attach thru V.35	1028, 1029
5833	3	ESS N/A Attach thru X.21	1062, 1069, 1070
1666	4	Token–Ring Interface Coupler	1088, 1089, 1092, 1093

The meaning of the column headings are:

Cable Group Cable group number.

Qty Quantity of ordered cables in the same cable group.

Interface Type of attachment for the cables in the same cable group.

Port No. Numbers of the ports to which the cables of each cable group are connected.

Example of the Cables for the 3745 (LIC Types 1 to 6)

Cable Group	Qty	Interface	Port No.
1604	22	LIC type 1 – external modem	0 – 11, 32 – 41
1605	5	LIC type 3 – direct attach	12, 16, 20, 24, 28
N/A	8	LIC type 6 – 4–wire cable	78, 80, 82, 84, 86, 88, 90, 92
N/A	2	LIC type 6 – 4–wire cable	64, 68
N/A	5	LIC type 5 – 4–wire cable	72 – 76

Figure 42-3. 3745 Cable Example Table

Note: If you have LIC type 5 or 6 in your configuration, their cable group information is not in the above table since they have standard-length cables shipped with them. Each LIC5 has two 15-meter cables and each LIC6 has one 15-meter cable.

The meaning of the column headings are:

Cable Group Cable group number.

Qty Quantity of ordered cables in the same cable group.

Interface Type of attachment for the cables in the same cable group.

```
3746-950 NWAYS MULTINETWORK CTLR              1

     FC                                      QTY

    3000 MULTIACCESS ENCLOSURE (MAE)          1


    3280 2-PORT TOKEN-RING ADAPTER            3 1
    3281 2-PORT ETHERNET ADAPTER              1
    3287 1-PORT ESCON CHANNEL ADAPTER         1
    3293 1-PORT SINGLE MODE ATM ADAPTER       1
    3500 2ND AC POWER SUPPLY (FOR MAE)        1
    3713 MULTI-PURPOSE RJ-45 CABLE            6
    5000 DUAL POWER INPUT AC 200-240          1
    5002 2ND AC DISTRIBUTION                  1
    5021 SERVICE PROCESSOR                    1
    5022 NETWORK NODE PROCESSOR               1
    5023 CONTROLLER RACK                      1
    5027 NNP MEMORY EXPANSION                 1
    5029 SP RACK-MOUNT KIT                    1
    5033 IP ROUTING                           1
    5601 TOKEN RING COUPLER (TIC3)            2
    5622 TOKEN RING PROC. TYPE 2 (TRP2)       1 2
    5720 SMF ATM EXTERNAL CABLE 10M           1
    8614 TRP2 IN BASE POSITION H              1
    8627 TIC3 IN BASE POS H                   1
    8628 TIC3 IN BASE POS G                   1
    9838 CTLR EXP NON LOCKING PLUG            2
    9895 NON-LOCKING PLUG                     2
    9902 60HZ - 208V                          2
```

Port No. Numbers of the ports to which the cables of each cable group are connected.

Example for LIC11 Cables

FEATURE	QTY	DESCRIPTION	3746/NCP ADDRESSES
9716	4	LIC11 cable – 15m	2272,2240,2720,2624

The meaning of the column headings are:

Feature
Feature or specific code of the LIC cable.

QTY
Quantity of ordered LIC11 cables.

DESCRIPTION
Type of cable and its length.

3746/NCP ADDRESSES
Logical addresses of the ports to which the LIC11 cables are connected.

Example for ARC Cables

FEATURE	QTY	DESCRIPTION	DISTRIBUTION ACROSS 3746/NCP ADDRESSES
6415	127	ARC V.24 — DCE attachment 12m	2432,2448,2496,2512,2528,2544,2560, 2576,2592,2608,2624,2640,2656,2672, 2688,2704,2720,2736
6500	30	ARC V.35 — DTE attachment 15m	2432,2448,2496,2512,2528,2544,2560, 2576,2592,2608,2624,2640,2656,2672, 2688,2704,2720,2736

The meaning of the column headings are:

FEATURE
Feature code of the ARC.

QTY
Quantity of ordered ARCs.

DESCRIPTION
Type of ARC and cable length.

Gives the ARC type.

DISTRIBUTION ACROSS 3746/NCP ADDRESSES
Port addresses to which the ARCs are connected.

Example of 3746 Cable Group Information

These cables, except the system EPO cables, are automatically shipped with the machine or MES in European, Middle East and African countries. For all other countries, these cables must be specifically ordered.

For all countries, EPO cables must be ordered if needed.

For available cable types and lengths, refer to “Cable Information” on page 44-63.

CABLE GROUP	QTY	DESCRIPTION
7003	4	TOKEN RING INTERFACE COUPLER TYPE 3
3797	2	ESCON COUPLER
1178	2	SYSTEM EPO
5833	2	LIC12

The meaning of the column headings are:

CABLE GROUP Cable group number of the cable(s).
QTY Quantity of cables of the same cable group.
DESCRIPTION Type of cable.

Line Group Examples

Example of High-Speed Scanning Links

ID	Group Name	No. Lines	Line Speed	Line Type	Attach	Back Up	Device
4	High–Speed 1	1	256000	V35	NIA	N	3745
5	High–Speed 2	2	1544000	X21	NIA	N	3745

The meaning of the column headings:

ID The identification number (from 1 through 99) defined by the person inputting to HONE for a group of lines that are identical in all respects.

Group Name Any name the person inputting to HONE defined for this group.

No. Lines The number of lines in this group.

Line Speed The speed of all lines in this group. It is given in bits per second (bps).

Line Type The type of ITU-T interface used in this group.

Attach NIA means network interface attachment. DA means direct attachment.

Back Up This defines the group as backup (Y for yes) or normally active (N for no) during use of the machine.

Device The device type on the other end of the link.

Example of Token-Ring Lines

ID	Group Name	LOGI. CONN.	Line Speed	TRA Type	Line CNTL	DUP	Transmit Set	Ring ID	TIC Number	CCU ID	Back Up
21	CHOLLET	4	4000000	1	SDLC	HDX	EBCDIC	1	1	A	N

The meaning of the column headings:

ID The identification number (from 1 through 99) defined by the person inputting to HONE for a group of lines that are identical in all respects.

Group Name The name assigned to this group at configuration time.

LOGI. CONN. The number of logical connections of the 3745 token-ring adapter on a token-ring.

Line Speed The speed is 4 or 16Mbps.

TRA Type A token-ring adapter (TRA) type 1 provides two attachment ports for token-ring networks operating at 4 Mbps. A TRA type 2 provides two attachment ports for token-ring networks operating at 4 or 16 Mbps.

Line CNTL The type of control used on the token-ring LAN.

DUP Duplex (DX) or half-duplex (HDX).

Transmit Set Transmission character set.

Ring ID The identification number of the token-ring network defined by the person entering data to HONE.

TIC Number The token-ring interface coupler identification.

CCU ID The central control unit (CCU).

Back Up **N** means that the line group is not a backup and is normally active when the controller is running.
Y means that the line group is a backup and is normally not active when the controller is running.

Example of Cross System Links and Line Group Information

ID	Group Name	No Lines	Line Speed	LIC Type	Protocol		Transmit Set	Line Weight	WT 4 LICs	Attach	Back Up
1	Line group 1	16	9600	1	SDLC	HDX	EBCDIC	3.1	2.8	Modem	N
2	Line group 2	5	56000	3	SDLC	FDX	EBCDIC	21.9	21.9	Direct	N
3	Line group 3	6	19200	1	SDLC	FDX	EBCDIC	12.5	10.0	Modem	N
4	DDS/BB – 1	8	9600	6	SDLC	FDX	EBCDIC	3.8	3.8	4 wires	N
5	DDS/BB – 2	2	56000	6	SDLC	FDX	EBCDIC	21.9	21.9	4 wires	N
6	Analog	5	14400	5	SDLC	FDX	EBCDIC	9.4	7.5	4 wires	N

Figure 42-4. Cross System Links and Line Group Table Example

The meaning of the column headings are:

ID The identification number (from 1 through 99) defined in the input to the CF3745 for a group of lines that are identical in all respects.

Group Name The name of the group used in the input to the CF3745.

No. Lines The number of lines in this group.

Line Speed The speed of all lines in this group. It is given in bits per second (bps).

LIC Type The type of LIC used in this group. The LIC type can be 1, 3, 4A, 4B, 5, or 6.

Protocol The line control for this group. It can be S/S, BSC, or SDLC and FDX (duplex) or HDX (half duplex) transmission for this group.

Transmit Set The transmission code for this group. It can be EBCDIC or ASCII.

Line Weight The normal line weight for each individual line in this group.

WT 4 LICs The line weight for each individual line in this group (if the number of LICs being serviced by an individual low- or medium-speed scanner is less than or equal to 4).

Attach Modem or direct attachment of the lines attached to LIC type 1 to 4, or
4 wires for the telephone cable attached to LIC type 5 or 6.

Back Up **N** means that the line group is not a backup and is normally active when the controller is running.
Y means that the line group is a backup and is normally not active when the controller is running.

Example of 3746-900 Low/Medium Speed Line Group Information (LIC11)

ID	GP NAME	LOCATION	LINE SPEED	TRAFFIC	BACK UP	CLP BACK UP	NO. LINES	ATTACH	INTERFACE	3745 ARC	ARC LENGTH
1	1	1	256000	NCP	N	N	1	DIRECT	V.35	N	15
2	2	1	128000	3746	N	N	1	MODEM	V.35	N	15
3	3	1	56000	NCP	N	N	90	MODEM	V.35	N	15
4	4	1	19200	3746	N	N	12	MODEM	V.24	N	12
5	5	1	9600	NCP	N	N	114	MODEM	V.24	N	12
6	6	1	4800	NCP	N	N	1	MODEM	V.24	N	12

Example of 3746-950 High Speed Line Group Information (LIC12)

ID	GP NAME	LOCATION	LINE SPEED	TRAFFIC	BACK UP	CLP BACK UP	NO. LINES	ATTACH	INTERFACE
7	2	2	1536000	3746	N	N	1	DIRECT	V—35
8	3	3	2048000	3746	N	N	2	MODEM	V—35

The meaning of the column headings are:

ID The identification number (from 1 through 99) defined by the person inputting to the CF3745 for a group of lines that are identical in all respects.

GP NAME Any name the person inputting to the CF3745 defined for this group.

LOCATION Represents the location where LCBs are installed (for the LIC12). This information has no effect on the 3746 configuration.

LINE SPEED The speed of all lines in this group. It is given in bits per second (bps).

TRAFFIC NCP = traffic controlled by an NCP (3746-900 only)
3746 = traffic controlled by the 3746 network node

BACK UP This defines the group as an inactive backup (Y for yes) or as normally active (N for no).

CLP BACK UP This defines the group as being backed up by another CLP (Y for yes) or as not being backed up (N for no).

NO. LINES The number of lines in this group.

ATTACH MODEM attachment (to DCE), MODEM attachment (to Transfix DCE), DIRECT attachment (to DTE).

INTERFACE Gives the interface type. Either V.24, V.35, or X.21.

3745 ARC Tells whether the lines of a group (DTE or DCE) are connected to the ARCs by LIC1, LIC3, LIC4A, or LIC4B cables.

ARC LENGTH Specifies the cable length of the ARC in meters.

LCB and ARC Example

On this type of installation sheet, the upper row of slot position represents the LCB base (LCBB) and the lower row of slot position represents the LCB expansion (LCBE).

On your installation sheet, in the upper right corner, you will find the low 3746 or NCP address of the LIC11 attaching this LCB base (this not shown on the following diagram).

```
3746 Frame Installed
Location: 1        LCBB ID: B1
```

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
Address	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441
ARC Type	V.35 DCE	V.35 DCE	V.35 DCE	V.35 DCE	V.35 DCE	V.35 DCE	V.24 DCE	V.24 DCE	V.24 DCE	
ARC length	15.0	15.0	15.0	15.0	15.0	15.0	12.0	12.0	12.0	
Speed	56K	56K	56K	56K	56K	56K	19.2K	9600	9600	
Line ID	3	3	3	3	3	3	4	5	5	.....
Status	(I)	(I)	(I)	(I)	(I)	(I)	(I)	(I)	(I)	

	+16	+17	+18	+19	+20	+21	+22	+23	+24	+25
Address	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457
ARC Type	V.35 DCE	—— ——	—— ——	—— ——	V.24 DCE	V.24 DCE	V.24 DCE	V.24 DCE	V.24 DCE	
ARC length	15.0	——	——	——	12.0	12.0	12.0	12.0	12.0	
Speed	16.6K	——	——	——	9600	9600	9600	9600	9600	
Line ID	2	——	——	——	5	5	5	5	5	.....
Status	(I)	(F)	(F)	(F)	(I)	(I)	(I)	(I)	(I)	

```
Legend:
(I)=Installed
(S)=Spare
(F)=Free slot
```

The meaning of the column headings are:

ADDRESS The addresses are either NCP addresses (for 3746-900 ports controlled by NCP) or line addresses (for 3746-controlled ports).

ARC Type Gives the interface type (V.24, V.35, or X.21) and type of attachment (DCE: modem attachment or DTE: direct attachment)

ARC Length Specifies the cable length of the ARC in meters.

Speed The speed of the line attached to the ARC.

Line ID The identification number (from 1 through 99) defined by the person inputting to the CF3745 for a group of lines that are identical in all respects.

Enclosure Physical Positions and Logical Addresses

Table 42-1 gives the relationship between the machine enclosure (physical) addresses and the 3746 or NCP line addresses.

Table 42-1. Physical Positions and Logical Addresses Relationship

Processor Position (See note 1)	**Coupler Position**	**Logical Line Address (See note 2)**
07G-A1-D	Reserved	Reserved
07G-A1-F	07N-A1-E Reserved 07N-A1-F (TIC3)	Reserved 2080
07G-A1-H (See note 3)	07N-A1-G 07N-A1-H	2112 to 2143 2144 to 2175
07G-A1-K	07N-A1-J 07N-A1-K	2176 to 2207 2208 to 2239
07G-A1-M	07N-A1-L 07N-A1-M	2240 to 2271 2272 to 2303
07G-A1-P	07N-A1-N 07N-A1-P	2304 to 2335 2336 to 2367
07E-A1-D	07M-A1-C 07M-A1-D	2368 to 2399 2400 to 2431
07E-A1-F	07M-A1-E 07M-A1-F	2432 to 2463 2464 to 2495
07E-A1-H	07M-A1-G 07M-A1-H	2496 to 2527 2528 to 2559
07E-A1-K	07M-A1-J 07M-A1-K	2560 to 2591 2592 to 2623
07E-A1-M	07M-A1-L 07M-A1-M	2624 to 2655 2656 to 2687
07E-A1-P	07M-A1-N 07M-A1-P	2688 to 2719 2720 to 2751

Note:

1. Starting with position 07G-A1-K, the processor slots can be assigned to a CLP, TRP, ESCP, TRP2, or ESCP2 processor.
2. A coupler slot for a LIC12, TIC3, ESCC or ESCC2 uses only the first address in the range of addresses assigned to the slot. The first address of a range is considered as the port address.

   For the LIC11, only 30 addresses out of 32 assigned to a port are used. Refer to page 43-8.
3. In the 3746-900, when port 07N-A1-G is used for a CBC (to connect to CCU B), there is always a TRP or TRP2 in slot 07G-A1-H.

Table 42-2. Physical Positions and Logical Addresses Relationship, Second Enclosure

Processor Position (See note 1 on page 42-16)	**Coupler Position**	**Logical Line Address (See note 2 on page 42-16)**
07D-A1-D	07L-A1-C 07L-A1-D	2752 to 2783 2784 to 2815
07D-A1-F	07L-A1-E 07L-A1-F	2816 to 2847 2848 to 2879
07D-A1-H	07L-A1-G 07L-A1-H	2880 to 2911 2912 to 2943
07D-A1-K	07L-A1-J 07L-A1-K	2944 to 2975 2976 to 3007
07D-A1-M	07L-A1-L 07L-A1-M	3008 to 3039 3040 to 3071
07D-A1-P	07L-A1-N 07L-A1-P	3072 to 3103 3104 to 3135

Note:

1. Starting with position 07G-A1-K, the processor slots can be assigned to a CLP, TRP, ESCP, TRP2, or ESCP2 processor.
2. A coupler slot for a LIC12, TIC3, ESCC or ESCC2 uses only the first address in the range of addresses assigned to the slot. The first address of a range is considered as the port address.

   For the LIC11, only 30 addresses out of 32 assigned to a port are used. Refer to page 43-8.
3. In the 3746-900, when port 07N-A1-G is used for a CBC (to connect to CCU B), there is always a TRP or TRP2 in slot 07G-A1-H.

CLP Logical Addresses

START and **END** refer to first and last addresses in the range of logical addresses assigned to a CLP. The CLPs in this example are in slots H, K, and M of the expansion enclosure.

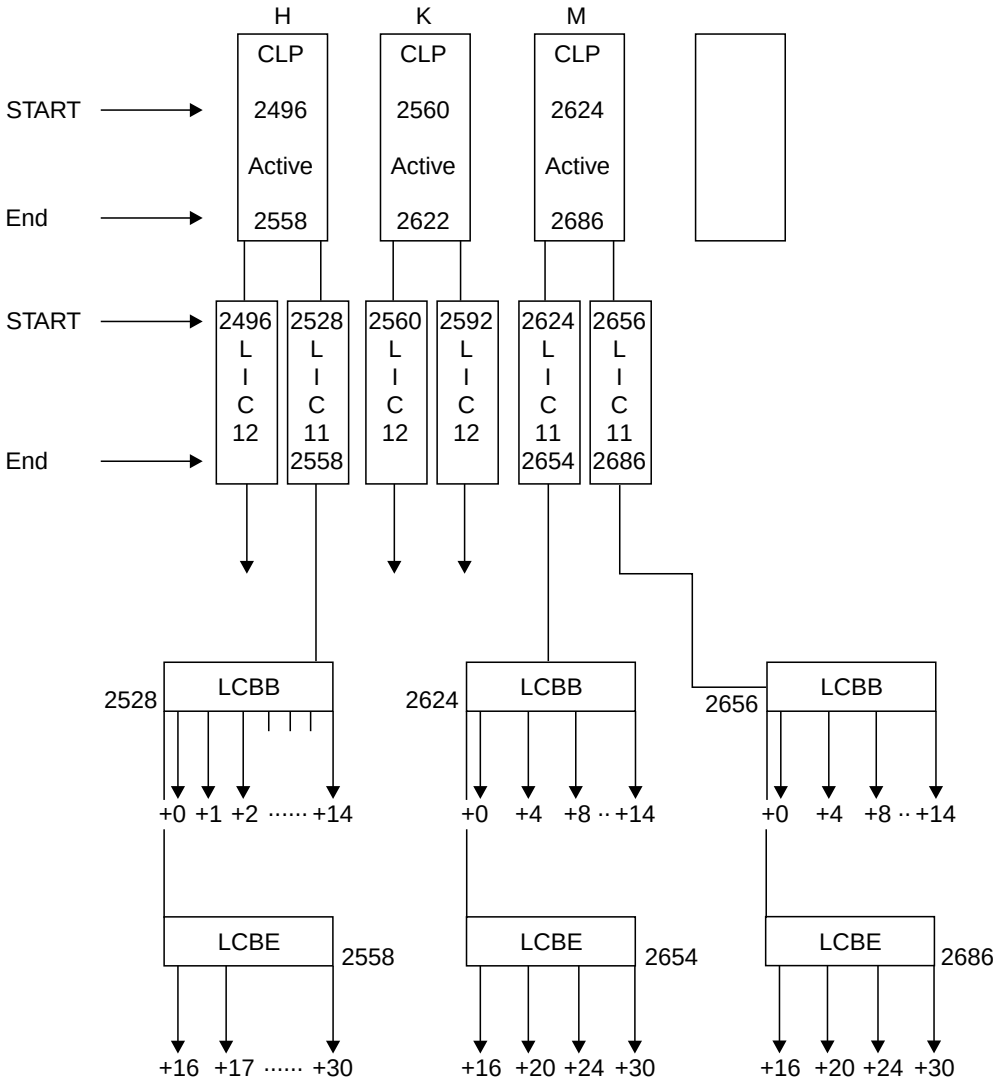


Figure 42-5. CLP Logical Addresses

Note: 120 addresses are available per CLP and all can be active simultaneously.

Unused addresses within an address range are allowed.

Examples of LIC Installation Sheets

Figure 42-6 is an example of an installation sheet for LIC types 1 to 6 in the 3745 Models 21A to 61A. Not all possible LIC types are shown. Refer to page 42-25 for the legend.

TYPE/MODEL: 3745–21A LINE UNIT (LIU1): 01P LINE RANGE: 0–63

DMUX2	AREA 3			WEIGHT SUM	27.8			AREA 4
B1	D1	E1	F1	G1	H1	J1	K1	L1
CABLE POS W LSS – –	LIC TYPE 1 ID/PORT	LIC TYPE 1 ID/PORT	LIC TYPE 1 ID/PORT	LIC TYPE – – ID/PORT	LIC TYPE – – ID/PORT	LIC TYPE – – ID/PORT	LIC TYPE – – ID/PORT	LIC TYPE – – ID/PORT
POS.Z LSS CABLE #5	1/32 M 1/33 M 1/34 M 1/35 M	1/36 M 1/37 M 1/38 M 1/39 M	1/40 M 1/41 M – – – –	– – – – – – – –	– – – – – – – –	– – – – – – – –	– – – – – – – –	– – – – – – – –
	WEIGHT 11.1 STATUS (I)	WEIGHT 11.1 STATUS (I)	WEIGHT 5.6 STATUS (I)	WEIGHT – – STATUS (F)	WEIGHT – – STATUS (F)	WEIGHT – – STATUS (F)	WEIGHT – – STATUS (F)	WEIGHT – – STATUS (F)
POS.W LSS CABLE #2	LIC TYPE 1 ID/PORT	LIC TYPE 1 ID/PORT	LIC TYPE 1 ID/PORT	LIC TYPE 3 ID/PORT	LIC TYPE 3 ID/PORT	LIC TYPE 3 ID/PORT	LIC TYPE 3 ID/PORT	LIC TYPE 3 ID/PORT
POS.Z LSS CABLE #1	3/0 M 3/1 M 3/2 M 3/3 M	3/4 M 3/5 M 1/6 M 1/7 M	1/8 M 1/9 M 1/10 M 1/11 M	– – – – – – 2/12 D	– – – – – – 2/16 D	– – – – – – 2/20 D	– – – – – – 2/24 D	– – – – – – 2/28 D
	WEIGHT 40.0 STATUS (I)	WEIGHT 25.6 STATUS (I)	WEIGHT 11.1 STATUS (I)	WEIGHT 21.9 STATUS (I)	WEIGHT 21.9 STATUS (I)	WEIGHT 21.9 STATUS (I)	WEIGHT 21.9 STATUS (I)	WEIGHT 21.9 STATUS (I)
B1	D1	E1	F1	G1	H1	J1	K1	L1
DMUX1	AREA 1		WEIGHT SUM	98.6	WEIGHT SUM		87.6	AREA 2

Figure 42-6. Installation Sheet for 3745 LIC Types 1 to 6

Figure 42-7 is an example of an installation sheet for a LIB type 1 containing LIC types 1 to 4 in the 3745 Model 17A. Not all possible LIC types are shown. Refer to page 42-25 for the legend.

Type/Model: 3745-17A LIB: M-A1 Line range: 32 - 63

DMUX2	AREA 3		WEIGHT SUM		27.8			AREA 4
B1	C1	D1	E1	F1	G1	H1	J1	K1
POS W LSS CABLE – –	LIC TYPE 1	LIC TYPE 1	LIC TYPE 1	LIC TYPE – –	LIC TYPE – –	LIC TYPE – –	LIC TYPE – –	LIC TYPE – –
	ID/PORT	ID/PORT	ID/PORT	ID/PORT	ID/PORT	ID/PORT	ID/PORT	ID/PORT
POS.Z LSS CABLE #5	1/32 M	1/36 M	1/40 M	– –	– –	– –	– –	– –
	1/33 M	1/37 M	1/41 M	– –	– –	– –	– –	– –
	1/34 M	1/38 M	– –	– –	– –	– –	– –	– –
	1/35 M	1/39 M	– –	– –	– –	– –	– –	– –
	WEIGHT 11.1	WEIGHT 11.1	WEIGHT 5.6	WEIGHT – –	WEIGHT – –	WEIGHT – –	WEIGHT – –	WEIGHT – –
	STATUS (I)	STATUS (I)	STATUS (I)	STATUS (F)	STATUS (F)	STATUS (F)	STATUS (F)	STATUS (F)
	MES No.	MES No.	MES No.	MES No.	MES No.	MES No.	MES No.	MES No.

Figure 42-7. Installation Sheet for 3745 17A LIC Types 1 to 6

Note: LIB 2 (for LIC types 5 and 6) uses the same legend.

Frame Identification

You may want to identify the installation for each 3745 or 3746 to be installed. Check whether an identification is already given at the beginning of your HONE report. If yes, add this identification on the top of each installation sheet. Otherwise, it is recommended that you add an identification. It is normally the physical unit name.

Figure 42-8 locates the LIC units (LIUs) for Models 21A to 61A identified on your installation sheets. There are no LIUs in the 3746-900.

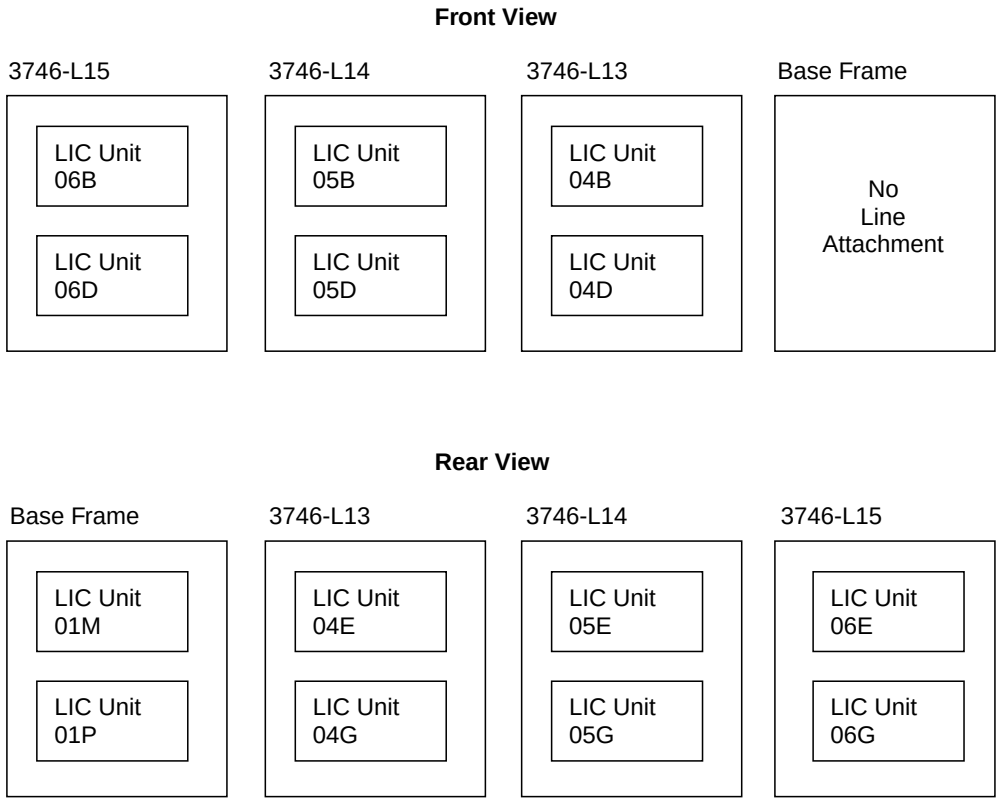


Figure 42-8. LIC Units (LIUs)

LIB Identification for Model 17A

Figure 42-9 locates the LIBs identified on your installation sheets. There are no LIBs in the 3745-900.

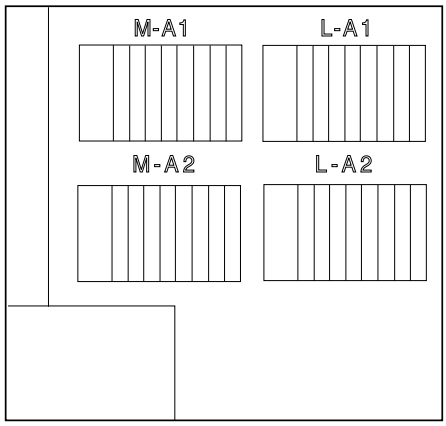


Figure 42-9. Models 17A LIBs

Notes:

1. Boards M-A1 and M-A2 are type 1 LIBs and are equipped with LIC types 1 to 4.
2. Board L-A1 is a LIB type 2 and is equipped with LIC types 5 and 6.
3. Board L-A2 can be a LIB type 1 or a LIB type 2.

Example TSST Installation Sheet

Type/Model: 3745 - 21A Line range: 1028 - 1095 (W/TRA)
Controller name: PU 1

T S S T B O A R D								
BUS GROUP	POS. 1 TYPE: TRA 1		POS. 2 TYPE: — —		POS. 3 TYPE: HSS		POS. 4 TYPE: ELA	
1	AD#1088 Port 1 TIC	AD#1089 Port 2 TIC	Reserved		AD#1028 ID/Port 4/1	AD#1029 ID/Port 4/2	AD#1062 PORT 1 LAN	AD#1063 PORT 2 XPT
BUS GROUP	POS. 5 TYPE: TRA 2		POS. 6 TYPE: TRA 2		POS. 7 TYPE: ELA		POS. 8 TYPE: ELA	
2	AD#1092 Port 1 TIC	AD#1093 Port 2 TIC	AD#1094 Port 1 XTC	AD#1095 Port 2 XTC	AD#1068 PORT 1 XPT	AD#1069 PORT 2 LAN	AD#1070 PORT 1 LAN	AD#1071 PORT 2 XPT

Figure 42-10. TSST Installation Sheet Example

Legend:

TSST Board The TSST board supports token-ring adapters.

TSSB board does not support token-ring adapters.

Pos. n / TYPE The type of line adapter attached to the bus group in each scanner position.

- **LSS** For a low- or medium-speed scanner. The information consists of the cable number, the frame that it is servicing, and the area within that frame.
- **HSS** For high-speed scanner.
- **TRA 1** For token-ring adapter type 1.
- **TRA 2** For token-ring adapter type 2.

AD/Port

XTC TIC currently not in use
ELA For Ethernet LAN adapter
LAN For Ethernet LAN attached
XPT For port currently not in use
TIC For token-ring interface coupler
N/A Position not available
- - Position free

- Address of ports for HSSs (Configuration Without TRAs)

  These are arranged by pairs:

  Ports 1024 and 1025
  Ports 1026 and 1027
  Ports 1028 and 1029
  Ports 1030 and 1031
  Ports 1032 and 1033
  Ports 1034 and 1035
  Ports 1036 and 1037
  Ports 1038 and 1039

  Note: In each pair, two cables can be plugged but only one can be active at a time. Each cable corresponds to a high-speed line. The lines that correspond to both cables of a pair can be of different interface types and protocols.

- Address of ports for HSSs (Configuration With TRAs)

  These are arranged by pairs:

  Ports 1028 and 1029
  Ports 1030 and 1031
  Ports 1036 and 1037
  Ports 1038 and 1039

  Note: Same note as above.

- Address of ports for TRAs

  These are arranged by pairs:

  Ports 1088 and 1089
  Ports 1090 and 1091
  Ports 1092 and 1093
  Ports 1094 and 1095

  Note: In each pair, two cables can be active at the same time. Each cable corresponds to a token-ring network.

- Address of ports for Ethernet adapters (configuration without TRA)

  These are arranged by pairs:

  Ports 1056 and 1057
  Ports 1058 and 1059
  Ports 1060 and 1061
  Ports 1062 and 1063
  Ports 1064 and 1065
  Ports 1066 and 1067
  Ports 1068 and 1069
  Ports 1070 and 1071

  Note: In each pair, two cables can be active at the same time. Each cable corresponds to a token-ring network.

- Address of ports for Ethernet adapters (configuration with TRAs)

  These are arranged by pairs:

  Ports 1060 and 1061
  Ports 1062 and 1063
  Ports 1068 and 1069
  Ports 1070 and 1071

  Note: In each pair, two cables can be active at the same time. Each cable corresponds to a token-ring network.

ID/Port

ID The identification number (from 1 through 99) defined in the input to the CF3745 for a group of lines that are identical in all respects.

Port Port number on HSS connector (J1 or J2) or TIC (J1 or J2).

Bus Group The bus group number is 1 or 2.

Legend for the Example Installation Sheets

The legend for the figures on pages 42-18 and 42-19 starts here and ends on page 42-29.

Type/Model: Defines the base frame or line expansion unit.

Line Unit Number that identifies the LIC unit containing the LICs in the 3745 Models 21A to 61A or 3746-Lx.

LIB Identifies the 3745-17A line interface board.

Line Range Defines the range of line addresses for the LIU or LIB.

DMUX Number Double multiplex circuits (DMUX) are used in LIC units type 1. One DMUX is associated with up to eight LICs type 1 to 4 (up to 32 ports).

SMUX Letter A single multiplex circuit (SMUX) is used in LIC units type 2. One SMUX is associated with up to eight LIC types 5 or 6 (up to 16 ports).

Area For **Models 21A to 61A**:

The LIC area numbers (shown at the top and bottom of the example in Figure 42-6 on page 42-18) are subdivisions of the LIC units in the base frame and line expansion units. The following diagrams show the physical arrangement of LIC areas.

In the 3745 base frame:

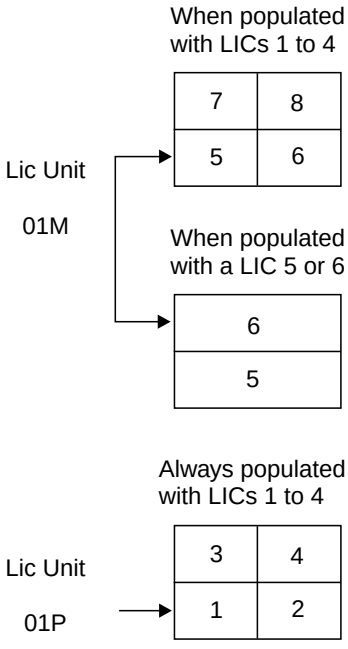


Figure 42-11. Physical Arrangement of LIC Areas — 3745 base frame

In the expansion units 3746-L13, 3746-L14, 3746-L15:

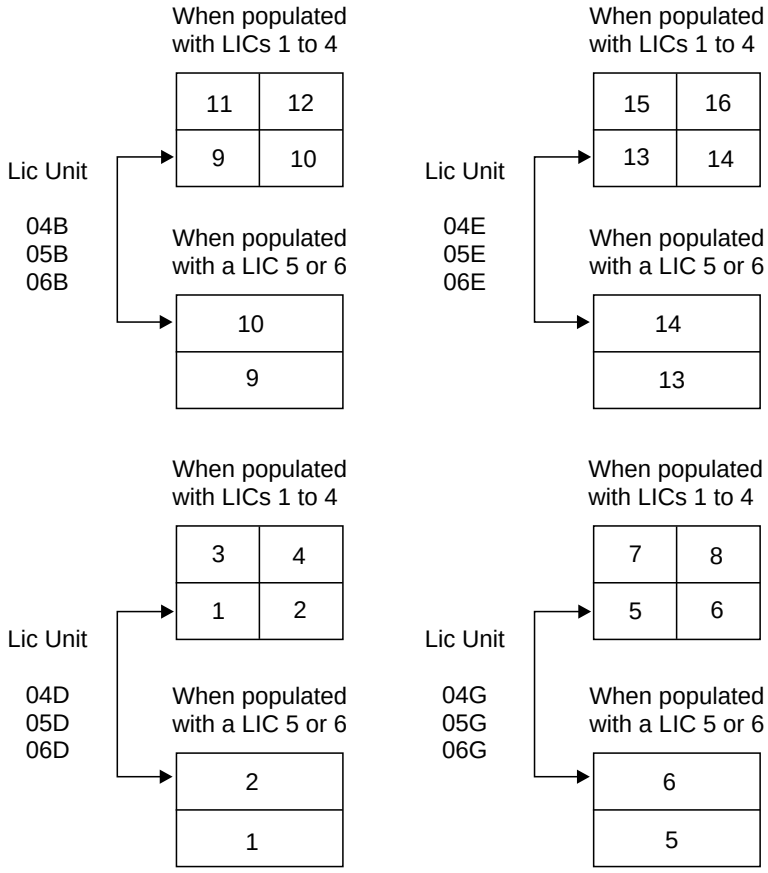


Figure 42-12. Physical Arrangement of LIC Areas — Expansion Units 3746—L13, —L14, —L15

Area

For the **Model 17A**:

The LIC area numbers (shown at the top of Figure 42-7 on page 42-19) are subdivisions of the LIBs. The following table shows the arrangement of LIC areas:

LIB	LIB Type	
	Area	Area
M–A1	1	
	3	4
M–A2	1	
	1	2
L–A1	2	
	7	7
L–A2	1,2	
	5	6

Figure 42-13. Arrangement of LIC Areas

Weight Sum Weight summary (at the top and bottom of the installation sheets) per area. If two areas are serviced by the same scanner, the weight summary will appear overlapping the two areas. If one scanner services only one area, then the weight summary will appear only in the area serviced.

D0 to K0 These column headings are the physical locations of the LIB plugging positions.

D1 to K1 These column headings are physical locations of the LIC plugging positions in the LIC units (LIUs).

ID/Port There are three types of information for the ID/Port:

1. **ID:** the identification number (from 1 through 99) defined in the input to the CF3745 for a group of lines that are identical in all respects.
2. **Port:** the port number. There are up to four ports per line interface coupler (LIC).

   The port numbers of Models 21A to 61A are arranged in groups of:

   - 64 ports corresponding to the maximum number of ports in a LIU1 for LIC types 1 to 4:

     Ports 0000 through 0063
     Ports 0064 through 0127
     Ports 0128 through 0191
     Ports 0192 through 0255
     Ports 0256 through 0319
     Ports 0320 through 0383
     Ports 0384 through 0447
     Ports 0448 through 0511
     Ports 0512 through 0575

Ports 0576 through 0639
Ports 0640 through 0703
Ports 0704 through 0767
Ports 0768 through 0831
Ports 0832 through 0895

- 32 ports corresponding to the maximum number of ports in a LIU2 for LIC types 5 and 6:

  Ports 0064 through 0095
  Ports 0128 through 0159
  Ports 0192 through 0223
  Ports 0256 through 0287
  Ports 0320 through 0351
  Ports 0384 through 0415
  Ports 0448 through 0479
  Ports 0512 through 0543
  Ports 0576 through 0607
  Ports 0640 through 0671
  Ports 0704 through 0735
  Ports 0768 through 0799
  Ports 0832 through 0863

  The port numbers of the Model 17A are arranged as follows:

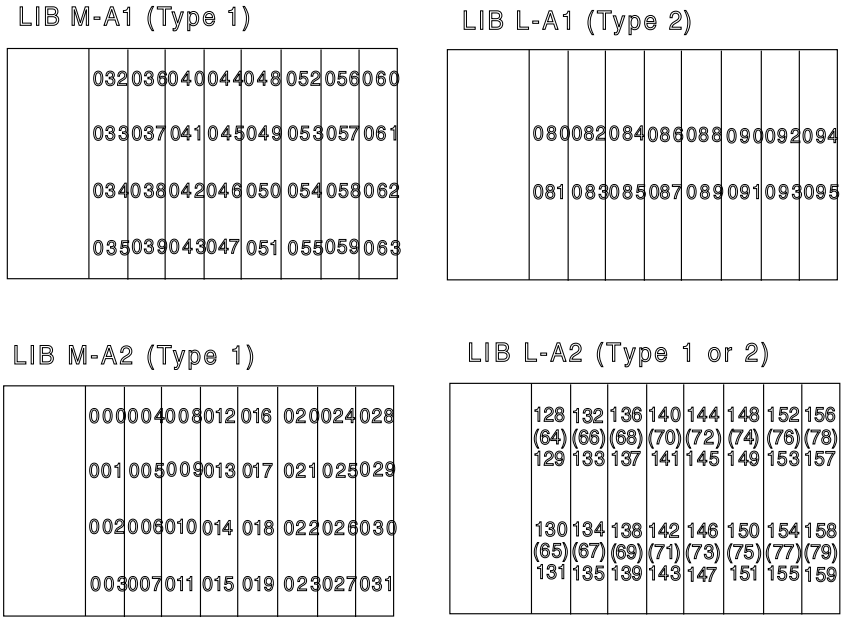


Figure 42-14. Port Numbers for Model 17A

Note: For LIB L-A2, if a:

- LIB type 1 is installed; the address range is 128 to 159
- LIB type 2 is installed; the address range is 64 to 79 (in parentheses)

3. **Port status**

(Blank) Backup line group

F No cable installed

D Direct-attached (LIC types 1, 3, 4A, and 4B) or digital data service (LIC6)

M Modem cable attached (LIC types 1, 3, 4A, and 4B)

L Limited distance modem (LIC6)

A Auto-call (LIC1) or analog (LIC5)

Weight Line weight for each LIC.

Status

F Position free

I Installed (factory-installed if the MES number is blank)

S Spare LIC (installed)

N Position not available for use. The position must be empty. According to LIC plugging rules, there is no LIC in the position on either side of a LIC6 running at a speed above 19 200 bits per second (bps).

Pos W, Pos Z This is the cable plugging relationship of the scanner with DMUX or SMUX card (see LSS No. following).

LSS No. One low- or medium-speed scanner (LSS) can be associated with either:

- 4 or 8 LICs in a LIC unit type 1
- 8 or 16 LICs in a LIC unit type 2.

If there is only one scanner number, this number applies to positions W and Z.

MES No. Miscellaneous equipment specification, if there is one.

Chapter 43. Plugging Sheets for the 3746 Nways Multiprotocol Controller

Blank plugging sheets for copying are provided starting on page 43-18.

Why Plugging Sheets and Cable Labels Are Required

In addition to the cables installed by IBM service personnel, you may have to manage up to several hundred cables. These may be for:

- Low-speed lines
- Medium-speed lines
- High-speed lines
- IBM token-ring networks
- Service processor and network node processor cables
- Emergency power-OFF (EPO) cables

Other cables (for example, channel adapters and power cables) are not installed by the user and are not included in this chapter.

Even for a small configuration, it is very important to identify these cables. Use the plugging sheet examples included in this manual and cable labels to prepare cable identification:

- **Plugging sheets** summarize the cable situation. These sheets will be used at installation time and must be updated at each cabling change. The plugging sheet set is the map of your cabling situation.

  The plugging sheets must be filled in *before installation*.

  Update these sheets (and create new cable labels) when changing, removing, or adding cables during later modifications. They are necessary for problem determination, configuration modifications, and controller relocation.

- *Labels* identify both ends of each cable (3746 Nways Multiprotocol Controller side and destination side).

  The labels are filled out by the customer engineer (CE) *at installation time* according to the information supplied by the customer on the plugging sheets.

  Update or replace the labels during later cable or 3746 modifications. Refer to 43-8 and 43-7.

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Preparing the Plugging Sheets for 3746 Low- and Medium-Speed Lines (LIC11)

Prepare your LIC11 plugging sheets:

1. With your LIC11 and LCB/ARC installation sheets.

   For information about the installation sheets. Refer to Chapter 42, "Familiarizing Yourself with the Installation Sheets."

2. Using your LCB identifications (LCB number/location) and ARC identifications (Symbolic line name).

3. With the cable characteristics adapted to your installation. There are two types of cables:

   LIC11 Connects the LIC11 to the LCBB. You need a LIC11 cable length and cable part number.

   ARC Up to 30 ARCs connect the LCBB and LCBE to the DCEs/DTEs. You need an ARC type and cable length for each ARC.

   Use the Chapter 44, "Physical Planning Details," pages 44-82 and 44-84.

4. With copies of the blank plugging sheet provided on page 43-18. See the example in Figure 43-1 on page 43-3.

5. If an IBM CE is not doing the installation or change, prepare the cable labels according to "Preparing the LIC11, LCB, and ARC Cable Labels" on page 43-8.

3746 Controller Name: CCI					
LIC Port: 2146	LIC Cable Length: 35 m		LIC Cable Part Number: 58G5604		
Address Range: 2146 - 2206					
LCBB Number/Location (Up to 25 Characters): 5/Room 2A					
ARC Position	Port	ARC Type	ARC Cable Length	Symbolic Line Name (Up to 8 Characters)	Comments
+0	2146	V.24 DCE	m 0.6	Print Room	
+1	2147	V.35 DCE	1.2 ft	Spirda	

Legend:

3746 Controller Name
Your identification for the 3746 Nways Multiprotocol Controller.

LIC Port
"3746/NCP" address of the LIC11 as it appears on the LIC11 installation sheet.
Refer to page 42-7.

LIC Cable Length
The length of the LIC11 cable as it appears on the LIC11 installation sheet.
Refer to page 42-7.

LIC Cable Part Number
The part number of the LIC11 cable. This information is optional.

Address Range
The 30 addresses available for this LIC port address.
Refer to page 42-15.

LCBB Number/Location
The user can label the LCB with up to 25 characters.
This label is then used to identify the LCB in the MOSS-E.

ARC Position
This is the slot location of the ARC in the LCBB or LCBE.
This information is supplied on the LCB installation sheet.
Refer to page 42-14.

Port
This is the logical address of the ARC and line.
It is found by adding the ARC position to the LIC11 port address.
This information is supplied on the LCB installation sheet.
Refer to page 42-14.

ARC Type
This information is supplied on the LCB installation sheet.
Refer to page 42-14 and to Chapter 44, "Physical Planning Details."
It is also on the label of the ARC card in the LCB.

ARC Cable Length
The length of the ARC cable. This information is supplied on the LCB installation sheet.
Refer to page 42-14.

Symbolic Line Name
The user can label the ARC with up to 8 characters identifying the line destination.
This name can identify the ARC in the MOSS-E.

Figure 43-1. Example LIC11 Plugging Sheet

Preparing the Plugging Sheets for 3746 High-Speed Lines (LIC12)

Prepare your LIC12 plugging sheet:

1. With the port address of each LIC12, as given by your installation sheets.

   For information about the installation sheets. Refer to Chapter 42, "Familiarizing Yourself with the Installation Sheets."

2. With the names you use to identify the line destination.
3. With the cable characteristics adapted to your installation and chosen using Chapter 44, "Physical Planning Details," page 44-75. They are:

   Cable group or cable part number
   Cable length.

4. With copies of the blank plugging sheet provided on page 43-19. See the example plugging sheet in Figure 43-2.
5. Prepare the cable labels as described on page 43-7.

3746 Controller Name: *CC1*

LIC Port	Cable Group or Part Number	Cable Length	Line Destination	Comments
2176	*CG 7007*	*10 m*	*Atlanta*	*Plenum cable*

Legend:

3746 Controller Name
Your identification for the 3746 Nways Multiprotocol Controller base frame.

LIC Port
Address of the LIC12 as it appears on the 3746 enclosure installation sheet(s). Refer to pages 42-1 to 42-3.

Cable Group or Part Number
This information is available on page 44-75.

Cable Length
The length of the LIC cable.

Line Destination
Your name for the destination of the LIC cable.

Figure 43-2. Example LIC12 Plugging Sheet

Preparing the Plugging Sheets for the 3746 Token-Ring Adapters

Prepare your token-ring adapter plugging sheets:

1. With the port address of each token-ring coupler, as given by your installation sheets.

   For information about the installation sheets, refer to Chapter 42, “Familiarizing Yourself with the Installation Sheets.”

2. With the names you use to identify the token-ring LANs (the token-ring network destination).

3. With the cable characteristics adapted to your installation and chosen using Chapter 44, “Physical Planning Details,” page 44-75. They are:

   Cable group or cable part number
   Cable length.

   If you are using unshielded twisted-pair (UTP) cable, refer to Chapter 44, “Physical Planning Details,” page 44-93 . IBM supplies the necessary token-ring media filter, but not the UTP cable and connectors.

4. With copies of the blank plugging sheet provided on page 43-20. See the example plugging sheet in Figure 43-3.

5. Prepare the cable labels as described on page 43-7.

3746 Controller Name: CC 1				
TIC Port	Cable group or Part number	Cable Length	Token-Ring Network Destination	Comments
2176	CG 7003	21.3 m	BLD. 7-6X	

Legend:

3746 Controller Name
Your identification for the 3746 Nways Multiprotocol Controller frame.

TIC3 Port
Address of the TIC3 as it appears on the 3746 enclosure installation sheet(s), refer to pages 42-1 to 42-3.

Cable Group or Part Number
This information is available starting on page 44-75.

Cable Length
The length of the TIC3 cable.

Token-Ring Network Destination
Your name for the token-ring LAN connected to the TIC3.

Figure 43-3. Example TIC3 Plugging Sheet

Preparing the Plugging Sheet for the Service Processor

Prepare your plugging sheet for each service processor using Chapter 44, “Physical Planning Details,” pages 44-70 and 44-72.

There is a copy of the blank plugging sheet provided on page 43-21.

Preparing the Plugging Sheet for the EPO Cables

The emergency power-off (EPO) cables allow the host to directly control the power state (on or off) of the controller frame.

Prepare your plugging sheet:

1. With the cable characteristics chosen using “ESCON Jumper Cables and Emergency Power-Off Cables (3746-9x0)” on page 44-67. They are:

   Cable group or cable part number
   Cable length.

2. With the blank plugging sheet provided on page 43-22. See the explanation of the plugging sheet in Figure 43-4.
3. Prepare the cable labels according to 43-7.

3746 Controller Name: *CC 2*

From	To	Cable Group or Part Number	Cable Length	Comments
3746	*Host*	*CG 1178*	*18 m*	

Legend:

3746 Controller Name
Your identification for the 3746 Nways Multiprotocol Controller frame.

Cable Group or Part Number
Information is available on page 44-67.

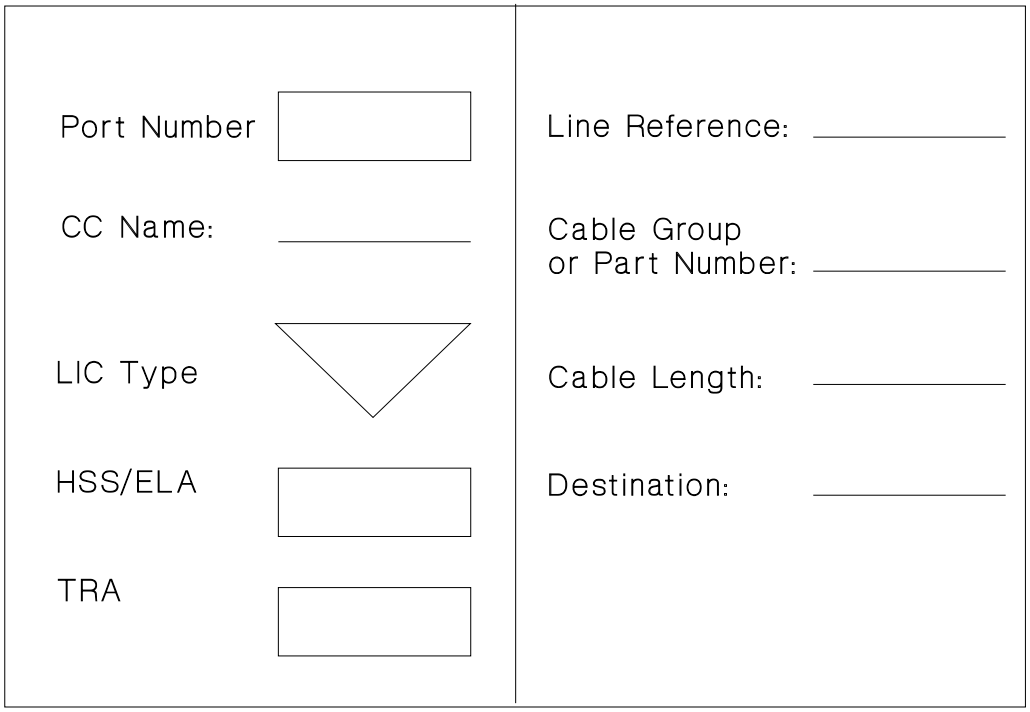
Cable Length
Information is available on page 44-67.

Figure 43-4. Example of EPO Cables Plugging Sheet

Preparing LIC12, Token-Ring, and EPO Cable Labels

To prepare the cable labels, proceed as follows:

1. Obtain the necessary number of cable labels required for your installation. Two labels are needed for each cable.
2. Depending on the type of cable:
   a. Enter the line characteristics given in your plugging sheets in the appropriate areas.



   b. Attach an identical label to each end of each cable (3746 side and destination side).

Preparing the LIC11, LCB, and ARC Cable Labels

The line connection boxes (LCBs) are the connectivity interface between the 3746 LIC11 and the customer DCEs/DTEs. Two LCBs can be installed in the 3746 itself and more in the Controller Expansion (Feature 5023) or independent customer racks.

The LCBB connects to the LIC11, to the LCBE, and houses a maximum of 15 ARCs.

The LCBE connects to the LCBB and houses a maximum of 15 ARCs.

The LCB and cable identification uses the labels referenced A, B, or C in Figure 43-5 on page 43-9:

- Label A is used to identify the LCB
- Label B is on the cable between the LIC11 and the LCBB
- Label C is on the ARC cables connecting the DCE/DTEs to the LCBs.

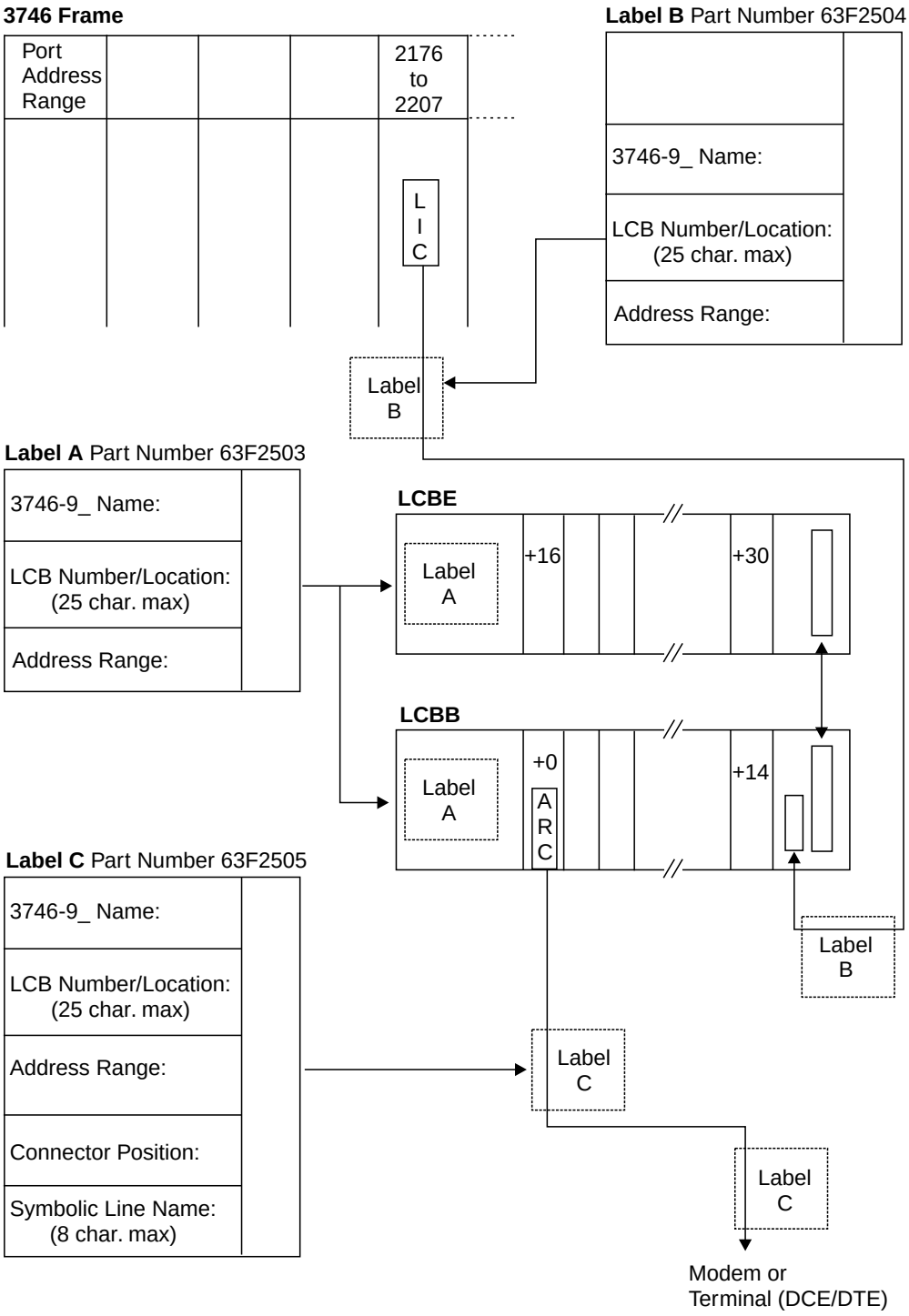


Figure 43-5. LIC11 Cabling and Labeling

Preparing the Plugging Sheets for 3745 and 3746-L13, -L14, -L15 Low- and Medium-Speed Lines (LIC Types 1 to 6)

Prepare your plugging sheets for the LIC types 1 to 6:

1. With the line characteristics provided in your installation sheets:
   - For lines attached to a LIC type 1 to 4, they are:

     LIC type
     Port number
     Line protocol
     Line interface
   - For lines attached to a LIC type 5 or 6, they are:

     LIC type
     Port number

   For information about the installation sheets, refer to Chapter 42, “Familiarizing Yourself with the Installation Sheets.”
2. With your network line characteristics:
   - For a LIC type 5 or 6, they are:

     Network type
     Line reference
   - For all LIC types, there is one:

     Destination.
3. Use the cable characteristics adapted to your installation and chosen using Chapter 44, “Physical Planning Details,” starting on page 44-77. They are:
   - Cable group or cable part number
   - Cable length.
4. With copies of the blank plugging sheets provided on page 43-19 or 43-24.

   There is an example plugging sheet for:
   - LIC types 1 to 4 in Figure 43-6 on page 43-11
   - LIC types 5 and 6 in Figure 43-7 on page 43-12.
5. If an IBM CE is not doing the installation or change, prepare the cable labels according to “Preparing LIC12, Token-Ring, and EPO Cable Labels” on page 43-7.

3745 Communication Controller Name: CC 1						Frame: 3746-L15 LIC Unit: 05 D	
LIC Port	LIC Type	Cable Group or Part Number	Cable Length	Line Interface	Line Protocol	Destination	Comments
0384	3	PN 6398665	100 m	V.35 DCE	SDLC	B3 LA GAUDE	
0385							

Legend:

3745 Communication Controller Name
Your identification for the 3745 base frame.

Frame
The frame where the LICs are located.

LIC Unit
The LIC location within the frame.

LIC Port
Address of the LIC as it appears on the HONE installation sheet.

LIC Type
The LIC can be a type 1, 3, 4A, or 4B.

Cable Group or Part Number
This information is available starting on page 44-77.

Cable Length
The length of the LIC cable.

Line Interface
One of more of the following: Transfix, V.24, V.25, V.25 bis (auto-call), V.35 (DCE or direct attachment), X.20 bis, X.21, and X.21 bis.

Line Protocol
One of the following: BSC, SDLC, or asynchronous.

Destination
The destination of the line using the LIC.

Figure 43-6. Example Plugging Sheet for LIC Types 1 to 4

3745 Communication Controller Name: CC1				Frame: 3746-L14 LIC Unit: 06D	
LIC Port	LIC Type	Network Type	Line Reference	Destination	Comments
0640	5	LDM	R370L40	Tech Support, Orlando	
0641					

Legend:

3745 Communication Controller Name
Your identification for the 3745 base frame.

Frame
The frame where the LICs are located.

LIC Unit
The LIC location within the frame.

LIC Port
Address of the LIC as it appears on the HONE installation sheet.

LIC Type
The LIC can be a type 5 or 6.

Network Type
One of the following: analog, DSU/CSU, baseband, private, or limited distance modem (LDM).

Line Reference
Either common carrier or public switched telephone network.

Destination
The destination of the line using the LIC.

Figure 43-7. Example Plugging Sheet for LIC Types 5 and 6

Preparing the Plugging Sheets for 3745 High-Speed Lines

Prepare your high-speed line plugging sheets:

1. With the port of each line, as given by your installation sheets.

   For information about the installation sheets, refer to Chapter 42, “Familiarizing Yourself with the Installation Sheets.”

2. With the names you use to identify the line destination.

3. With the line characteristics of your installation:

   Line interface
   Line protocol

4. With the cable characteristics adapted to your installation and chosen using Chapter 44, “Physical Planning Details,” starting on page 44-77. They are:

   Line type
   Cable group or cable part number
   Cable length

5. With copies of the blank plugging sheet provided on page 43-25. See the example plugging sheet in Figure 43-8 on page 43-14.

6. If an IBM CE is not doing the installation or change, prepare the cable labels as described on page 43-7.

3745 Communication Controller Name: CC 2				Model: 3745-41A	
Port	Cable Group or Part Number	Cable Length	Line destination	Line Interface and Protocoll	Comments
1084	CG 5831	33 ft	Jordan Meeting Room, Bld 100	V.35 DCE Duplex	

Legend:

3745 Communication Controller Name
Your identification for the 3745 base frame.

Frame
These high-speed lines are only connected to the 3745 frame.
Add the 3745 model number.

LIC Port
Address of the LIC12 as it appears on the HONE installation sheet.

Cable Group or Part Number
This information is available on page 44-75.

Cable Length
The length of the line cable.

Line Destination
Your name for the destination of the line LIC cable.

Line Interface and Protocol
One of the following: V.35 (DCE, direct attachment) or X.21 (DCE, direct attachment, Transfix, EIA-547).

Figure 43-8. Example 3745 High-Speed Line Plugging Sheet

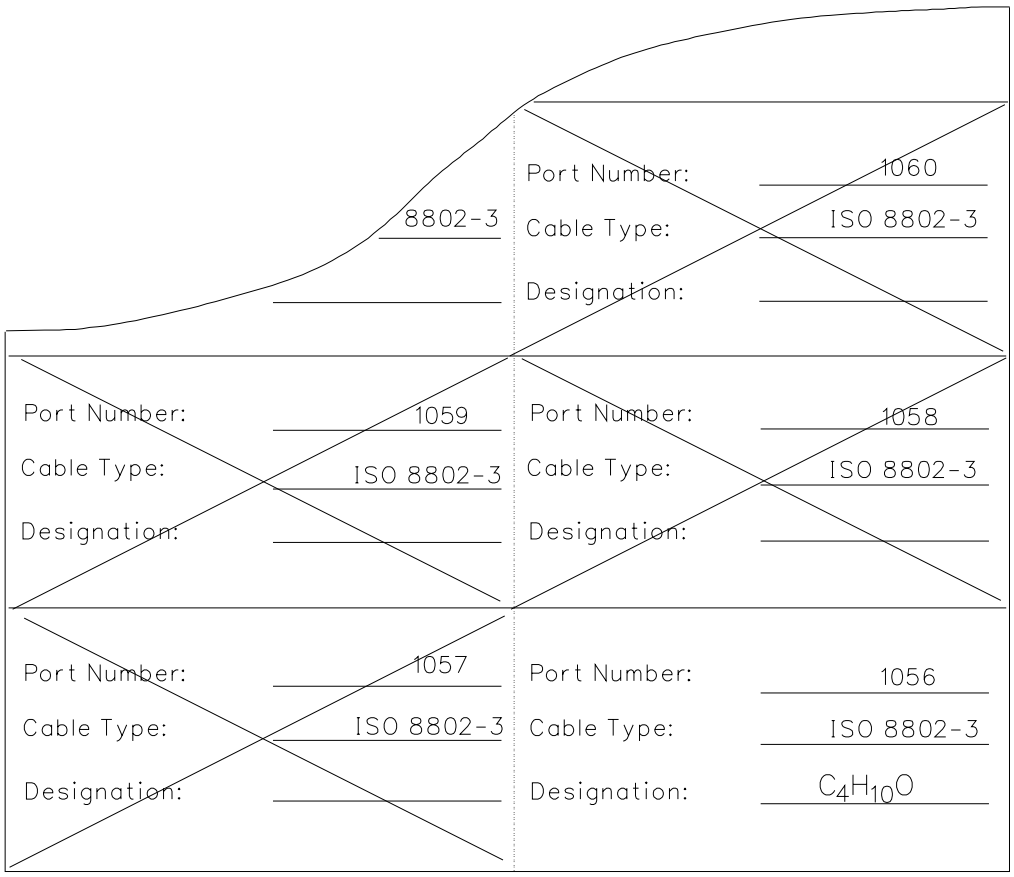
Preparing the Plugging Sheets for 3745 Ethernet Adapters

Prepare your Ethernet adapter plugging diagram:

1. With the port of each Ethernet adapter, as given by your installation sheets.

   For information about the installation sheets, refer to Chapter 42, “Familiarizing Yourself with the Installation Sheets.”

2. With the names you use to identify the Ethernet LANs (designation).
3. With a copy of the blank plugging diagram provided on page 43-26. See the example plugging sheet in Figure 43-9 on page 43-16.
4. Enter the Ethernet LAN name on the Designation line that matches its port number.
5. If an IBM CE is not doing the installation or change, prepare the cable labels as described on page 43-7.



Legend:

Port Number
Address of the Ethernet adapter as it appears on the HONE installation sheet.

Cable Type
Standard Ethernet LAN cable.

Designation
Your name for the Ethernet LAN connected to the Ethernet port.

Figure 43-9. Example Plugging Diagram for Ethernet Adapters

Plugging Sheets

This section provides a set of blank plugging sheets. Photocopy as many as you need of each.

Once filled in, these sheets reflect the cabling plan of:

- Low- and medium-speed lines attached to one LIC Unit type 1 for the LIC types 1, 3, 4A, and 4B
- Low- and medium-speed lines attached to one LIC Unit type 2 for the LIC types 5 and 6
- Low- and medium-speed lines (LIC11)
- High-speed lines (LIC12)
- Token-ring connections (TIC3)
- Ethernet networks
- Communication lines attached to the 3746-900 (LIC types 11 and 12)
- Service processor and network node processor
- Service processor RSF link
- Emergency power-OFF cables
- Customer power connection.

Use these sheets at installation time and for any later cable changes. After using these sheets at installation time, store them in this manual for future reference.

Plugging Sheet for 3746 Low- and Medium-Speed Lines (LIC11)

3746 Controller Name					
LIC Port:		LIC Cable Length:		LIC Cable Part Number:	
Address Range:					
LCBB Number/Location (Up to 25 characters)**:**					
ARC Position	**Port**	**ARC Type**	**ARC Cable Length**	**Symbolic Line Name** (Up to 8 characters)	**Comments**
+0					
+1					
+2					
+3					
+4					
+5					
+6					
+7					
+8					
+9					
+10					
+11					
+12					
+13					
+14					
LCBE Number/Location (Up to 25 characters)**:**					
+16					
+17					
+18					
+19					
+20					
+21					
+22					
+23					
+24					
+25					
+26					
+27					
+28					
+29					
+30					

Plugging Sheet for 3746 High-Speed Lines (LIC12)

3746 Controller Name:				
LIC Port	**Cable Group or Part Number**	**Cable Length**	**Line Destination**	**Comments**

Plugging Sheet for 3745 and 3746 Token-Ring Adapters

3746 Controller Name:				
TIC Port	**Cable Group or Part Number**	**Cable Length**	**Token-Ring Network Destination**	**Comments**

Plugging Sheet for 3745/3746 Service Processor

Service Processor Name:			
Cable Type	**Part Number**	**Cable Length**	**Comments**
Service Processor to SPAU	6339098	2.4 m (8 ft)	Shipped with service processor.
3746 CBSP2/TIC3 to SPAU		9 m (30 ft)	Shipped with 3746.
3746 Network Node Processor to SPAU	6339098	2.4 m (8 ft)	Shipped with network node processor.
3745 MOSS to SPAU		9 m (30 ft)	Shipped with 3745.
Service Processor to Modem	57G7528	15 m (49.2 ft)	Shipped with service processor.
Modem to Telephone Line		4.6 m (15 ft)	Shipped with service processor.

Plugging Sheet for 3746 EPO Cables

3746 Controller Name:				
From	**To**	**Cable Group or Part Number**	**Cable Length**	**Comments**

Plugging Sheet for 3745 and 3746 Low- and Medium-Speed Lines (LIC Types 1 to 4)

3745 Communication Controller Name: Frame:

LIC Unit:

LIC Port	LIC Type	Cable Group or Part Number	Cable Length	Line Interface	Line Protocol	Destination	Comments

Plugging Sheet for 3745 and 3746 Low- and Medium-Speed Lines (LIC Types 5 and 6)

3745 Communication Controller Name: Frame:

LIC Unit:

LIC Port	LIC Type	Network Type	Line Reference	Destination	Comments

Plugging Sheet for 3745 High-Speed Lines

3745 Communication Controller Name:				Frame: 3745	
Port	Cable Group or Part Number	Cable Length	Line Destination	Line Interface and Protocol	Comments

Plugging Diagram for 3745 Ethernet LAN Adapters

Port Number:	1071	Port Number:	1070
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1069	Port Number:	1068
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1067	Port Number:	1066
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1065	Port Number:	1064
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1063	Port Number:	1062
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1061	Port Number:	1060
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1059	Port Number:	1058
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	
Port Number:	1057	Port Number:	1056
Cable Type:	ISO 8802-3	Cable Type:	ISO 8802-3
Designation:		Designation:	

Chapter 44. Physical Planning Details

This chapter contains the physical planning information needed for the:

- 3745 Communication Controller Models 17A, 21A, 31A, 41A, and 61A
- 3746 Expansion Units Models A11, A12, L13,L14 and L15
- 3746 Nways Multiprotocol Controller Models 900 and 950
- Controller Expansion (Feature 5023)

Plan Views

The figures are not drawn to scale. The measurements shown in parentheses are in inches.

Your machine configuration may not exactly match one of the plan views on the following pages.

Total Length

The minimum total length of your configuration is the sum of:

1. All the frame lengths

   plus

2. The floor loading security clearance (the total end clearance: X + Y)

   plus

3. 60 mm (2.7 in.) for the two side covers.

Total End Clearance

As a general rule, the total end clearance (X + Y) can be distributed on either side of your configuration in any amount. For example, if X + Y = 100 mm, then X can be from 0 to 100 mm with the remaining clearance given to Y.

Total Width

As a general rule, the front-to-rear service clearance is 2250 mm (88.6 in.).

The exception to this rule is when either a 3746-900 (or 3746-950) or controller expansion (or both) is installed. These frames have larger doors (750 mm) than the other frames; therefore, adding 50 mm (2.0 in.) in front and 50 mm in the back makes it easier to open and close the doors.

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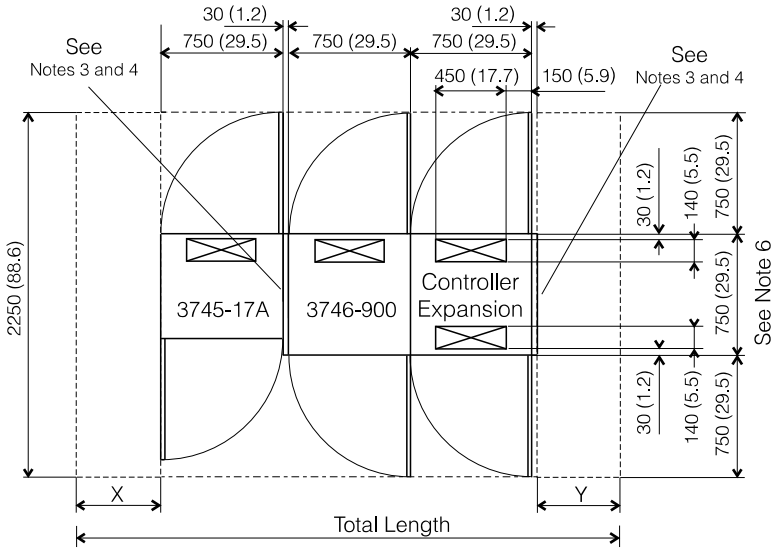
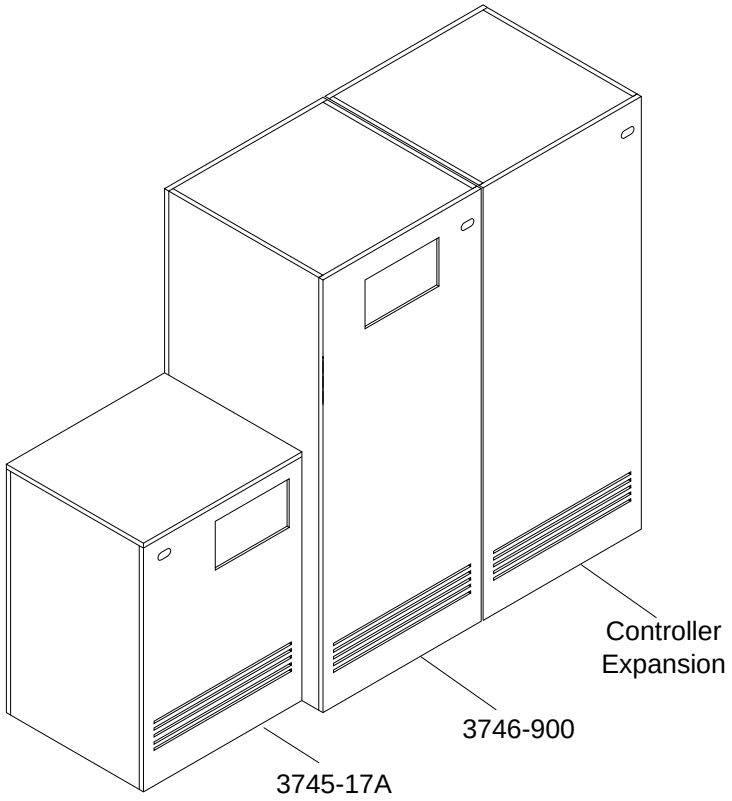
3745 Model 17A with a 3746 Model 900 and Controller Expansion

For the notes in the following diagram, refer to page 44-7.

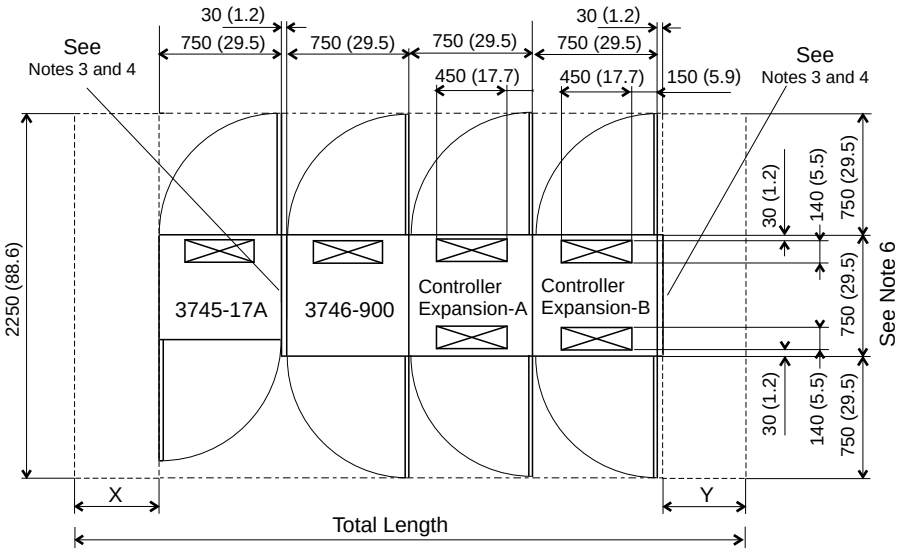


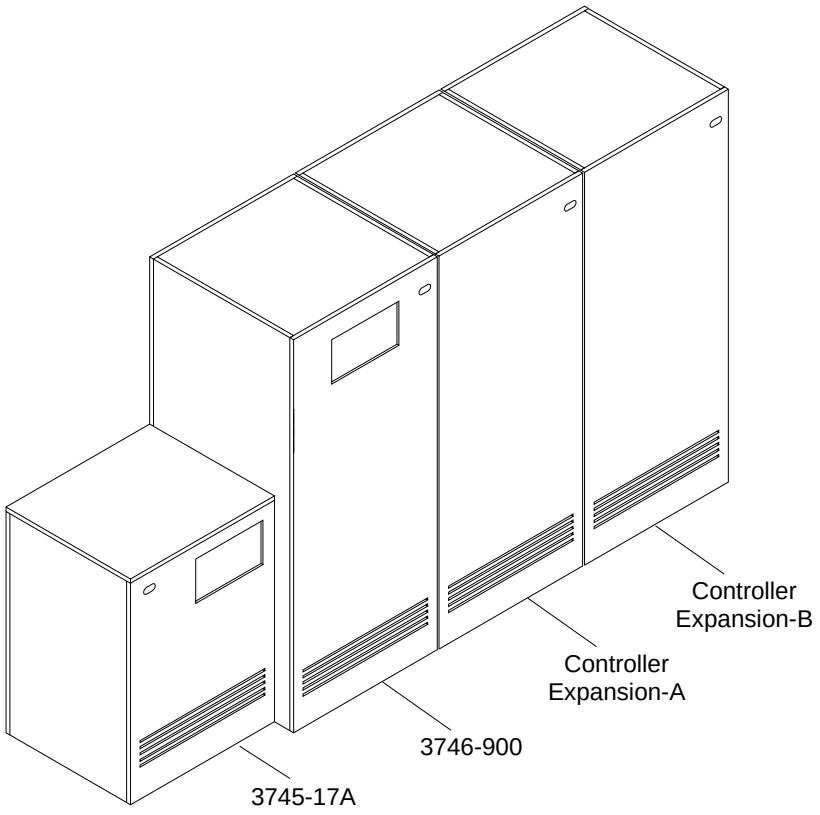


The 3746-900 and the Controller Expansion (Feature 5023) can be installed on the right or the left side of the 3745. The controller expansion can be installed separately from the 3745-17A (refer to page 44-11). The X and Y dimensions depend on your configuration (refer to Table 44-1 on page 44-13). Total length is explained on page 44-1.

3745 Model 17A with a 3746 Model 900 and Both Controller Expansion A/B.

For the notes in the following diagram, refer to page 44-7.



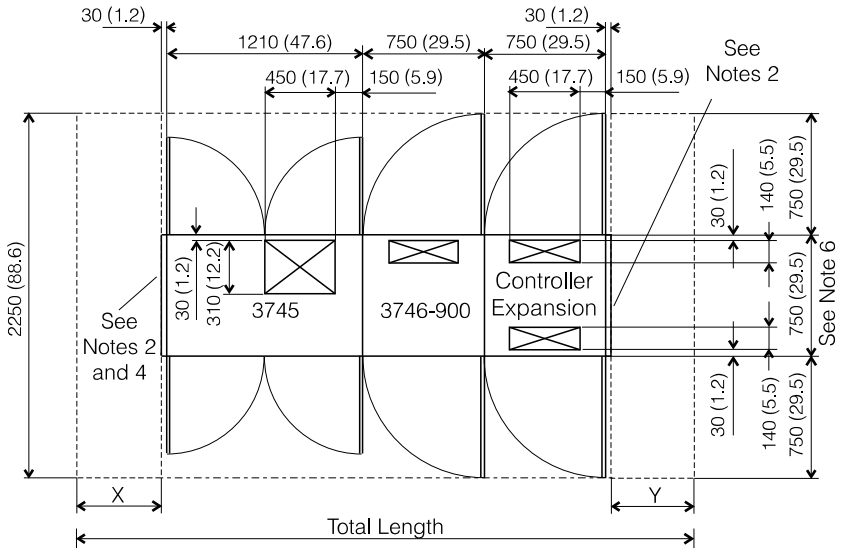


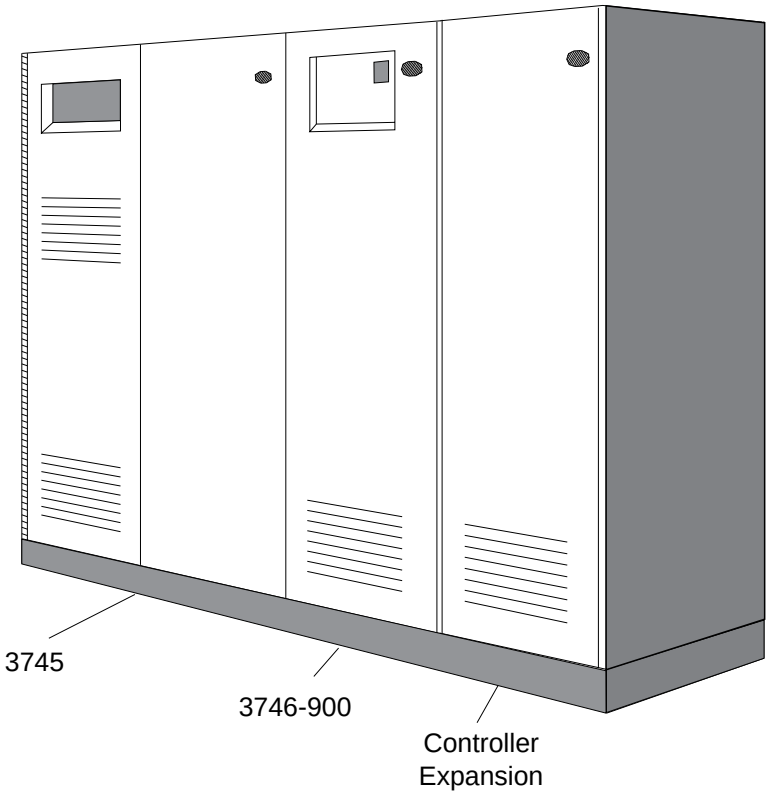
The 3746-900 and the Controller Expansion (Feature 5023) can be installed on the right or the left side of the 3745. The controller expansion can be installed separately from the 3745-17A (refer to page 44-11). Both controller expansions A and B are optional.

The X and Y dimensions depend on your configuration (refer to Table 44-1 on page 44-13). Total length is explained on page 44-1.

3745 Models 21A, 31A, 41A, or 61A with a 3746-900 and One Controller Expansion

For the notes in the following diagram, refer to page 44-7.

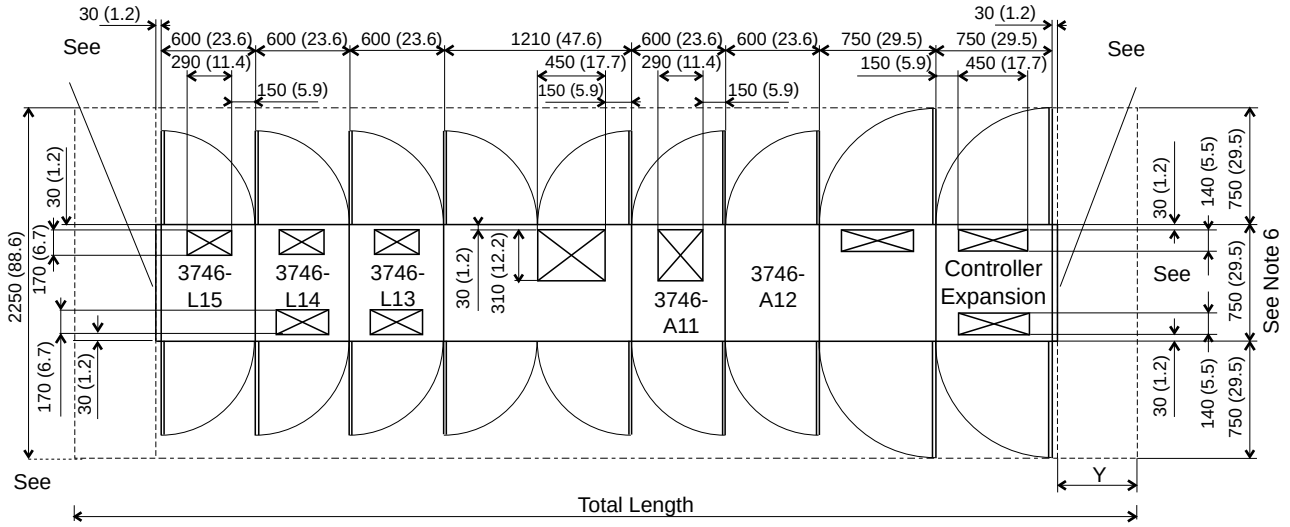


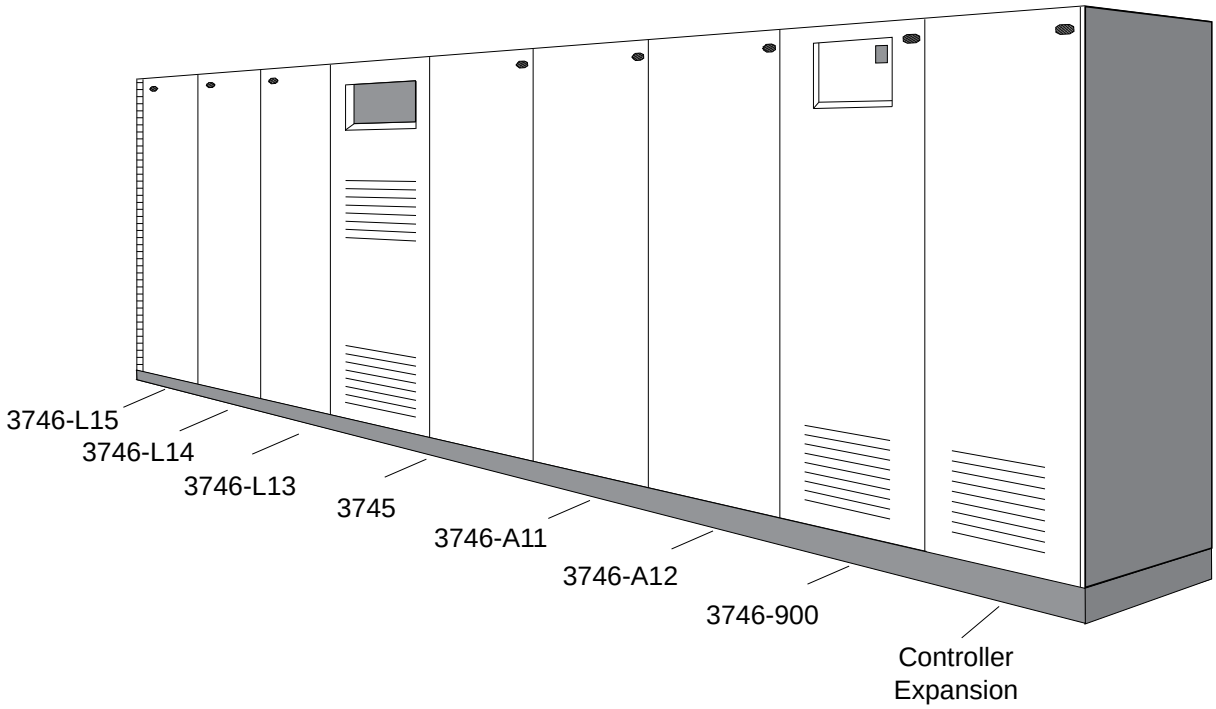


The Controller Expansion (Feature 5023) can be installed on the right or the left side of the 3745 or can be installed separately from the 3745 (refer to page 44-11).
The X and Y dimensions depend on the configuration (refer to Table 44-1 on page 44-13). Total length is explained on page 44-1.

3745 Models 21A, 31A, 41A, or 61A Maximum Configuration with a 3746-900 and One Controller Expansion

For the notes in the following diagram, refer to page 44-7.

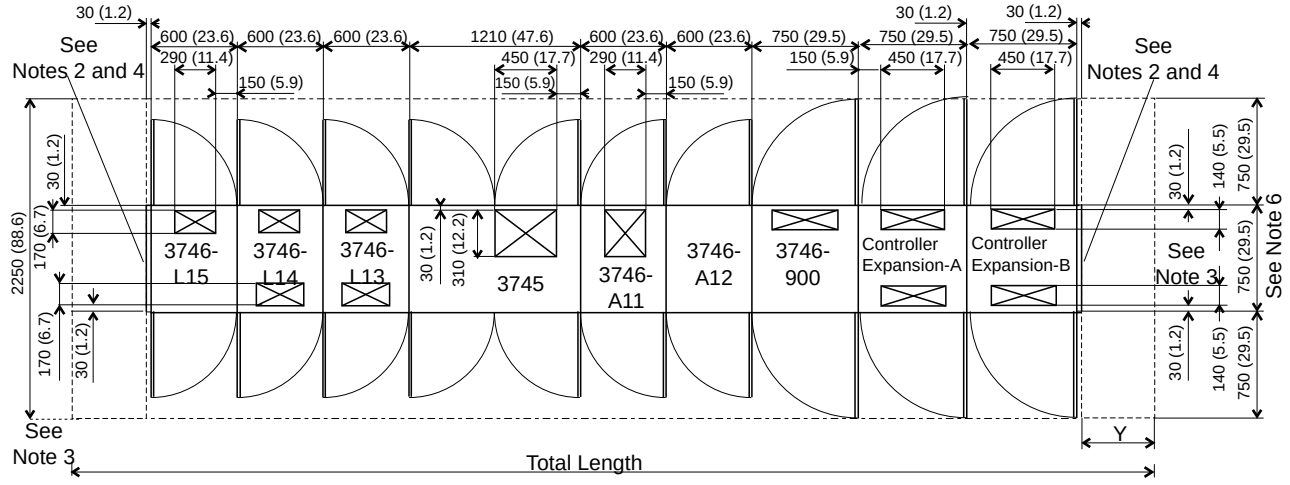


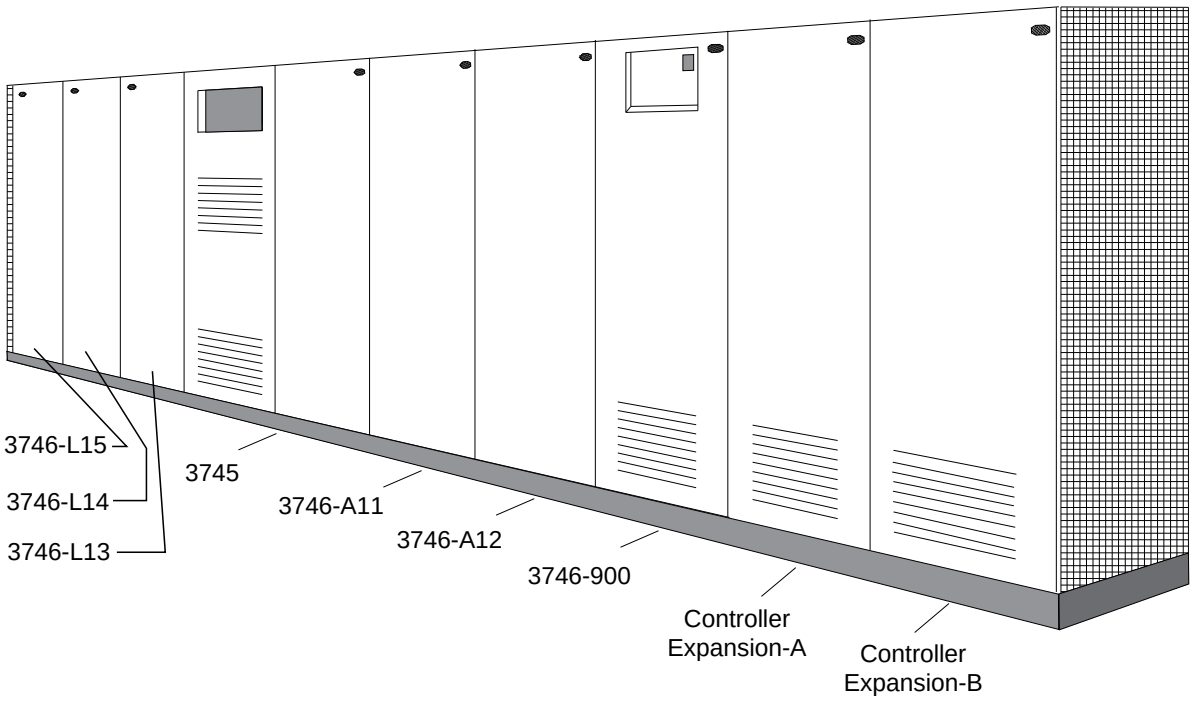


The Controller Expansion (Feature 5023) can be installed on the right or the left side of the 3745 or can be installed separately from the 3745 (refer to page 44-11).
The X and Y dimensions depend on the configuration (refer to Table 44-1 on page 44-13). Total length is explained on page 44-1.

3745 Models 21A, 31A, 41A, or 61A Maximum Configuration with a 3746-900 and Both controller expansions A and B

For the notes in the following diagram, refer to page 44-7.





The Controller Expansion (Feature 5023) can be installed on the right or the left side of the 3745 or can be installed separately from the 3745 (refer to page 44-11). Both controller expansions A and B are optional.

The X and Y dimensions depend on the configuration (refer to Table 44-1 on page 44-13). Total length is explained on page 44-1.

Notes:

1. Cable entry and exit area locating dimensions are measured from edge of frame, not covers. The casters must not be less than 75 mm (3 in.) from a hole under a frame.

   - The 3745-x1A, the 3746-9x0, and controller expansion have four swiveling castors.
   - The 3745-17A and the 3746-A11 to L15 have:
     – Two swiveling castors on the front side
     – Two fixed castors on the rear side

   Leveling pads are delivered with each unit.

2. Side ground plates are delivered with the 3745 Models 21A to 61A. When a 3746-9x0 or controller expansion is installed, these plates are relocated to the end of the configuration by the IBM service representative. Cutaways in the ground plates correspond to the cable entry and exit areas shown in the plan views.

3. Side covers are delivered with the 3746-900 configured for the 3745-17A. When the controller expansion feature is installed, one of these covers is relocated to the end of the controller expansion by the IBM service representative.

4. The 3745 Models 21A to 61A are shipped with side covers. When a 3746-9x0 or the controller expansion is installed, the 3745 side covers are relocated to the end of the 3746-9x0 or controller expansion by the IBM service representative.

5. A raised floor is recommended.

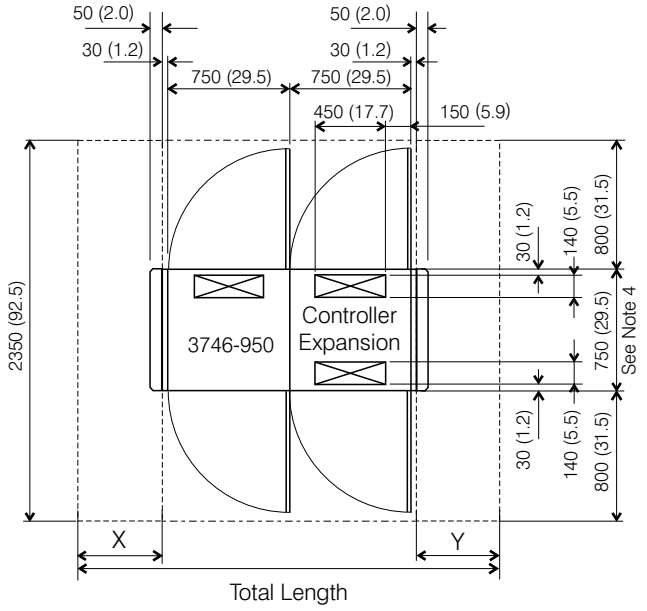
   - For 3745 Models 21A to 61A, a raised floor is required if one of the following conditions is present:
     – A 3746-9x0 is connected to the base frame (3745).
     – The base frame (3745) is channel-attached.
     – More than 32 attachments (low-speed lines, high-speed lines, Ethernet lines, and token-ring lines) are connected to the base frame (3745).
   - For 3745 Model 17A, a raised floor is required if one of the following conditions is present:
     – More than 64 external cables (LIC cables, high-speed line cables, Ethernet cables, token-ring cables).
     – More than two LIC base features.
     – Two host attachments with blue cables (part number 5460185), or one host attachment with gray cables (part number 5353920).

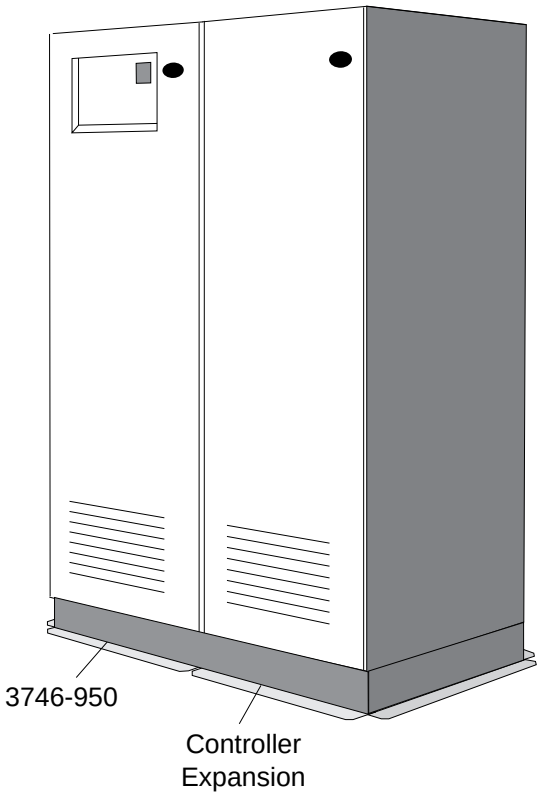
   When no raised floor is installed, the cables should be protected with ramps or trenches.

6. Dimension includes front and rear covers that are 30 mm (1.2 in.) each.

3746-950 with a Controller Expansion (Feature 5023)

For the notes in the following diagram, refer to page 44-12.



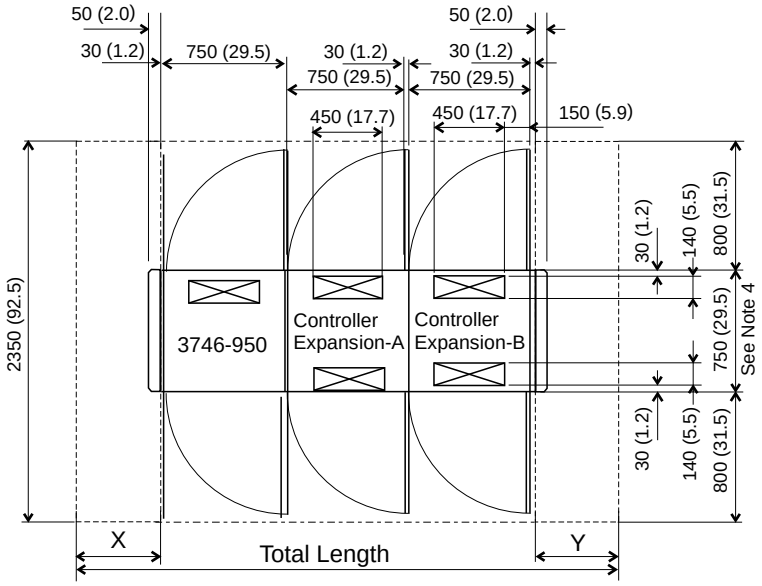


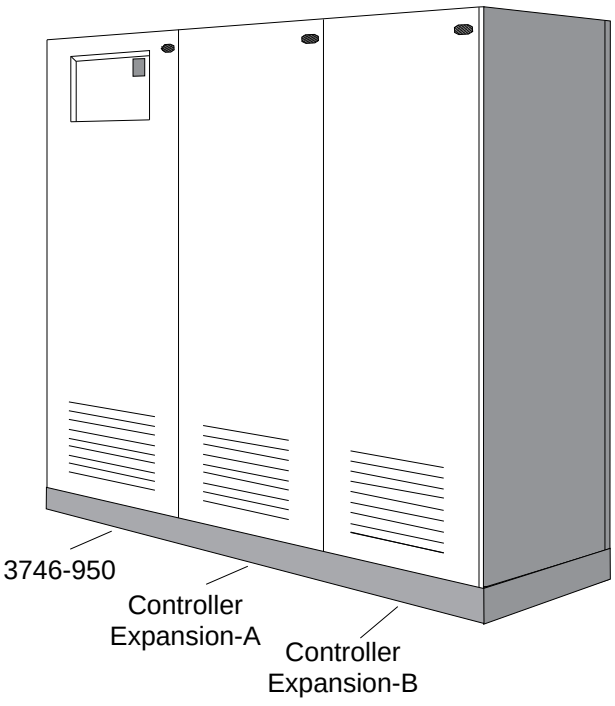
The controller expansion can be installed on either the right or the left side of the 3746-950.

Total length is explained on page 44-1.

3746-950 with Two Controller Expansions (A and B)

For the notes in the following diagram, refer to page 44-12.

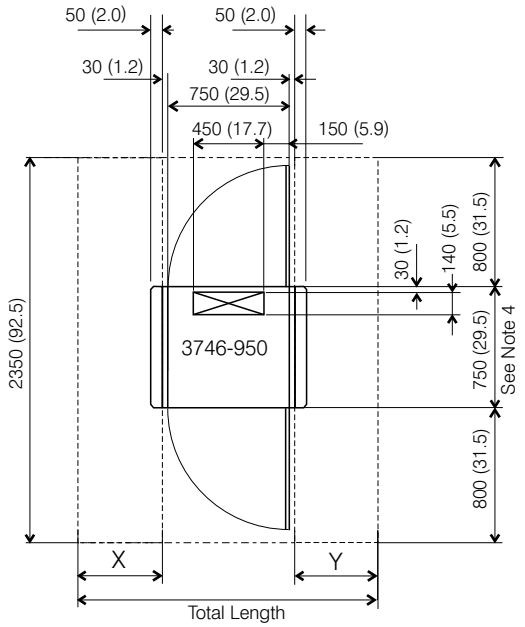


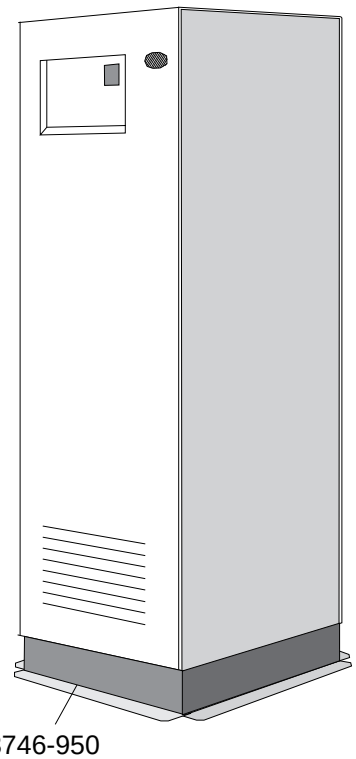


This is an example configuration. controller expansion-A and -B can be installed together, but separate from the 3746-950 box. Refer also to notes 5 and 6 on page 44-12.

3746-950 Standing Alone

For the notes in the following diagram, refer to page 44-12.

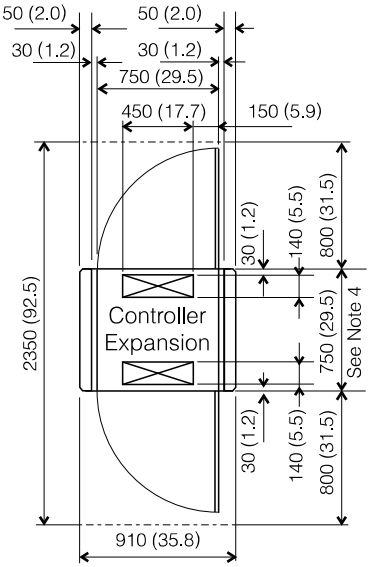


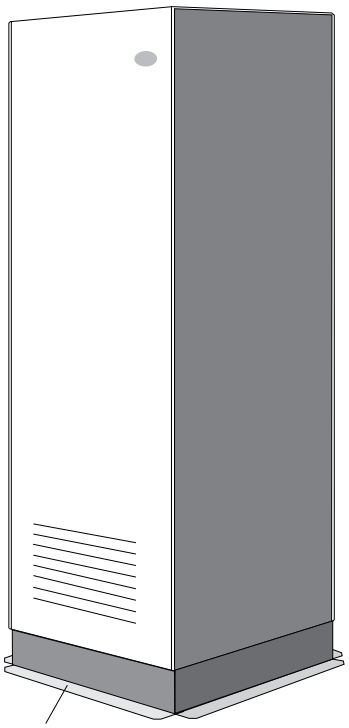


Total length is explained on page 44-1.

Controller Expansion (Feature 5023) Standing Alone

For the notes in the following diagram, refer to page 44-12.





Controller
Rack

Refer to notes 5 and 6 on page 44-12.

Notes:

1. Cable entry and exit area locating dimensions are measured from edge of frame, not covers.
2. The 3746-950 and controller expansion have four swiveling castors. The castors must not be less than 75 mm (3 in.) from a hole under a frame.
3. A raised floor is recommended.

   When no raised floor is installed, the cables should be protected with ramps or trenches.
4. Dimension includes front and rear covers that are 30 mm (1.2 in.) each.
5. For the controller expansion standing alone or standing next to a 3745-17A (with no 3746-900), the side cover (Feature 5024) must be ordered. It includes the side cover ground plates. The side covers and ground plates are installed by the IBM service representative for radio frequency interference (RFI) and electro static discharge (ESD) protection of the machine.
6. The controller expansion can be located about 6 m (20 ft) from the 3746-900 or 3746-950 when using the standard cable shipped with the 3746. For information about longer cables, refer to page 44-70.

Service Clearances and Floor Loading

Table 44-1 is based on IBM's method of calculating floor loading. The side clearance is not a service requirement; it ensures that the weight distribution of the 3745 and 3746 units meets IBM standards.

The side service clearances depend on the strength of raised floor. The customer facilities management personnel should be consulted to determine the floor load rating that is installed. The table below shows the required side service clearances for different types of raised floor.

Table 44-1 (Page 1 of 2). Floor Loading an Service Clearances

Configuration (See note 1)	Floor Loading Rating		Total End Clearance (X+Y)	
	Kg/M²	Lb/T²	mm.	In.
3745-17A	300	61	0	0
3745-17A + Controller Expansion	320	65	0	0
3745-17A + 3746-900.	345 365 390	70 74 79	650 400 0	25.6 15.7 0
3745-17A + 3746-900 + Controller Expansion See page 44-2	345 372	70 75	550 0	21.6 0
Controller Expansion (Feature 5023) See diagram on page 44-10	345	70	0	0
3745-x1A.	345 365	70 74	1150 850	45.3 33.5
3745-x1A + Controller Expansion	345 365	70 74	1000 700	39.4 27.6
3745-x1A + 3746-900 (1 ac input)	345 365 390	70 74 79	1900 1400 950	74.8 55.1 37.4
3745-x1A + 3746-900 (2 ac inputs or 1 ac + 1 dc input)	345 365 390	70 74 79	1900 1750 1250	74.8 55.1 49.2
3745-x1A + 3746-900 + Controller Expansion (1 ac input) see note 1, and See page 44-4	345 365 390	70 74 79	1900 1400 950	74.8 55.1 37.4
3745-x1A + 3746-900 + Controller Expansion (2 ac inputs or 1 ac + 1 dc input) See page 44-4	345 365 390	70 74 79	1900 1750 1250	74.8 55.1 49.2
3745-x1A + 3746-A11	345 365 390	70 74 79	1800 1300 850	70.9 51.2 33.5
3745-x1A + 3746-A11 + 3746-900	345 365 390	70 74 79	2500 1700 1500	98.4 66.9 59.1
3745-x1A + 3746-A11 + 3746-900 **+ Controller Expansion** See note 2	345 365 390	70 74 79	2500 1700 1500	98.4 66.9 59.1

Notes:

1. x1A = 21A, 31A, 41A, or 61A.
2. On this configuration, X and Y must be split into two areas: X or Y must be 750mm minimum and the remaining length on the other side.
3. The maximum configuration includes the 3746-A11 and L-13 plus any combination of 3746-A12, -L14, and L-15 frames.

Table 44-1 (Page 2 of 2). Floor Loading an Service Clearances

Configuration (See note 1)	Floor Loading Rating		Total End Clearance (X+Y)	
	Kg/M²	Lb/T²	mm.	In.
3745-x1A + 3746-A11 + 3746-L13	345 365 390	70 74 79	1700 1300 750	66.9 51.2 29.5
3745-x1A + 3746-A11 + 3746-L13 + 3746-900 See note 2	345 365 390	70 74 79	2750 2000 1500	108.3 78.7 59.1
3745-x1A + 3746-A11 + 3746-L13 + 3746-900 + Controller Expansion See note 2	345 365 390	70 74 79	2450 1500 1500	96.5 59.1 59.1
3745-x1A Maximum Configuration + 3746-900 See notes 2, 3	345 365 390	70 74 79	3000 1600 1500	118.1 63.0 59.1
3745-x1A Maximum Configuration + 3746-900 + Controller Expansion See notes 2, 3 See page 44-5	345 365 390	70 74 79	3000 1600 1500	118.1 63.0 59.1
3746-950 See page 44-10	345 365 390	70 74 79	890 690 440	35.0 27.1 17.3
3746-950 + Controller Expansion See page 44-8	345 365 390	70 74 79	890 520 190	35.0 20.5 7.5
3746-950 + 2 Controller Expansion See page 44-9	345 365 390	70 74 79	890 520 190	35.0 20.5 7.5

Notes:

1. x1A = 21A, 31A, 41A, or 61A.
2. On this configuration, X and Y must be split into two areas: X or Y must be 750mm minimum and the remaining length on the other side.
3. The maximum configuration includes the 3746-A11 and L-13 plus any combination of 3746-A12, -L14, and L-15 frames.

Ground Leakage Current

The ground leakage current for a 3745-21A, 31A, 41A, or 61A must not exceed 500 mA rms in any configuration.

The ground leakage current for the 3745-17A must not exceed 3.5 mA rms.

The ground leakage current for the 3746-9x0 and Controller Expansion (Feature 5023) (or user-supplied rack) must not exceed 3.5 mA rms per power cord.

Physical Specifications

For service processor specifications, refer to page 44-36.

Dimensions

Frame	Width (See note)	Depth	Height
3745-17A	750 mm (29-1/2 in.)	650 mm (25-3/4 in.)	1 000 mm (39-1/2 in.)
3745-21A, 31A, 41A, 61A	1 210 mm (47-3/4 in.)	750 mm (29-1/2 in.)	1 775 mm (70 in.)
3746-900, 950	750 mm (29-1/2 in.)	750 mm (29-1/2 in.)	1 775 mm (70 in.)
3746-A11, A12, L13, L14, L15	600 mm (24 in.)	750 mm (29-1/2 in.)	1 775 mm (70 in.)
Controller Expansion (Feature 5023)	750 mm (29-1/2 in.)	750 mm (29-1/2 in.)	1 775 mm (70 in.)
Multiaccess Enclosure (Feature 3000)	480 mm (18.9 in.)	358 mm (14.1 in.)	572 mm (22.5 in.)
Note: These dimensions exclude side covers.			

Weight

Frame	Weighs less than:
3745-17A	230 kg (510 lb)
3745-21A, 31A, 41A, 61A	680 kg (1 496 lb)
3746-900 (1 AC)	390 kg (858 lb)
3746-900 (2 AC)	446 kg (982 lb)
3746-950 (1 AC)	410 kg (904 lb)
3746-950 (2 AC)	466 kg (1027 lb)
3746-A11	320 kg (704 lb)
3746-A12, L13, L14, L15	240 kg (528 lb)
Controller Expansion (Feature 5023) (Populated)	288 kg (633 lb)

Heat Output

Frame	Maximum Heat Output	
	kW	(kBTU/hr)
3745-17A	0.8	(2.6)
3745-21A, 41A	2.6	(8.9)
3745-31A, 61A	2	(6.9)
3746-900, 950	2.2	(7.7)
3746-A11	1.2	(4.1)
3746-A12	0.5	(1.7)
3746-L13	0.6	(2.1)
3746-L14	0.6	(2.1)
3746-L15	0.6	(2.1)
Controller Expansion (Populated)	1.4	(4.9)

Airflow

A forced air ventilation system is installed inside each 3745/3746 frame.

Frame	Airflow
3745-17A	7.5 m^3/min (260 cfm)
3745-21A, 31A, 41A, 61A	18 m^3/min (635 cfm)
3746-900, 950	18 m^3/min (635 cfm)
3746-A11	24 m^3/min (850 cfm)
3746-A12, L13, L14, L15	12 m^3/min (425 cfm)
3746-L13	5 m^3/min (180 cfm)
3746-L14	5 m^3/min (180 cfm)
3746-L15	5 m^3/min (180 cfm)
Multiaccess Enclosure (Feature 3000).	2 m^3/min (71 cfm)

Acoustical Data

For definitions, see *Acoustics* in Chapter 3 of *IBM General Information Manual: Installation Manual-Physical Planning,* GC22-7072, and *IBM Acoustical Product Specifications*, CS1-1710.

Model		LwAd		I	T
		Operating (bels)	Idling (bels)		
3745-17A Operating at 208 V 60 Hz or at 220 V 50 Hz		7.0	7.0	No	No
3745-21A, 31A, 41A, 61A Operating at 208 V 60 Hz	3745 alone	7.5	7.5	No	No
	3745 and 3746-L13 and 3746-A11	7.8	7.8	No	No
3745-21A, 31A, 41A, 61A Operating at 380 V 50 Hz	3745 alone	7.5	7.5	No	No
	3745 and 3746-L13 and 3746-A11	7.8	7.8	No	No
3746-9x0 Operating at 208 V 60 Hz or at 220 V 50 Hz		7.5	7.5	No	No

Environmental Specifications

Table 44-2. 3745 and 3746-9x0 Environmental Specifications

	Operating Environment	Non-operating Environment
Temperature	10°C-38°C (50°F-100°F)	10°C-43°C (50°F-110°F
Relative Humidity	8%-80%	8%-80%
Max Wet Bulb	23°C (73°F)	27°C (80°F)

Lightning Protection

The power input of the 3745, 3746-900, 3746-950, and multiaccess enclosure (Feature 3000) are protected against lightning.

Contact an electrical contractor to determine if lightning protection is needed for your power distribution system.

The line interface coupler (LIC), token-ring, high-speed line, and service processor cables are not protected against lightning and must be placed in the same building as the 3745/3746 units.

Electromagnetic Interference (3745, 3746-9x0 and Controller Expansion)

1. The 3745/3746-9x0 and controller expansion (physically attached to the 3746-9x0 or not) is always compatible with the following electromagnetic interference standards:
   - CISPR Publication 22 (1993), Class A (International)
   - FCC, Part 15, Class A (USA)
   - VCCI Class 1 (Japan)
   - EN 55022 (1994), Class A (Europe)
2. If a 3745-950 (with or without a physically attached controller expansion) or a controller expansion (installed separately from any 3745/3746-9X0) is installed on a raised metallic floor with the cabling underneath this floor, then the following standards apply to the 3746-950 or the Controller Expansion:
   - CISPR Publication 22 Class B (International)
   - EN 55022 Class B (Europe)
   - VCCI Class 2 (Japan)
3. The Line Connection Boxes (LCB), whenever configured, must be installed inside the 3746-950 or the Controller Expansion frame to comply with Class B (Class 2 in Japan).
4. A Controller Expansion (physically attached to the 3746-950 or not) equipped with a Multiaccess Enclosure (Feature 3000) is always compatible with the following electromagnetic interference standards:
   - CISPR Publication 22 Class A
   - FCC, Part 15, Subpart J, Class A (USA)
   - General Operating Permit (GOP)(Germany)
   - VCCI Class 1 and IEC 1000-3-2 (Japan)

Power Requirements

3745 Models 21A, 31A, 41A, and 61A, and 3746 Models A11, A12, L13, L14, and L15

The base frame power system has an external power cord. It distributes power to the attached 3746 Models A11, A12, L13, L14, and L15.

Note: The 3746 Nways Multiprotocol Controller Model 900 has its own power supply and external power cord(s). The Controller Expansion (Feature 5023) has its own external power cord(s).

Countries	Freq.	Voltages (Nominal)	Phase Distribution System	Wiring (Note 1)	Power Factor	Maximum Machine Load (Amperes) (Notes 1 and 2)	Inrush Current (Amperes at first cycle)
U.S.A. and Canada	60 Hz	208/240	Three phases phase-to-phase	Four—wire	0.65	31.6	230
Europe, Middle East and Africa Latin America Asia and Pacific (except Japan)	60 Hz	208/220	Three phases phase-to-phase (delta)	Four-wire	0.65	31.6	230
	50 Hz	200/415		Four-wire		33	230
	60 Hz	380/415	Three phases phase-to-neutral (wye)	Five-wire	0.65	17.3	150
	50 Hz	380/415		Five-wire			
Japan	60 Hz	200/240	Three phases phase-to-phase	Four-wire	0.65	33	230
	50 Hz	200/240		Four-wire			

Notes:

1. Four-wire configurations include three phase wires and one ground.

   Five-wire configurations include three phase wires, one ground, and one neutral that are mandatory in the wye system.

2. Maximum load per phase under minimum nominal voltage.
3. A phase load imbalance of 1.2 is included.

3745 Model 17A

The 3746 Model 900 has its own power supply and external power cord(s). The Controller Expansion (Feature 5023) has its own external power cord(s).

Countries	Freq	Voltages (Nominal) (Note 1)	Phases	Wiring (Note 2)	Power Factor	Maximum Current (Amperes)	Inrush Current (Amperes at first cycle)
U.S.A. and Canada	60 Hz	200-208/220/240	One	Three-wire	0.6	5.5	100
Europe, Middle East, and Africa	50 Hz	200/220-230/240	One	Three-wire	0.6	5.5	100
Latin America Asia and Pacific	60 Hz	200/220-230/240					

Notes:

1. In some countries, 120 V power is available by ordering RPQ 7L1184.
2. Includes two phase wires and one ground wire.

3746-900/950

The 3746-900/950 has a basic AC power inlet and optionally, either a second AC power inlet or DC power inlet.

AC Power (each inlet):

Countries	Freq	Voltages (Nominal) (See Note 1)	Phases	Wiring (See Note 2)	Power Factor	Maximum Current (Amperes)
USA and Canada	60 Hz	200-208/220/240	One	Three-wire	0.75	8
European, Middle Eastern, African and Latin American	50 Hz	200/220-230/240	One	Three-wire	0.75	8
	60 Hz	200/220-230/240				
Asian and Pacific	50 Hz	200/220-230/240	One	Three-wire	0.75	8
	60 Hz	200/220-230/240				

Notes:

1. The AC power supplies have three voltage possibilities. For example, 200-208/220/240 means that the first position has a range from 200 to 208 V AC. The second position is for 220 V AC and the third is 240 V AC.
2. Includes two phase wires and one ground wire.

Maximum Inrush Current

Maximum Inrush Current (A) Verses Duration (ms)					
A	160	192	256	288	400
ms	20	12	10	9	8

DC Power

Input voltage	-44.5 V to -60.0 V
Maximum Continuous Current	26 A
Maximum Inrush Current	400 A during 5 ms
Wiring	2 wires plus one ground wire. Positive and ground lines connected to DC common and machine frame.

Controller Expansion (Feature 5023)

The controller expansion has one or two AC outlet distribution boxes each with eight 220 V AC sockets for components described in 44-46.

Countries	Freq	Voltages (Nominal)	Phases	Wiring See Note 1	Maximum Current (Amperes) See Note 2
U.S.A. and Canada	60 Hz	200-240	One	Three-wire	12
Europe, Middle East, and Africa Latin America Asia and Pacific	50 Hz	200-240	One	Three-wire	12
	60 Hz	200-240			

Notes:

1. Includes two phase wires and one ground wire.
2. Sockets labeled J1, J2, J3, and J4 can handle a total of 6 A (fuse F1). Sockets labeled J5, J6, J7, and J8 can handle a total of 6 A (fuse F2).
3. You can have up to two controller expansions.

Multiaccess Enclosure (Feature 3000)

For the multiaccess enclosure the AC power source is supplied from its housing controller expansion (refer to “Controller Expansion (Feature 5023),”) and must be able to supply:

Countries	Freq	Voltages (Nominal)	Phases	Wiring See Note 1	Maximum Current (Amperes) See Note 2
U.S.A. and Canada	60 Hz	100-240	One	Three-wire	3A/200-240V
Europe, Middle East, and Africa Latin America Asia and Pacific	50 Hz	100-240	One	Three-wire	3A/200-240V
	60 Hz	100-240			

Notes:

1. 0.62 kVA power
2. 70 amps peak inrush current for one quarter cycle per supply

Power Input

The 50- or 60-Hz power input requirements are:

Frame	Maximum kVA
3745-17A	1.1
3745-210, 310, 410, 610, 21A, 31A, 41A, and 61A	4.0
3746-900	1.8
3746-950	1.8
3746-A11	1.8
3746-A12	0.8
3746-L13, -L14, and -L15	0.9
Controller Expansion (Feature 5023)	2.9

The minimum branch circuit rating should be calculated by an electrical contractor according to country regulations. For example, in the U.S.A. and in Canada, the minimum branch circuit rating is for:

- 3745 Models 21A, 31A, 41A, or 61A base frame: 15 A per phase
- 3745 Models 21A, 31A, 41A, or 61A maximum configuration: 40 A per phase
- 3745 Model 17A maximum configuration: 10 A
- 3746-900: 15 A
- 3746-950: 15 A
- Controller Expansion (Feature 5023): 15 A.

Power Cord Characteristics

3745 Model 17A

Voltages	Cable Outside Diameter mm (in.)	Number of Conductors	AWG Number AWG (mm²)
200-240 single phase (AC)	US/JAPAN 9.5 (0.4) Other 8.5 (0.37)	2 plus ground	14 (2)

3745 Models 21A, 31A, 41A, and 61A

Voltages	Cable Outside Diameter mm (in.)	Number of Conductors	AWG Number AWG (mm²)
200-240 delta configuration	25.9 (1.2)	3 plus ground	8 (8.4)
380-440 wye configuration	21.7 (0.85)	4 plus ground	10 (5.3)

The power wiring configuration can be changed on-site from wye to delta and from delta to wye. Contact your IBM representative.

3746 Models 900 and 950

Voltages	Cable Outside Diameter mm (in.)	Number of Conductors	AWG Number AWG (mm²)
200-240 single phase (AC)	US/JAPAN 9.5 (0.4) Other 8.5 (0.37)	2 plus ground	14 (2)
-41.3 to -60.0 (DC)	All Countries 22.5 (0.88)	2 plus ground	8 (8)

Controller Expansion (Feature 5023)

If you have two controller expansions, these requirements refer to both.

Voltages	Cable Outside Diameter mm (in.)	Number of Conductors	AWG Number AWG (mm²)
200-240 single phase (AC)	US/JAPAN 9.5 (0.4) Other 8.5 (0.37)	2 plus ground	14 (2)

Power Cord length: A 4.3 m power cord is shipped with the 3745. One or two 4.3 m (14 ft) power cords are shipped with each 3746-9x0 and Controller Expansion, depending on how many power inlets are ordered. In Chicago, Illinois, USA, a 1.8 m (6 ft) power cord is shipped instead, provided that the controller configuration includes the specific code 9986.

Power Cord Plug and Receptacle

The AC power cord is supplied with a country-dependent plug. The DC power cord for the 3746-9x0 is supplied with a terminal to fit an M6 or 0.250 - 20 UNC plug. The customer must provide a receptacle, as shown in the following tables. The branch circuit rating should match the receptacle rating.

The approved plug for the specific location and installation should be installed by an electrical contractor. The green/yellow grounding wire of the power cable *must* be attached to the ground leg of the power plug.

U.S.A., Canada, and Mexico

Table 44-3. Receptacle Types Needed in the U.S.A., Canada, and Mexico

Frame	Plug Type	Plug	Ordering Code	Receptacle Type
3745-17A	Moisture Resistant	Russelstoll 3720-DPU2	9020	Russelstoll 3913U-2 (inline) or 3743U-2 (box type)
	Locking	NEMA L6-15P	9890	NEMA L6-15R
	Nonlocking	NEMA 6-15P	9830	NEMA 6-15R
3745-21A, -31A, -41A, -61A	Moisture Resistant	Russelstoll 7328-78	None	Russelstoll 7428 (inline) or 7324 (box type)
3746-900/950 (ac input)	Moisture Resistant	Russelstoll 3720-DPU2	9027	Russelstoll 3913U-2 (inline) or 3743U-2 (box type)
	Locking	NEMA L6-15P	9894	NEMA L6-15R
	Nonlocking	NEMA 6-15P	9895	NEMA 6-15R
Controller Expansion (Feature 5023)	Moisture Resistant	Russelstoll 3720-DPU2	9028	Russelstoll 3913U-2 (inline) or 3743U-2 (box type)
	Locking	NEMA L6-15P	9898	NEMA L6-15R
	Nonlocking	NEMA 6-15P	9038	NEMA 6-15R

Japan

Table 44-4. Receptacle Types Needed in Japan

Frame	Plug Type	Plug	Ordering Code	Receptacle Type
3745-17A	Locking	NEMA L6-15P	9890	NEMA L6-15R
	Nonlocking	NEMA 6-15P	9830	NEMA 6-15R
3745-21A, -31A, -41A, -61A	Moisture Resistant	Hirose Electric CL105-0091	None	Hirose Electric CL105-0092
3746-900/950 (ac input)	Locking	NEMA L6-15P	9892 (50 Hz) 9894 (60 Hz)	NEMA L6-15R
	Nonlocking	NEMA 6-15P	9893 (50 Hz) 9895 (60 Hz)	NEMA 6-15R
Controller Expansion (Feature 5023)	Locking	NEMA L6-15P	9898	NEMA L6-15R
	Nonlocking	NEMA 6-15P	9838	NEMA 6-15R

Other Countries

Table 44-5. Receptacle Types Needed in Other Countries

Frames	Plug Type
3745-21A, -31A,-41A, -61A	No plug shipped
3745-17A 3746-900/950 (ac input) Controller Expansion (Feature 5023)	Country standard plug. Refer to pages 44-27 and 44-30.

Country Frequency and Power Plug Identification

In Table 44-6, the second column (3745 Plug) and third column (3746-900/950 and controller expansion Plug) refer to the power plugs shown on page 44-30.

Table 44-6 (Page 1 of 3). Country Frequency and Power Plug Identification

Country	Freq (Hz)	Plug Type	
		3745-17A	3746-900/950 and controller expansion
Afghanistan	50	18	18
Albania	50	18	18
Algeria	50	18	18
Andorra	50	18	18
Angola	50	18	18
Argentina	50	6	54
Australia	50	6	54
Austria	50	18	18
Bahamas	60	5	5
Bahrain	50	23	46
Bangladesh	50	22	22
Barbados	50	6	54
Belgium	50	18	18
Benin	50	18	18
Bermuda	60	5	5
Bolivia	50	6	54
Bosnia	50	18	18
Brazil	60	5	5
Brunei	50	23	46
Bulgaria	50	18	18
Burma	50	22	22
Cameroon	50	18	18
Canada	60	5/10/34	5/10/34

Table 44-6 (Page 1 of 3). Country Frequency and Power Plug Identification

Country	Freq (Hz)	Plug Type	
		3745-17A	3746-900/950 and controller expansion
Central African Republic	50	18	18
Chad	50	18	18
Channel Islands	50	23	46
Chile	50	25	25
China	50	6	54
Colombia	60	5	5
Congo Brazzaville	50	18	18
Costa Rica	60	5	5
Croatia	50	18	18
Cyprus	50	23	46
Czech Republic and Slovakia	50	18	18
Denmark	50	19	19
Dominican Republic	60	5	5
Egypt	50	18	18
El Salvador	60	5	5
Ecuador	60	5	5
Ethiopia	50	25	25
Finland	50	18	18
France	50	18	18

Table 44-6 (Page 2 of 3). Country Frequency and Power Plug Identification

Country	Freq (Hz)	Plug Type	
		3745-17A	3746-900/950 and controller expansion
Germany	50	18	18
Ghana	50	23	46
Greece	50	18	18
Guatemala	60	5	5
Guinea	50	18	18
Haiti	60	5	5
Honduras	60	5	5
Hong Kong	50	23	46
Hungary	50	18	18
Iceland	50	18	18
India	50	23	46
Indonesia	50	18	18
Iran	50	18	18
Iraq	50	23	46
Ireland	50	23	46
Israel	50	32	32
Italy	50	25	25
Ivory Coast	50	18	18
Jamaica	50	6	5
Japan	50/60	5/10	5/10
Jordan	50	23	46
Kenya	50	23	46
Korea	60	5	18
Kuwait	50	23	46
Lebanon	50	18	18
Libya	50	25	25
Liechtenstein	50	24	18
Luxembourg	50	18	18
Macedonia	50	18	18
Malagasy	50	18	18
Malawi	50	23	46
Malaysia	50	23	46
Mali	50	18	18
Malta	50	23	46

Table 44-6 (Page 2 of 3). Country Frequency and Power Plug Identification

Country	Freq (Hz)	Plug Type	
		3745-17A	3746-900/950 and controller expansion
Martinique	50	18	18
Mauritania	50	18	18
Mauritius	50	18	18
Mexico	60	5/10/34	5/10/34
Monaco	50	18	18
Morocco	50	18	18
Mozambique	50	18	18
Nepal	50	23	46
Netherlands	50	18	18
Netherlands Antil.	60	5	5
New Caledonia	50	18	18
New Zealand	50	6	49
Nicaragua	60	5	5
Niger	50	18	18
Nigeria	50	23	46
Norway	50	18	18
Oman	50	23	46
Pakistan	50	22	22
Panama	60	5	5
Papua New Guinea	50	6	54
Paraguay	50	2	54
Peru	60	5	5
Philippines	60	5	5
Poland	50	18	18
Portugal	50	18	18
Qatar	50	23	46
Romania	50	18	18
Saudi Arabia	50/60	18	18
Senegal	50	18	18
Serbia	50	18	18

Table 44-6 (Page 3 of 3). Country Frequency and Power Plug Identification

Country	Freq (Hz)	Plug Type	
		3745-17A	**3746-900/950 and controller expansion**
Sierra Leone	50	23	46
Singapore	50	23	46
Slovenia	50	18	18
Somalia	50	23	46
South Africa	50	22	22
Spain	50	18	18
Sri Lanka	50	22	22
Sudan	50	18	18
Sweden	50	18	18
Switzerland	50	24	46
Syria	50	18	18
Taiwan	60	5	5
Tanzania	50	23	46
Thailand	50	6	5
Togo	50	18	18
Trinidad Tobago	60	5	5

Table 44-6 (Page 3 of 3). Country Frequency and Power Plug Identification

Country	Freq (Hz)	Plug Type	
		3745-17A	**3746-900/950 and controller expansion**
Tunisia	50	18	18
Turkey	50	18	18
Uganda	50	23	46
United Arab Emira	50	23	46
United Kingdom	50	23	46
Upper Volta	50	18	18
Uruguay	50	2	54
U.S.A.	60	5/10/34	5/10/34
USSR	50	18	18
Venezuela	60	5	5
Western Samoa	50	6	5
Yemen	50	23	46
Congo	50	18	18
Zambia	50	23	46
Zimbabwe	50	18	18

Power Plug Types

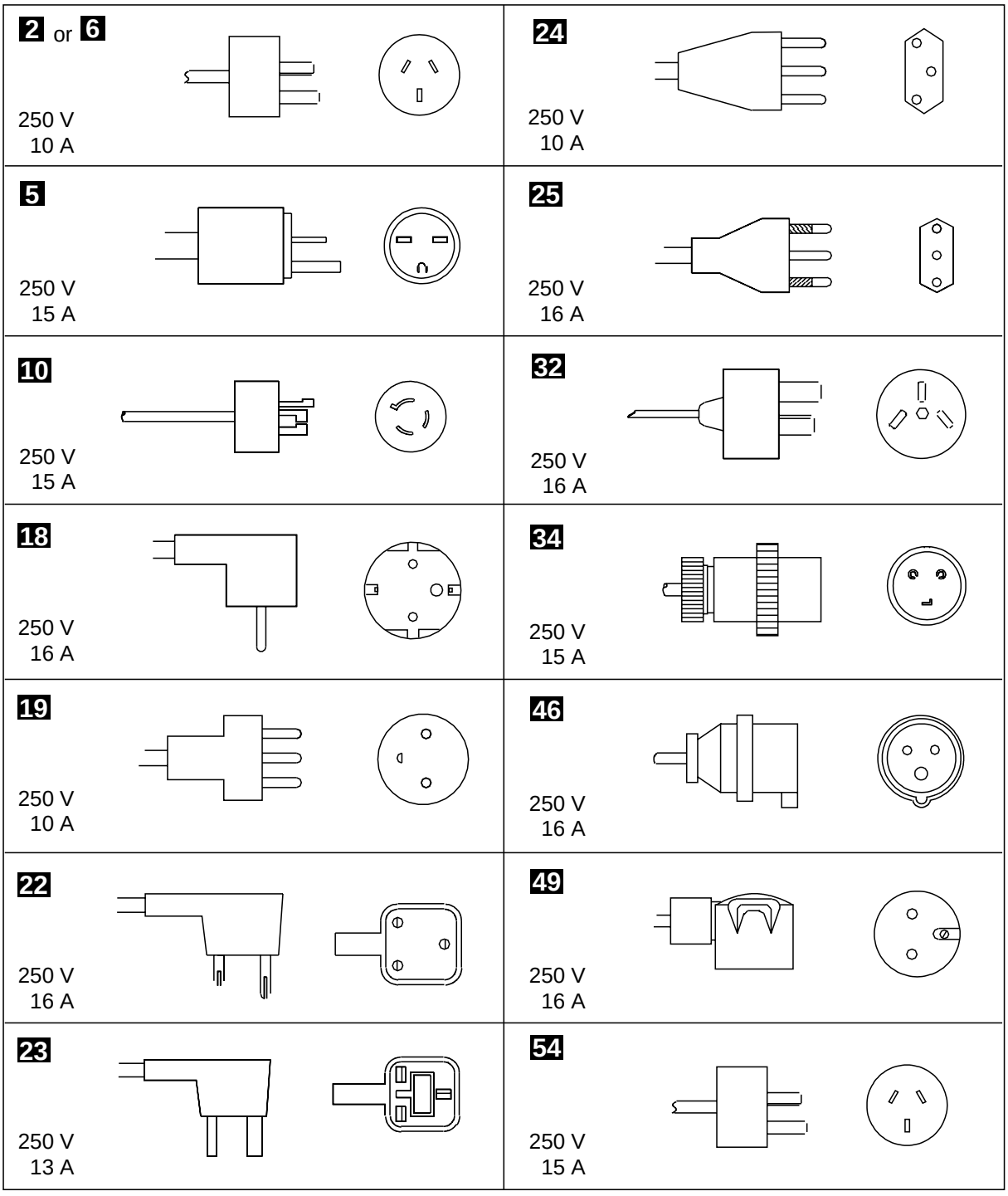


Figure 44-1. Side and Connector Ends for the Power Plugs

Notes:

1. Plugs 2 and 6 are similar in appearance but have different pin length, thickness, and spacing.
2. The figure shows the side and connector end for each plug.
3. The form of the plug moldings depends on the manufacturer.

Controller Expansion and LCB Grounding

Voltage Grounding

Ground Source Characteristics

The voltage measured between a frame or stand-alone LCB and the earth (not the ground source connection) must be less than 1 volt as shown in Figure 44-2.

The controller expansion and LCBs outside a grounded frame must be grounded by connecting the ground point located on the controller expansion or LCB to a suitable ground source. The voltage difference between the controller expansion or LCB and the ground must be less than one (1) volt.

controller expansion

A 9 m (29.5 ft) ground wire comes with the controller expansion. It has an M5 terminal at both ends. An M5 screw with two washers is also supplied. See Figure 44-2.

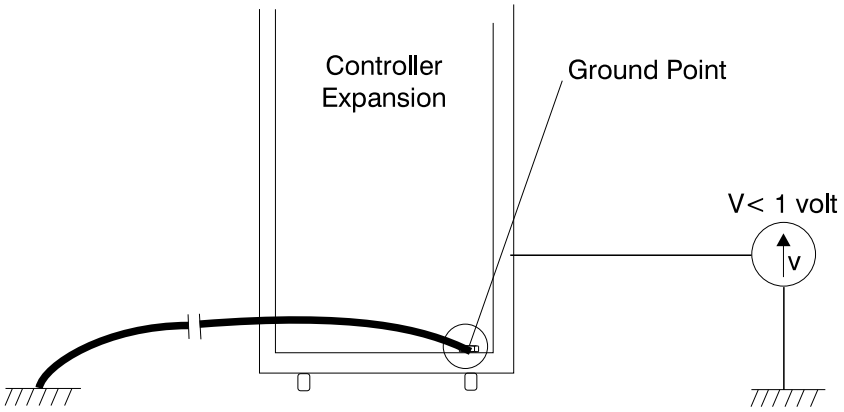


Figure 44-2. controller expansion Ground Requirements

If you have two controller expansions, they must both be grounded at the same ground point.

User-supplied rack

To meet the less-than-one-volt requirement, use at least 2.5mm^2 green/yellow wire and an M5 screw (or bolt and nut) and washers that are shown in Figure 44-3. See also Figure 44-2.

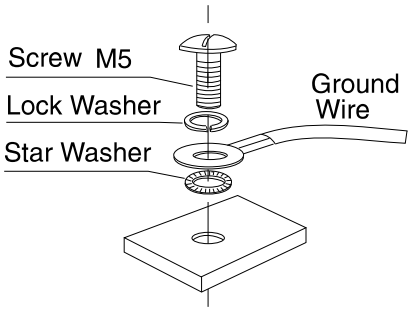


Figure 44-3. User-Supplied Rack Ground Requirements

Stand-alone LCB

A single LCB may be used alone on a table or suitable shelf. To meet the less-than-one-volt requirement, use at least 2.5mm^2 green/yellow wire and an M5 screw and washers that are shown in Figure 44-4 on page 44-32. See also Figure 44-2.

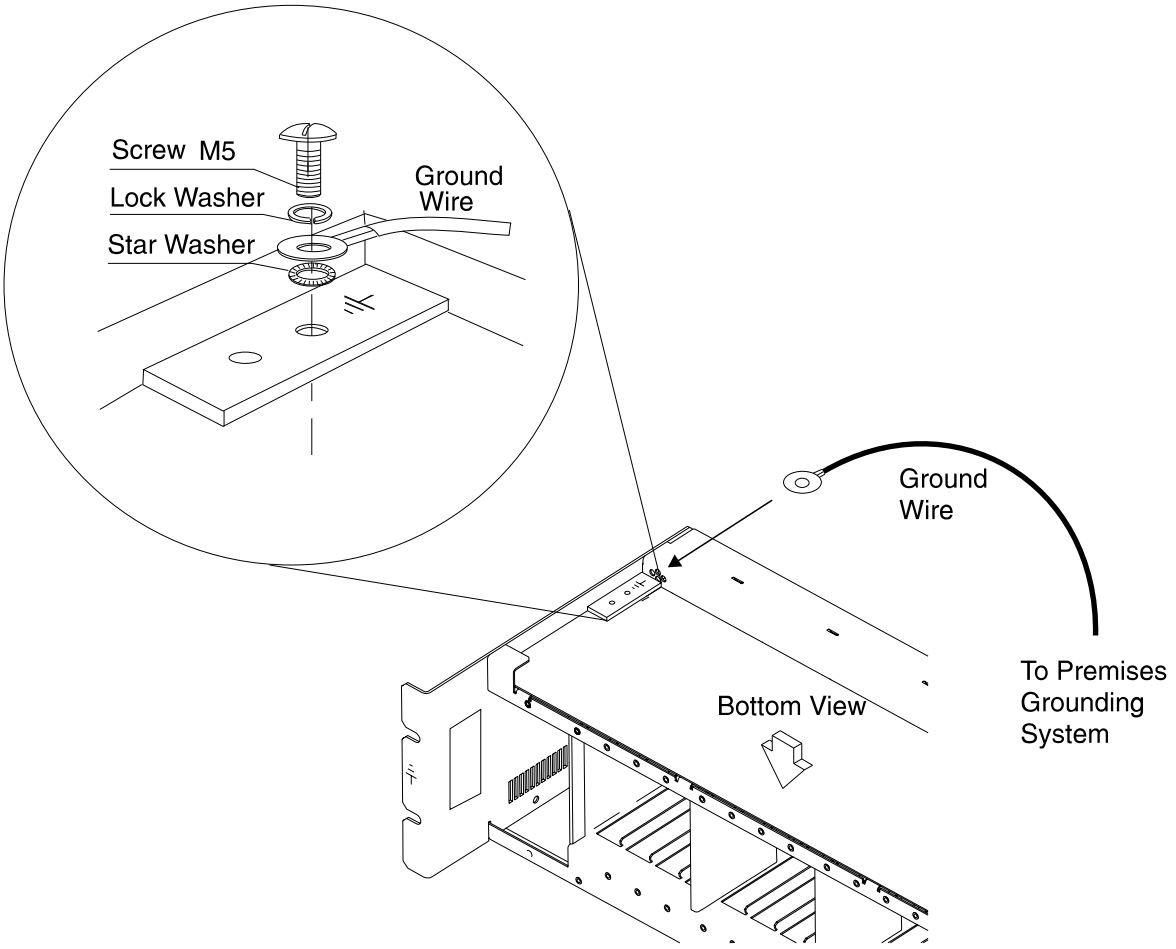


Figure 44-4. User-Supplied Rack Ground Requirements

Current Grounding

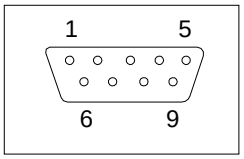
The ground leakage current for the 3746 Nways Multiprotocol Controller and controller expansion (or user-supplied rack) must not exceed 3.5 mA rms per power cord.

3745 Customer Power Control Relay

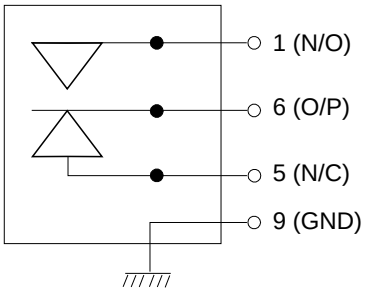
The customer power control relay is located in the 3745 console tailgate and can be used to power on/off equipment external to the controller. It includes:

- A normal-closed contact and a normal-open contact when the power is off, and the reverse when the power is on.
- An outlet available to the customer
- Voltage and current rating: 30 V AC or 42.4 V DC at 20-500 mA.
- The plug is not provided by IBM. It is a standard nine-pin female D shell connector including:
  - One receptacle (AMP reference 205203-1 or equivalent)
  - Four sockets (AMP reference 66504-9 or equivalent)
  - One housing (AMP reference 205729-1 or equivalent)
  - Two studs (AMP reference 350547-3 or equivalent).
- The cable is not provided by IBM. Its characteristics are:
  - Bulk cable, with a maximum outside diameter of 6 mm (0.23 in.)
  - Four conductors
  - AWG no. 22 (0.3 mm²).

Front (Pin Side) View of Customer Power Control Relay Connector on Console Tailgate



Pin-Out of Relay



Line Interface Attachment Cables

There are two types of LIC:

- LIC type 11 (LIC11) which is connected to DCE/DTE through line connection boxes (LCB) and active remote connectors (ARC)
- LIC type 12 (LIC12) which is connected to high-speed lines

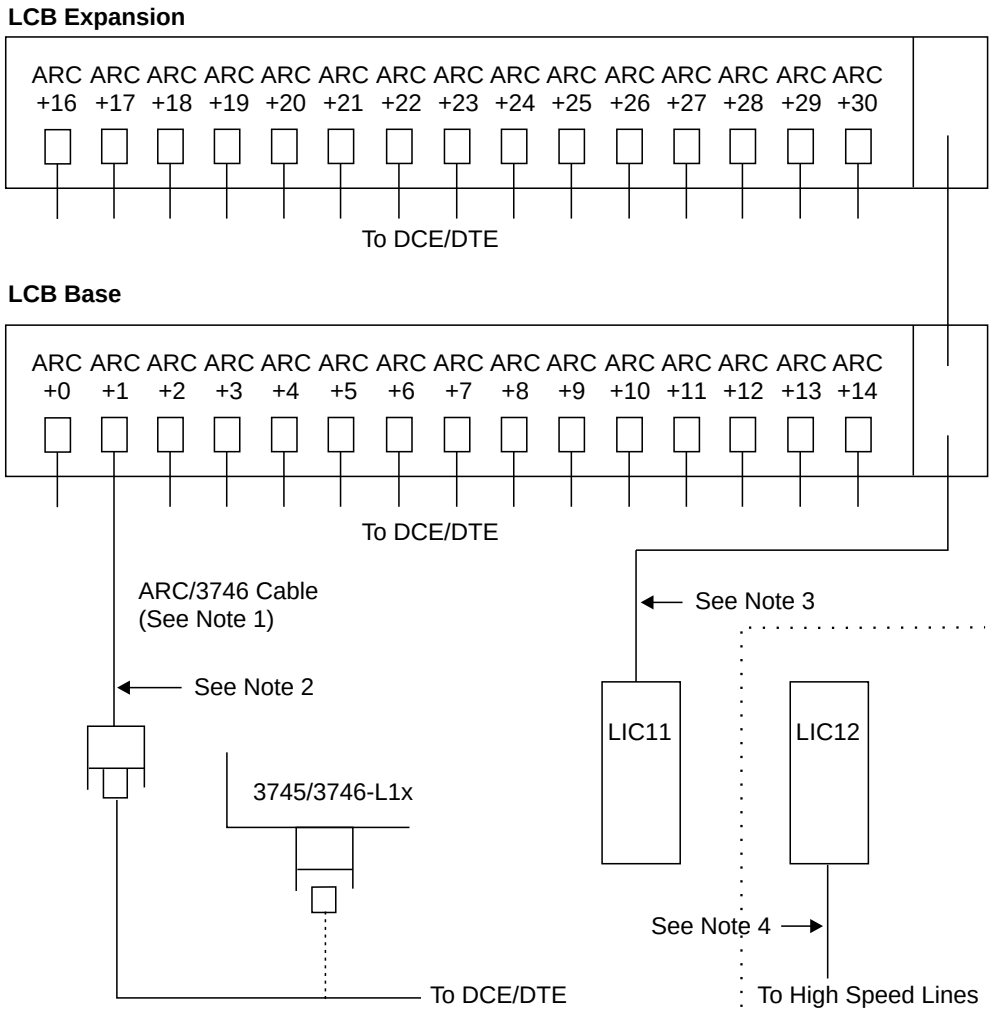


Figure 44-5. Diagram of LIC11 and LIC12 Cables

Notes:

1. ARC/3745 cables adapt to LIC cables that normally connect to 3745/3746-L1x LIC1s, LIC3s, or LICs 4A/4B. See the table on page 44-84. This allows re-use of installed cables when lines are moved from LIC1s, LIC3s, or LICs 4A/4B to LIC11s on the 3746-900/950.
2. See page 44-84.
3. See page 44-82.
4. See page 44-75.

The number above the ARC slot gives the physical position of the ARC in the LCB and represents the address increment with reference to ARC position +0. Address +15 is not used.

Line Connection Box

There are two types of line connection box (LCB):

- The line connection box base (LCBB).
- The line connection box expansion (LCBE). The LCBE is connected to the LCBB.

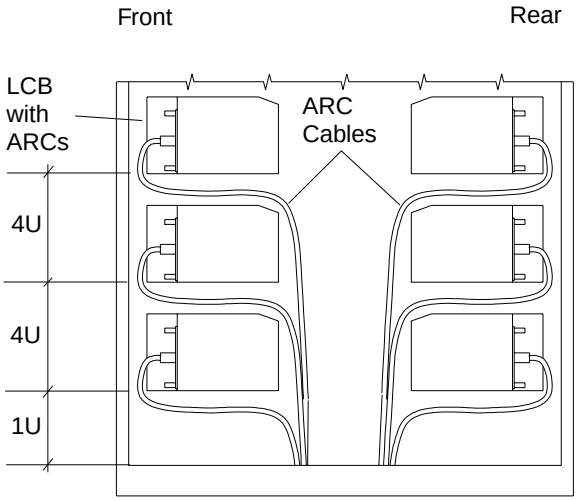
Each LCB contains up to 15 active remote connectors (ARC). Refer to the figure on page 44-34.

The LCBs can be installed either:

- In the 3746-900/950 (maximum of two LCBs when the Expansion Enclosure 2 is not present)
- In the controller expansion (Feature 5023 of the 3745 and 3746-900/950)

  The LCB occupies four units (Us) of height in the controller expansion. Refer to page 44-46.

  The ARC cards are plugged in on the front of the LCB. The ARCS include the cable for modem attachment or direct attachment. Each side of the controller expansion or a double-sided rack can be equipped with an LCB. This allows the installation of two LCBs per four Us.



Note: 1U = 44.5 mm

Figure 44-6. Controller Expansion or 19-inch User-Supplied Rack (Side View)

- In a 19-inch user supplied rack.

  Refer to installation information for the Controller Expansion (Feature 5023) above, in addition to the information given below.

  To reduce the possibility of radio frequency interference and electrostatic discharge, when installing a 19-inch rack, it is recommended to:

  – Remove one flooring tile (when a raised floor is present) and install the rack where the flooring tile was removed.

  – Have a conductive frame rack connected to the ground of the raised floor.

  – Have metallic side covers on the rack.

  – Install the LCBs starting from the bottom of the rack.

- On the floor.

  This must be in an area where the LCBs and their cables will not be in walkways or work areas.

The maximum length of cable between the LIC11 and the LCBB is 105 m (345 ft). The cable connecting the LCBB to the LCBE is part of the LCBE and it is 35 cm (1.15 ft.) long.

Note: When installing the second expansion enclosure, LCBs installed in the 3746-9x0 must be moved into the controller expansion or user rack. You may need to order longer LIC11-to-LCB cables.

LCB Specifications

Dimensions:

Width	45 cm (17.7 in.)
Depth	22 cm (8.7 in.)
Height	13 cm (5.1 in.)

Maximum Weight (with ARCs)

10 kg (22 lb)

Maximum Heat Output

17.6 W (60 BTU/hr)

Service Processor Specifications

The service processor is shipped with a stand-alone RSF modem and a Service Processor Access Unit. The service processor is composed of one rack-mountable system unit, a separate optical disk drive unit, a color display, and a keyboard with a built-in “trackpoint” pointing device.

From the F12380x microcode level, the service processor is to be shipped with an integrated CD-ROM drive, instead of a separate optical disk drive.
Previously-installed service processors are to be upgraded with a CD-ROM drive (FC #5051) if new functions that require the F12380x EC level, are ordered.

For service purposes, it is recommended to install the Controller Expansion (Feature 5023) that houses the service processor at a maximum distance of 10 m (33 ft) from the 3746. Refer to page 44-70 for cable lengths.

If necessary, the display, keyboard/trackpoint can be installed outside the controller expansion using the 4.6 m (15 ft) cable extenders provided with the service processor, leaving the system unit installed in the rack. If they are installed outside the rack, plan enough table space for display and keyboard use.

The service processor system unit, optical disk drive unit or CD-ROM drive, color display, and network node processor are powered via the AC outlet distribution box of the controller expansion.

Use 200-240 V Setting

The controller expansion AC outlet distribution box operates at 220 V AC. All components plugged into the AC outlet distribution box must be set for 220 V AC operation. If they have a manual switch setting, set it to 220 V AC.

Notes:

1. To protect 3746 operations against disruptions due to an electrical outage, the controller expansion, which houses and powers the network node processor, the multiaccess enclosure (Feature 3000), and the service processor should be powered with the same power source as the 3746 controller frame.
2. The 3746 Nways Multiprotocol Controller Models 900 and 950 may use an already installed desktop or floor-standing (tower) service processor (these are no longer available from IBM). However, the desktop model must be upgraded. Refer to Table 34-8 on page 34-27.

System Unit Characteristics

Rack-Mountable (Type 3172) Model (Feature 5021)

Size:

- Depth: 444 mm (17.4 in.)
- Height: 254 mm (10.00 in.)
- Width: 444 mm (17.4 in.)

Weight: 19 kg (47 lb)

Heat Output (maximum):

850 BTUs per hour (250 watts)

Electrical Input:

- Input voltage: single phase, 180-240 V ac, 50 or 60 Hz
- Input current: 2.5 A maximum
- Power cord; see “Power Distribution” on page 44-48 and “Service Processor Power Cords” on page 44-49

Rack-Mountable (Type 7585) Model (Feature 5052)

Size:

- Depth: 444 mm (17.4 in.)
- Height: 171 mm (6.7 in.)
- Width: 445 mm (17.5 in.)

Weight: 15 kg (33.3 lb)

Heat Output (maximum):

1417 BTUs per hour (415 watts)

Electrical Input:

- Input voltage: single phase, 180-240 V AC, 50 or 60 Hz
- Input current:
  - 6.0 A maximum at 100 to 125V
  - 3.0 A maximum at 200 to 245V
- Power cord; see “Power Distribution” on page 44-48 and “Service Processor Power Cords” on page 44-49

Floor Standing (Tower) Model

This model is no longer available from IBM.

Size:

- Depth: 501 mm (19.75 in.)
- Height: 508 mm (20 in.)
- Width: 203 mm (8 in.)

Weight: 22.7 kg (50 lb)

Heat Output (maximum): 1046 BTUs per hour (307 watts)

Electrical Input:

- Input voltage: single phase
- Power input: 0.6 kVA maximum

Desktop Model

This model is no longer available from IBM.

Size:

- Width: 440 mm (17.3 in.)
- Depth: 394 mm (15.5 in.)
- Height: 168 mm (6.6 in.)

Weight: 17.3 kg (38 lb)

Heat Output (maximum): 877 BTUs per hour (257 watts)

Electrical Input:

- Input voltage: single phase
- Input current: 2.2 A maximum

CD-ROM Drive Unit

Size:

- Height: 55 mm (2.16 in.)
- Depth: 315 mm (12.4 in.)
- Width: 160 mm (6.29 in.)

Electrical Input:

- Input voltage: single phase, 90 to 240 V AC, 50 or 60 Hz
- Input current: 1.8 A
- Power cord; see “Power Distribution” on page 44-48 and “Service Processor Power Cords” on page 44-49

Optical Disk Drive Unit

Size:

- Height: 117 mm (4.6 in.) With base: 122 mm (4.8 in.)
- Depth: 228 mm (9.0 in.)
- Width: 46 mm (1.8 in.) With base: 77 mm (3.0 in.)

Electrical Input:

- Input voltage: single phase, 90 to 240 V AC, 50 or 60 Hz
- Input current: 0.7 A maximum.
- Power cord; see “Power Distribution” on page 44-48 and “Service Processor Power Cords” on page 44-49

Color Display Characteristics

The color display is an IBM 6546-01N Model G52 color display.

Size:

- Width: 368 mm (14.5 in.)
- Depth: 422 mm (16.6 in.)
- Height: 376 mm (14.8 in.) including tile/swivel stand

Weight: 13.6 kg (30 lb)

Heat Output: 375 BTUs per hour (110 watts)

Electrical Input:

- Input Voltage: single phase, 100 to 240 V AC, 50 or 60 Hz
- Input Current: 110 W maximum
- Power cord; see “Power Distribution” on page 44-48 and “Service Processor Power Cords” on page 44-49

Note: The 3746 Nways Multiprotocol Controller Model 900 and 950 may use a service processor with an IBM 6553 Model 503, or with an IBM 8515 Color Display (these types of displays are no longer available from IBM).

RSF Modem

The RSF modem shipped with the service processor is a Hayes modem unless it is not homologated for the country. Table 44-11 on page 44-71 lists the countries which support this modem. If the Hayes modem is not homologated, the IBM 7857 Modem or an IBM 7855 Model 10 is shipped, depending on the country. They are all desktop units, and installed by IBM. A cross listing of countries and modems that are PTT-homologated can be found on page 44-71.

Note: In the U.S.A. and Canada, the 3745 and 3746-900/950 may use a service processor with an integrated modem (this type of modem is no longer available from IBM).

Hayes Modem Characteristics

Size:

- Width: 127 mm (5.0 in.)
- Depth: 178 mm (7.0 in.)
- Height: 32 mm (1.25 in.)

Weight: 0.37 kg (0.8 lb)

Electrical Input:

- Input Voltage: single phase, 99 to 253 V AC, 50 to 60 Hz
  - 110V +/-10% 60Hz (AC)
  - 230V +/-10% 50Hz (AC)
- Input Current: 0.8 A maximum

Note: The Hayes modem is supplied with the appropriate cables (power, line and data) according to the country requirements. Refer to Table 44-11 on page 44-71 for P/N to country information.

IBM 7858 Modem Characteristics

Size:

- Width: 210 mm (8.27 in.)
- Depth: 150 mm (5.91 in.)
- Height: 44 mm (1.73 in.)

Weight: 1.250 kg (2.75 lb)

Electrical Input:

- Input voltage: single phase, 100 to 240 V AC (country dependent), 50 and 60 Hz (country dependent)
- Power input: 5 W
- Power cord (USA, Canada): non-locking plug (110 V)
- Power cord (elsewhere): country dependent plug (220 V)

IBM 7857 Modem Characteristics

Size:

- Width: 220 mm (8.7 in.)
- Depth: 273 mm (10.7 in.)
- Height: 85 mm (3.3 in.)

Weight: 2.6 kg (5.7 lb)

Electrical Input:

- Input voltage: single phase, 110 or 220 V AC (country dependent), 50 or 60 Hz (country dependent)
- Power input: 12.0 W
- Power cord (USA, Canada): non-locking plug (110 V)
- Power cord (elsewhere): country dependent plug (220 V)

IBM 7855 Model 10 Modem Characteristics

Size:

- Width: 165 mm (6.5 in.)
- Depth: 280 mm (11 in.)
- Height: 64 mm (2.5 in.)

Weight: 2.5 kg (5.5 lb)

Electrical Input:

- Input Voltage: single phase, 90 to 259 V AC, 50 to 60 Hz
- Input Current: 0.16 A maximum
- Power cord (Japan): non-locking plug (100 V)
- Power cord (elsewhere): country dependent plug (220 V)

Service Processor Access Unit (SPAU)

The SPAU is equivalent to the IBM 8228 Token-Ring Multi-Station Access Unit (MAU). It is installed in the controller expansion by IBM; refer to “Controller Expansion (Feature 5023)” on page 44-46.

Network Node Processor Specifications

The network node processor must be installed in the controller expansion and powered via the AC outlet distribution box of the controller expansion (refer to “Controller Expansion (Feature 5023)” on page 44-46).

Rack-Mountable NNP (Type 7585-P02) Model (Feature 5122).

Size:

- Depth: 444 mm (17.4 in.)
- Height: 171 mm (6.7 in.)
- Width: 445 mm (17.5 in.)

Weight: 15 kg (33.3 lb)

Heat Output (maximum):

1417 BTUs per hour (415 watts)

of the controller rack).

Rack-Mountable NNP (Type 3172) Model (Feature 5022)

Size:

- Depth: 444 mm (17.4 in.)
- Height: 254 mm (10.00 in.)
- Width: 444 mm (17.4 in.).

Weight: 19 kg (47 lb)

Heat Output (maximum):

850 BTUs per hour (250 watts)

Electrical Input:

- Input voltage: single phase, 180 to 240 V AC, 50 or 60 Hz
- Input current: 2.5 A maximum
- Power cord length: 2.5 m (8.2 ft)
- Power plug: IEC (compatible with the AC outlet distribution box of the controller rack).

Notes:

1. To protect the 3746 operations against disruptions due to an electrical outage, the controller expansion housing the network node processor should be powered with the same power source as the 3746 controller frame.
2. The Network Node Processor A and Network Node Processor B should be plugged into different blocks of the AC outlet distribution box so that if the fuse should blow on one block, one Network Node Processor will still be powered from the other block and thus continue operation. Referring to Figure 44-9 on page 44-47, Network Node Processor-A is plugged into socket J2, and Network Node Processor-B is plugged into J5.

   Alternately, if the configuration includes two AC outlet distribution boxes, either both in the same controller expansion or each in two different controller expansion, the NNP-A and NNP-B should be plugged in different AC outlet distribution boxes.

Ethernet Port Specifications (Features 5631 and 5632).

An Ethernet network can be connected to a 3746-9x0 via an *Ethernet Port* (Feature 5631). This feature consists of:

- TIC3
- An Ethernet Bridge
- An Ethernet Bridge Connection Box (EBCB)
- Two connecting cables:
  - From the TIC3 to the connection box
  - From the connection box to the Ethernet Bridge

The Ethernet-to-Token Ring Bridge (Feature 5632) includes the same components as the Ethernet Port (Feature 5631), except the TIC3. Both the bridge and its connection box are installed in the controller expansion, up to 6 meters (20 feet) from the 3746 Nways Multiprotocol Controller, and powered via the AC outlet distribution box.

The components are installed as shown in Table 44-7.

Table 44-7. Where Components of the Ethernet Bridge Are Installed

Component	Where Installed
TIC3	3746 Nways Multiprotocol Controller
Ethernet bridge connection box	controller expansion
Ethernet bridge	controller expansion

The Ethernet bridge connection box is equivalent to the IBM 8228 Token-Ring Multi-Station Access Unit (MAU). It is installed in the controller expansion by IBM, refer to “Controller Expansion (Feature 5023)” on page 44-46.

Ethernet Bridge Specifications

The Ethernet bridge is equivalent to an IBM 8229.

Size:

- Depth: 355.6 mm (14.00 in.)
- Height: 133.4 mm (5.25 in.)
- Width: 444.5 mm (17.50 in.)

Each bridge occupies 4 Us of height in the controller expansion.

Weight: 11.4 kg (25.1 lb)

Heat Output (maximum)

850 BTUs per hour (250 watts)

Electrical Input:

- Input voltage: single phase, 180 to 240 V ac, 50 or 60 Hz
- Input current: 1.5 A (2.5 A maximum)
- Power cord length: 2.5 m (8.2 ft)
- Power plug: IEC (compatible with the AC outlet distribution box of the controller expansion)

Note: To protect operations against disruptions due to an electrical outage, the controller expansion housing the Ethernet bridge should be powered via the same power source as the 3746 controller frame.

Cables:
With each Ethernet feature (5631 or 5632), IBM supplies the cables (see Figure 44-7 and Table 44-8) between:

- TIC3 and the Ethernet bridge connection box: 9 m (30 ft.)
- The Ethernet bridge connection box and the Ethernet bridge: 2.4 m (8 ft.).

The customer supplies the cable connecting the Ethernet bridge to the Ethernet network.

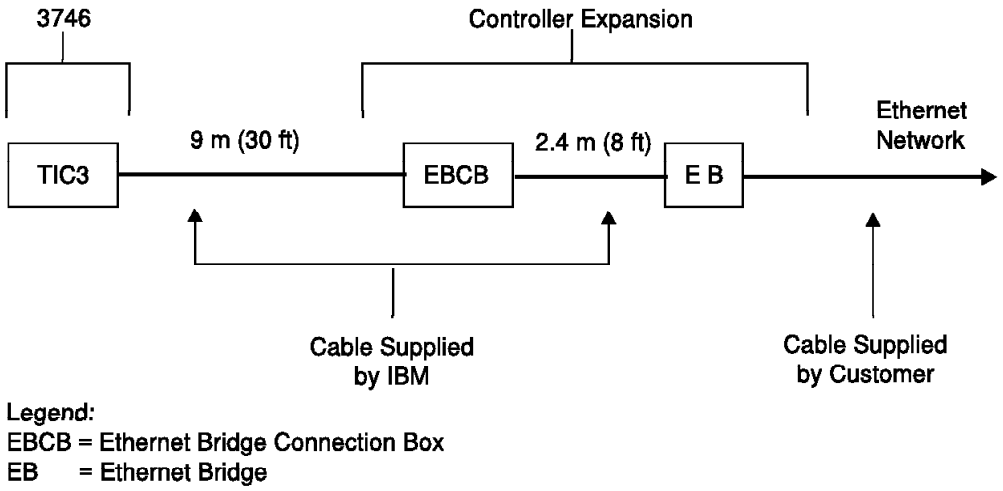


Figure 44-7. Components of the Ethernet Port

Note: Due to the position of the TIC3 in the 3746-9x0 and of the connection box (EBCB) in the controller expansion, the maximum distance between the 3746 and the controller expansion may not exceed 6 m (20 ft.) when using the standard 9 m (30 ft.) TIC3 cable supplied with the Ethernet port feature.

Table 44-8. Part Numbers for Ethernet Bridge Cables

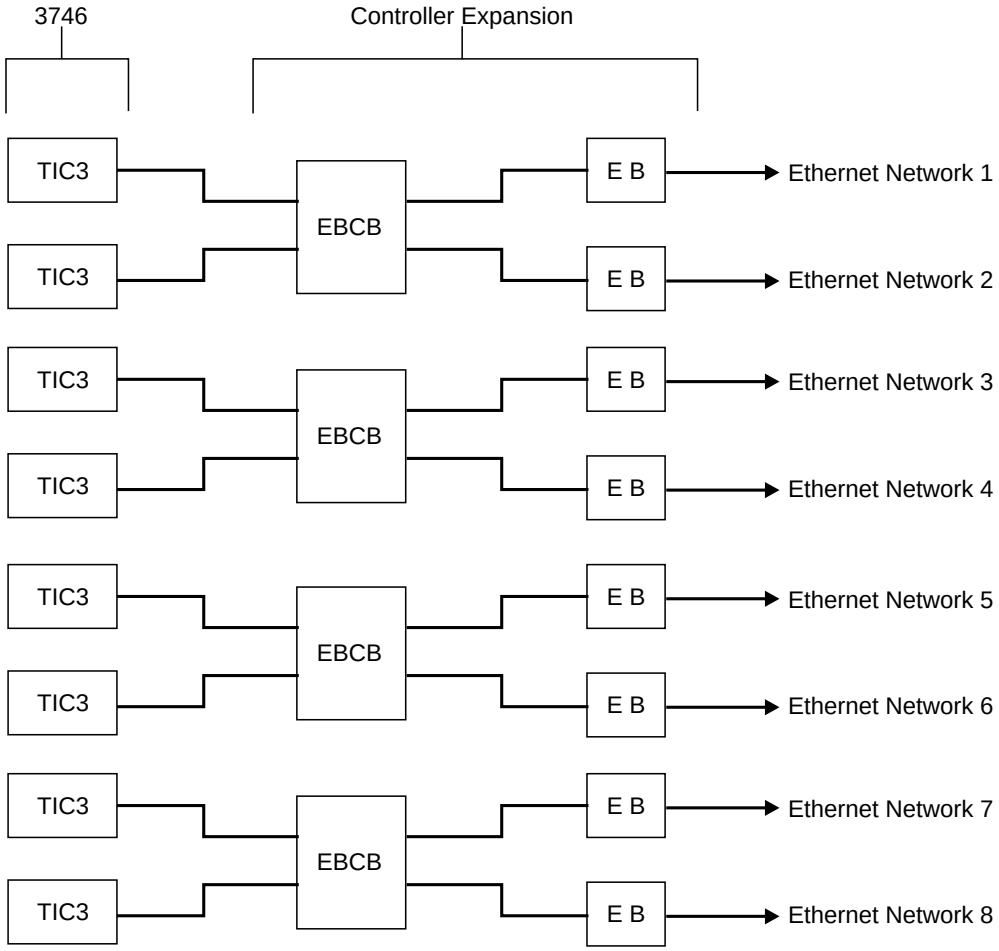
Cable	Country	Part number
TIC3 to Ethernet bridge connection box	All, Except USA USA	76F9441 76F9440
Ethernet bridge connection box to Ethernet bridge	All	6339098

If the distance between the 3746 and the controller expansion requires longer TIC3 cables to connect the Ethernet features, or if you need plenum cables (in the USA and Canada) instead of the standard cables, you need to order the cables described in Table 44-9 on page 44-45.

Table 44-9. Part Numbers for TIC3 Cables Greater than 9 m (30 feet)		
Country	**Part number**	**Maximum Cable Length**
USA and Canada	72F1242	Up to 44 m (144 ft. plenum cable)
All others	72F1236	Up to 44 m (144 ft.)

Maximum Ethernet Configuration

A 3746 Nways Multiprotocol Controller supports a maximum of eight Ethernet ports, each using a dedicated TIC3. Each Ethernet bridge connection box, however, can connect two bridges and their respective TIC3s. Thus, four connection boxes must be used to connect the eight bridges through to the eight TIC3s in the maximum configuration. This arrangement is shown in Figure 44-8.



Legend:
EBCB = Ethernet Bridge Connection Box
EB = Ethernet Bridge

Figure 44-8. Maximum Configuration of Ethernet Bridges Allowed for One 3746 Nways Multiprotocol Controller

Controller Expansion (Feature 5023)

The Controller Expansion (Feature 5023) is required for the installation and the powering of the network node processor and multiaccess enclosure and should also be used to house and/or power the service processor components. As an option, it can also be used for the installation of line connection boxes (LCBs) and/or Ethernet bridges. It is equipped with one or two AC outlet distribution boxes The second AC outlet distribution box (optional) may be configured to avoid single point of failure. You can have up to two controller expansions, both with two AC outlet distribution boxes.

Refer to “Power Cord Characteristics” on page 44-24 for information about the power cord and plug type of the controller expansion.

AC Outlet Distribution Boxes

The AC distribution box operates between 200 and 240 V AC (depending on your country and local conditions, the voltage may be outside of this range) and is installed in the lower-right corner on the rear of the controller expansion to power the network node processor(s), service processor, display, optical disk drive, multiaccess enclosure, and Ethernet bridge(s). It has a total of eight outlets with IEC connectors; the extra outlets allow for possible future upgrades of your controller. Depending on your 3746-9x0 configuration you may require extra outlets. Also to reduce the possibility of single power source loss, an optional AC outlet distribution box FC#5002 is available. See “Dual AC Outlet Distribution Box Option (FC#5002)” on page 44-48 for details of plugging.

Note: The RSF modem requires a customer-provided power receptacle.

The eight outlets are configured in two blocks of four; each block is protected by a fuse. See Table 44-10 and Figure 44-9 on page 44-47.

Table 44-10. AC Power Outlets and Fuses

Fuse	**Block**
F1 (6 Amps)	Lower block J1 to J4
F2 (6 Amps)	Upper block J5 to J8

Single AC Outlet Distribution Box Option

In a controller expansion with one AC distribution box installed, units should be plugged into the positions shown (sockets are numbered from the bottom (J1) to the top (J8)):

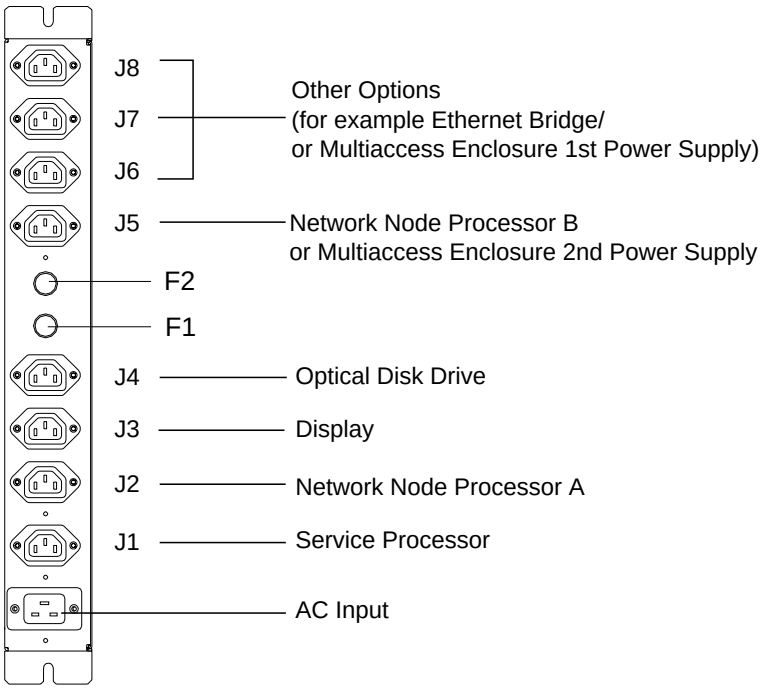


Figure 44-9. Power Plugging on a Single AC Outlet Distribution Box

Notes:

1. These unit plugging guidelines are calculated not to exceed the F1 or F2 current rating. Therefore units should not be shuffled from the fuse group that is recommended.
2. If the multiaccess enclosure second power supply option is installed, it is recommended that the second AC outlet distibution box is also added.

Dual AC Outlet Distribution Box Option (FC#5002)

To reduce the risk of outage due to power failure on a controller expansion with two AC outlet distribution boxes installed, units should be plugged into the positions shown:

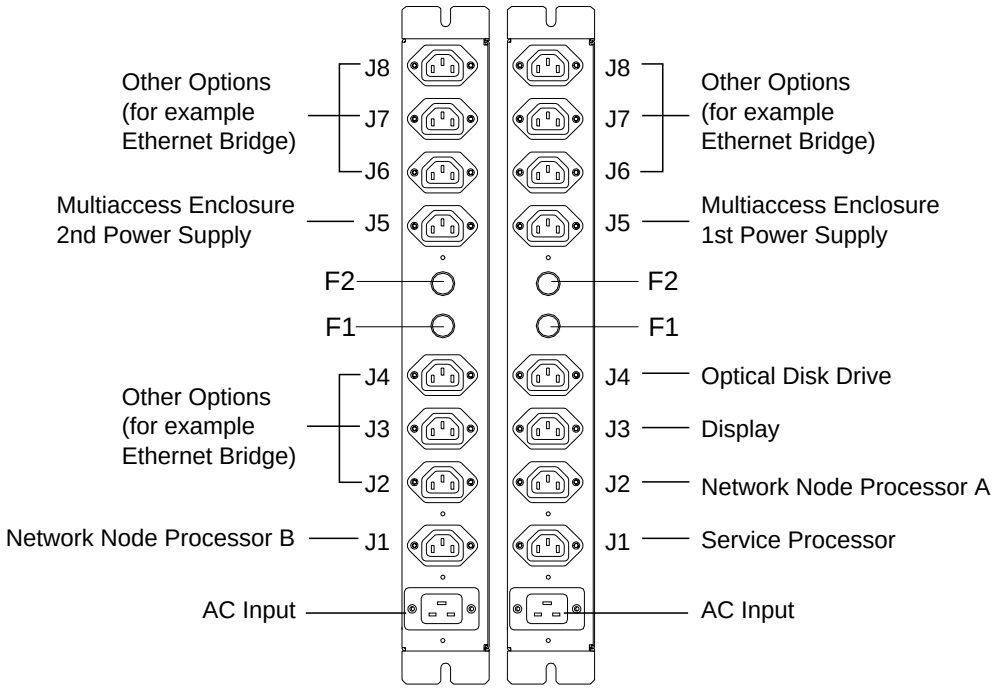


Figure 44-10. Power Plugging on Dual AC Outlet Distribution Boxes

Power Distribution

Three 2.5 m (8.2 ft) power cords with IEC plugs at both ends (part number 58G5783, see Figure 44-11) are provided with the controller expansion to power the service processor components:

- System unit
- Color display
- Optical disk drive unit

For a previously installed service processor, the three IEC power cords can be used to re-install the service processor components inside the controller expansion.

IEC-320-C-14 IEC-320-C-13/15

Figure 44-11. IEC-IEC Power Cord

The network node processor(s), Ethernet Port and multiaccess enclosure features installed in the controller expansion are automatically supplied with IEC-IEC 2.5 m (8.2 ft.) power cords.

Service Processor Power Cords

The type of power cords provided for the service processor depends on how the service processor is ordered:

Service processor and controller expansion ordered together for the same machine (either a 3745 Model A or a 3746-950)

No power cord is shipped with the service processor. The three IEC power cords that are shipped with the AC outlet distribution box are used.

Service processor ordered for an existing machine (either a 3745 Model A or a 3746-950) that has a controller expansion in its configuration

Three IEC power cords are shipped with the service processor for use with the AC outlet distribution box of the installed controller expansion.

For all the other service processor orders

A country-dependent power cord is shipped for each of the three service processor components:

- System unit:
  - U.S.A., Canada, and Japan: 200/220 V AC, non-locking plug (NEMA 6-15P)
  - Other countries: 220 V AC, country standard plug.
- Optical disk drive unit:
  - U.S.A., Canada, and Japan: 100/110 V AC, non-locking plug (NEMA 5-15P)
  - Other countries: 220 V AC, country standard plug.
- Color display unit:
  - U.S.A., Canada, and Japan: 100/110 V AC, non-locking plug (NEMA 5-15P)
  - Other countries: 220 V AC, country standard plug.

RSF Modem

The RSF modem can be installed in the controller expansion, but a separate 110 V or 220 V AC power receptacle (not on the AC outletdistribution box) must be used. Refer to “RSF Modem” on page 44-40

Installation of the Service Processor in the Controller Expansion (Feature 5023)

Any stand-alone service processor (desktop or tower model) can be reinstalled in the controller expansion. This normally occurs when upgrading a 3746-900 to be a 3746 Nways Multiprotocol Controller Model 900 or 950. The existing power cords are removed and replaced by the IEC power cords shipped with the controller expansion.

If the controller expansion is not equipped with the hardware required for the reinstallation of the service processor components (system unit, display, keyboard and so on), the Service Processor Rack Mount kit (Feature 5029) may be required.

However, the keyboard and mouse of the desktop or tower service processor cannot be housed in the controller expansion as they will not fit into the service drawer of the controller expansion. The controller expansion service drawer can only hold a keyboard with the following dimensions:

- 365 mm (14.4 in.) wide
- 45 mm (1.8 in.) height
- 200 mm (7.9 in.) deep

An IBM keyboard (with the trackpoint device), part number 61G2900, or equivalent fits into the service drawer.

Installation of Service Processor Components Outside the Controller Expansion (Feature 5023)

The color display and keyboard/trackpoint for the rack-mountable service processor can be installed outside the controller expansion while leaving the service processor system unit and optical disk installed in the controller expansion. In this case, longer cables are required (which are provided with the rack-mountable service processor):

- The keyboard/trackpoint requires the longer cable (4 m/13.1 ft), part number 58G1271.
- The display requires the 4 m (13.1 ft.) cable extender, part number 59G1270.

The length of the IEC power cord (2.5 m/8.2 ft) allows the color display to be powered via the power distribution strip of the rack.

Component Locations and Rack-mount Mechanical Parts

The figures on pages 44-51 to 44-56 show the recommended locations for the service processor components, network node processor(s), multiaccess enclosure and LCBs.

Each feature, service processor (FC#5021 or FC#5052), network node processor (FC#5022), multiaccess enclosure (FC#3000) and Ethernet (FC#5631 or FC#5632) is shipped with the hardware required for its installation in the controller expansion.

The service processor rack-mount kit (FC#5029) provides all components for re-installation of an existing service processor in the controller expansion.

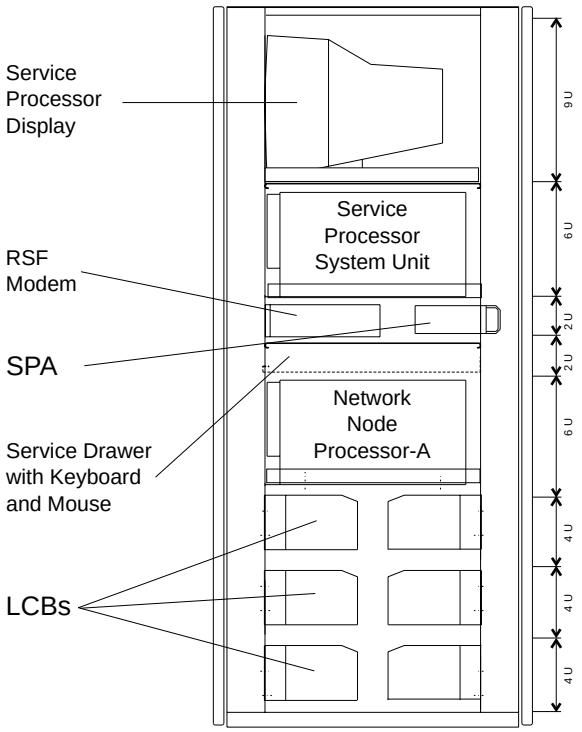


Figure 44-12. Right Side View of controller expansion with Rack-Mountable Service Processor (FC#5021).

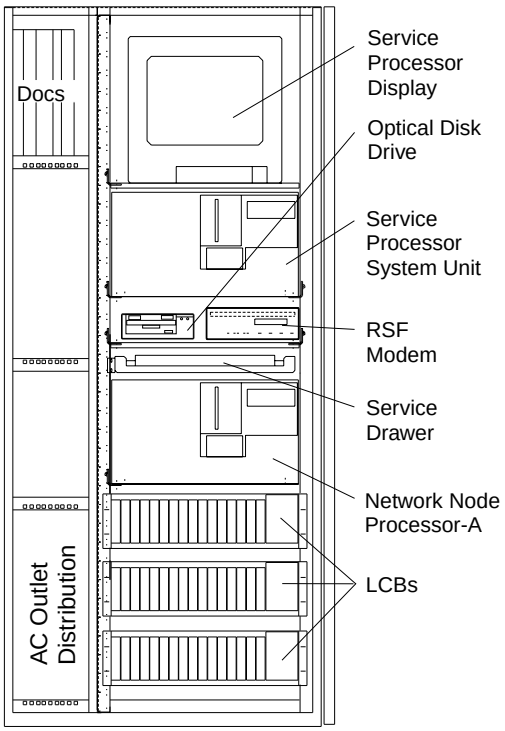


Figure 44-13. Front View of controller expansion with Rack-Mountable Service Processor (FC#5021).

Legend:

LCBs	Line connection boxes
RSF	Remote Support Facility
SPAU	Service processor access unit
Docs	Free area for customer documentation
1U	44.5 mm (1.75 in.)

Note: When the service processor display is installed in the controller expansion, do not attach the tilt and swivel stand to the display.

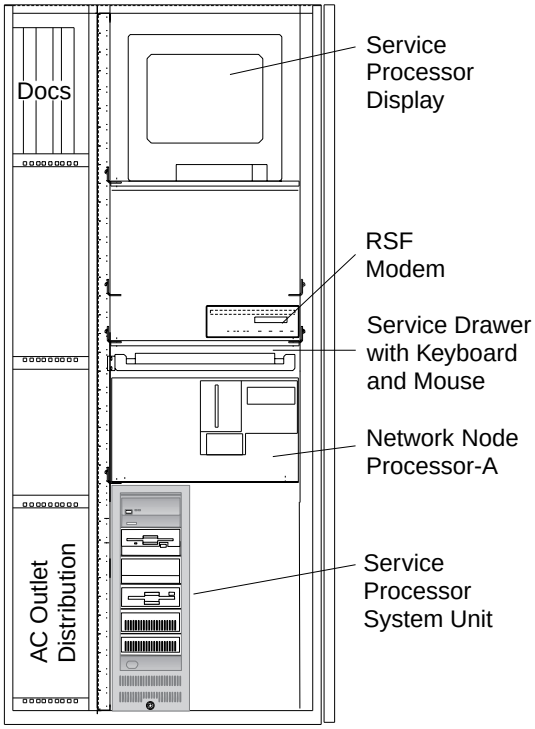


Figure 44-14. Front View of controller expansion with Tower Service Processor. This model of service processor is no longer available from IBM.

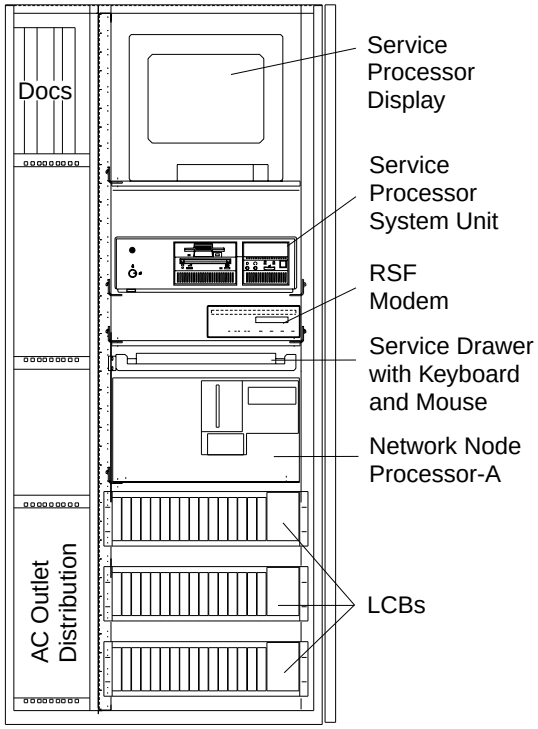


Figure 44-15. Front View of controller expansion with Desktop Service Processor. This model of service processor is no longer available from IBM.

Configuration with Two Network Node Processors

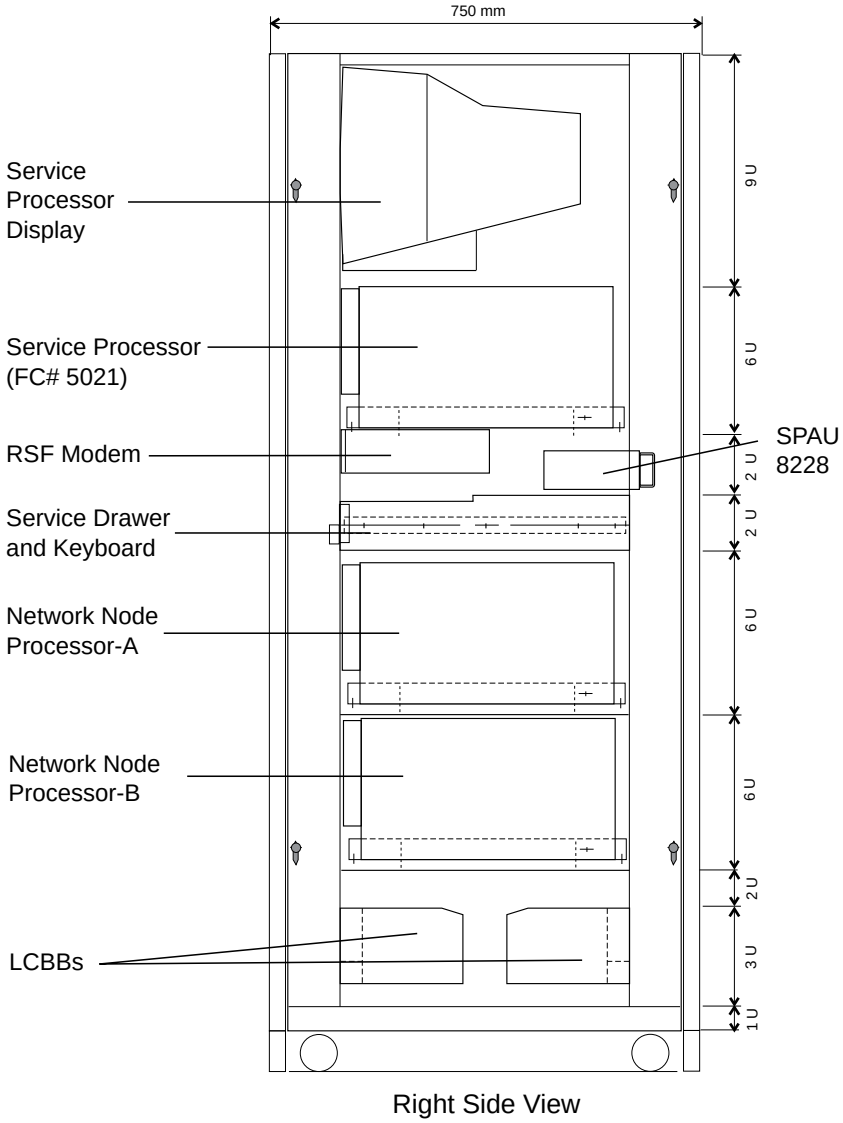


Figure 44-16. Side View of controller expansion with Two Network Node Processors

Addition of a Second Network Node Processor

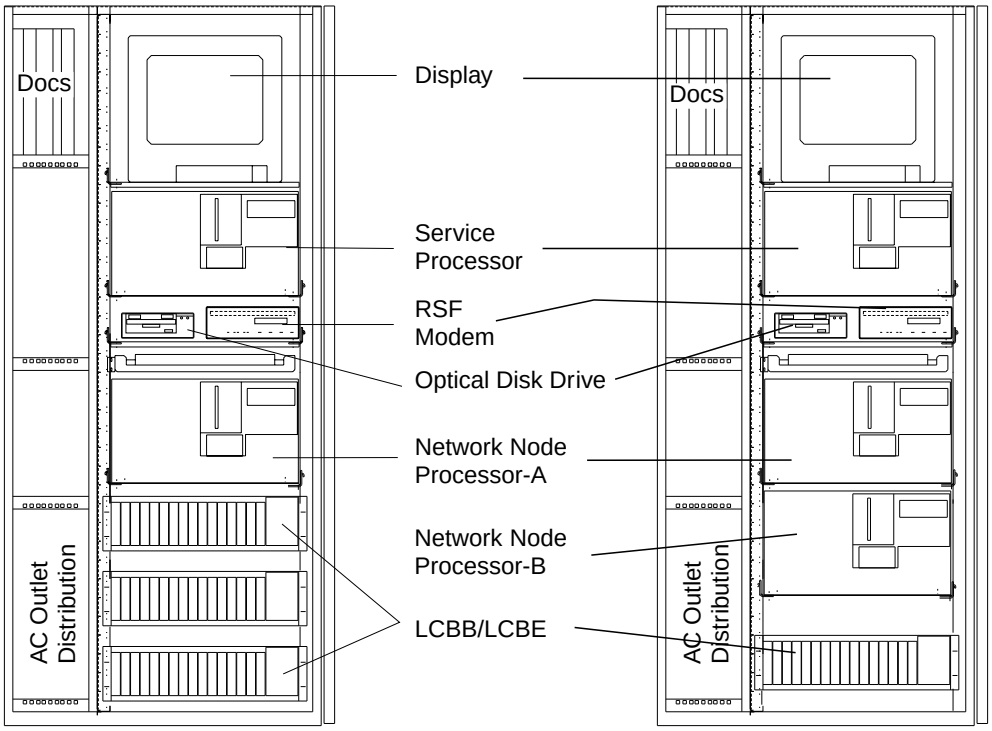


Figure 44-17. Front View of controller expansion with Rack Mounted Service Processor

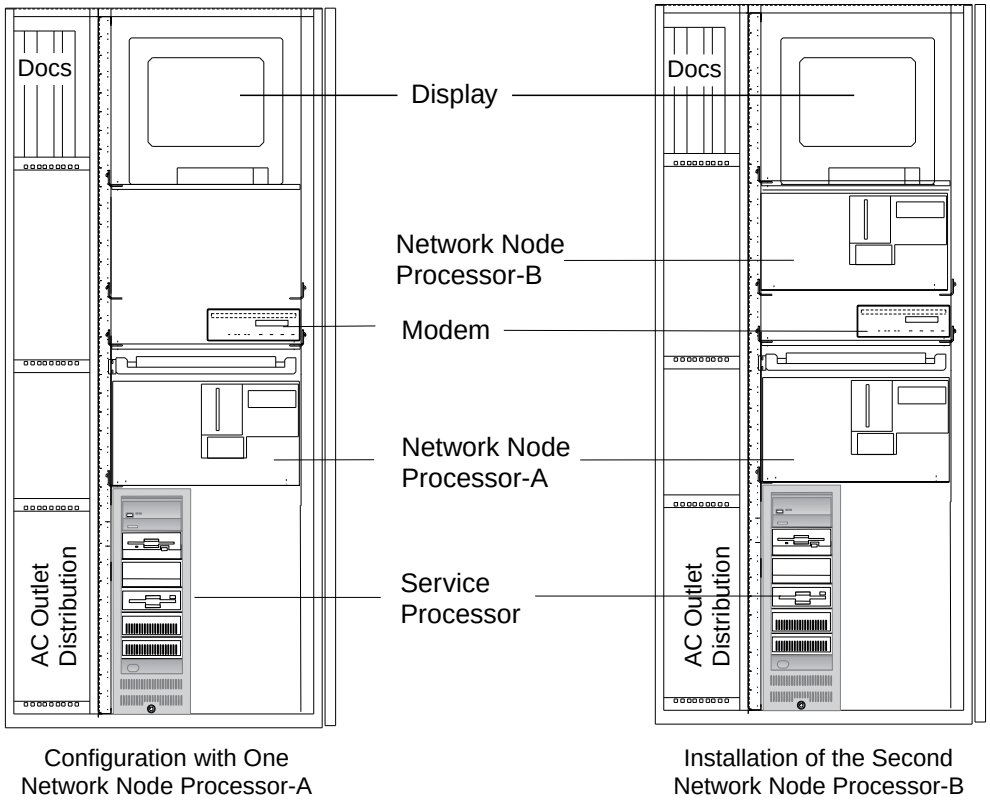
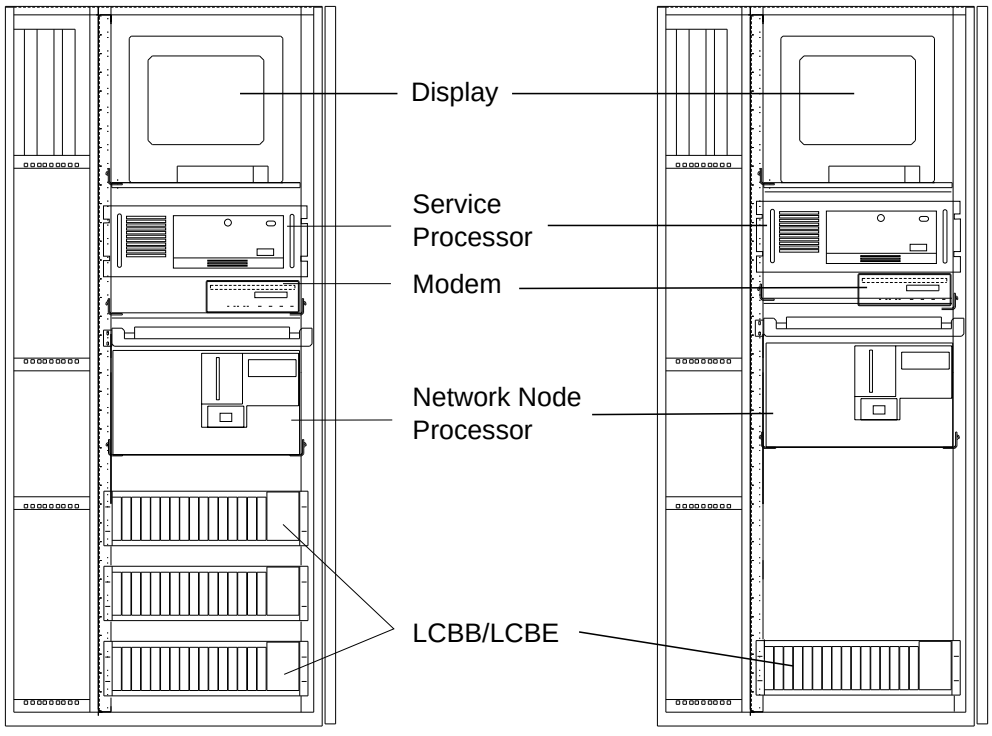


Figure 44-18. Front View of controller expansion with Tower Service Processor



Type 2 (FC#5052)

Figure 44-19. Front View of controller expansion the Rack Mounted Service Processor

Addition of a Multiaccess Enclosure

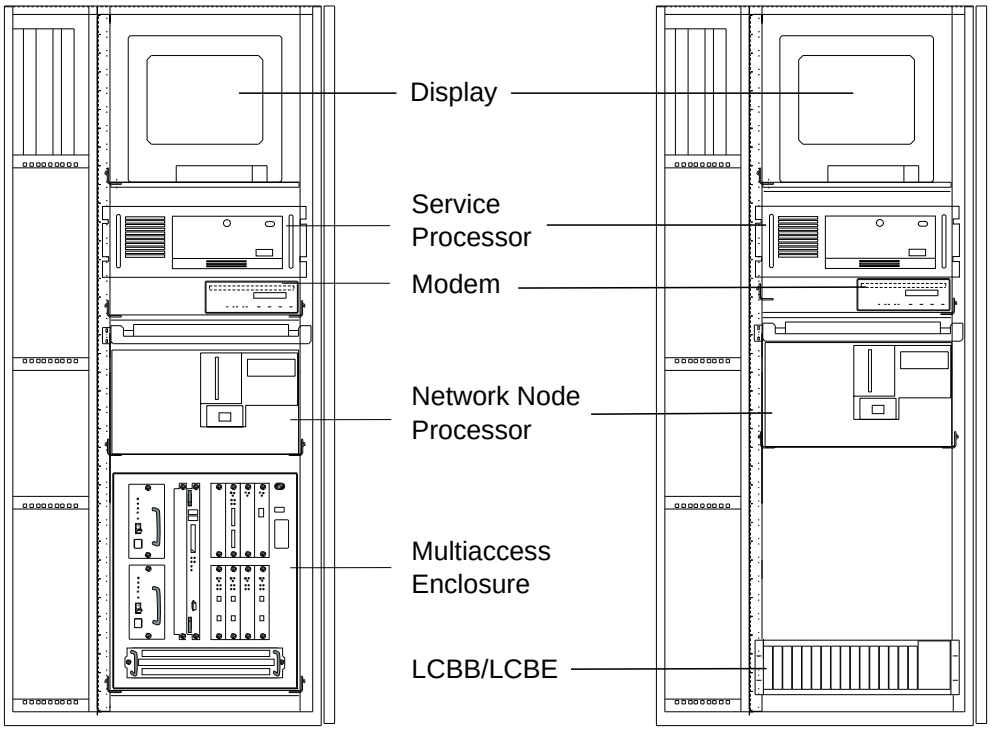


Figure 44-20. Front View of controller expansion with Multiaccess Enclosure and Rack Mountable Service Processor Type 7585 (FC#5052)

Note: The Multiaccess Enclosure may need to be installed in the second controller expansion, depending on the number of NNPs and type of service processor (FC#5021 or FC#5052).

Configuration with Ethernet Features

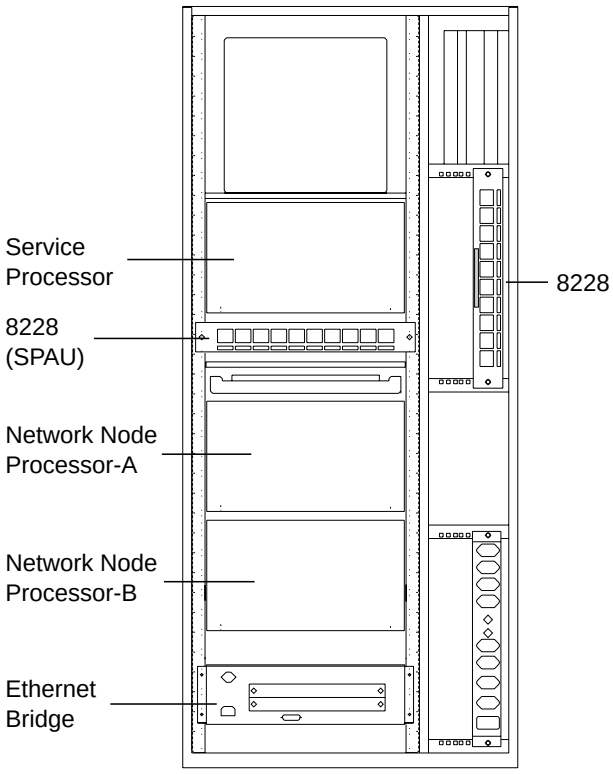


Figure 44-21. Installing One Ethernet Bridge in the Controller Expansion-A (Rear View)

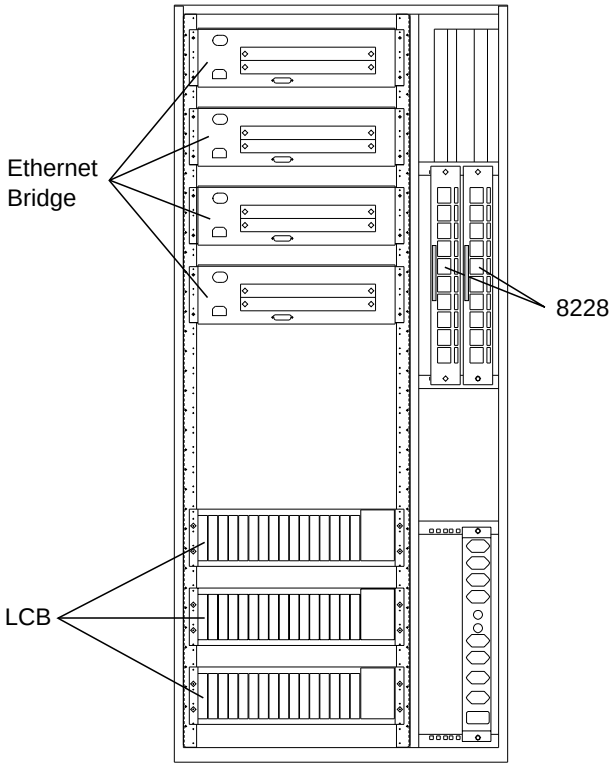


Figure 44-22. Installing Four Ethernet Bridges in the Controller Expansion-B (Rear View)

Controller Expansion Inventory Charts

Use these drawing to set up the units on the front side of the controller expansion. For the units that can be installed on the rear, refer to Figure 44-24 on page 44-59.

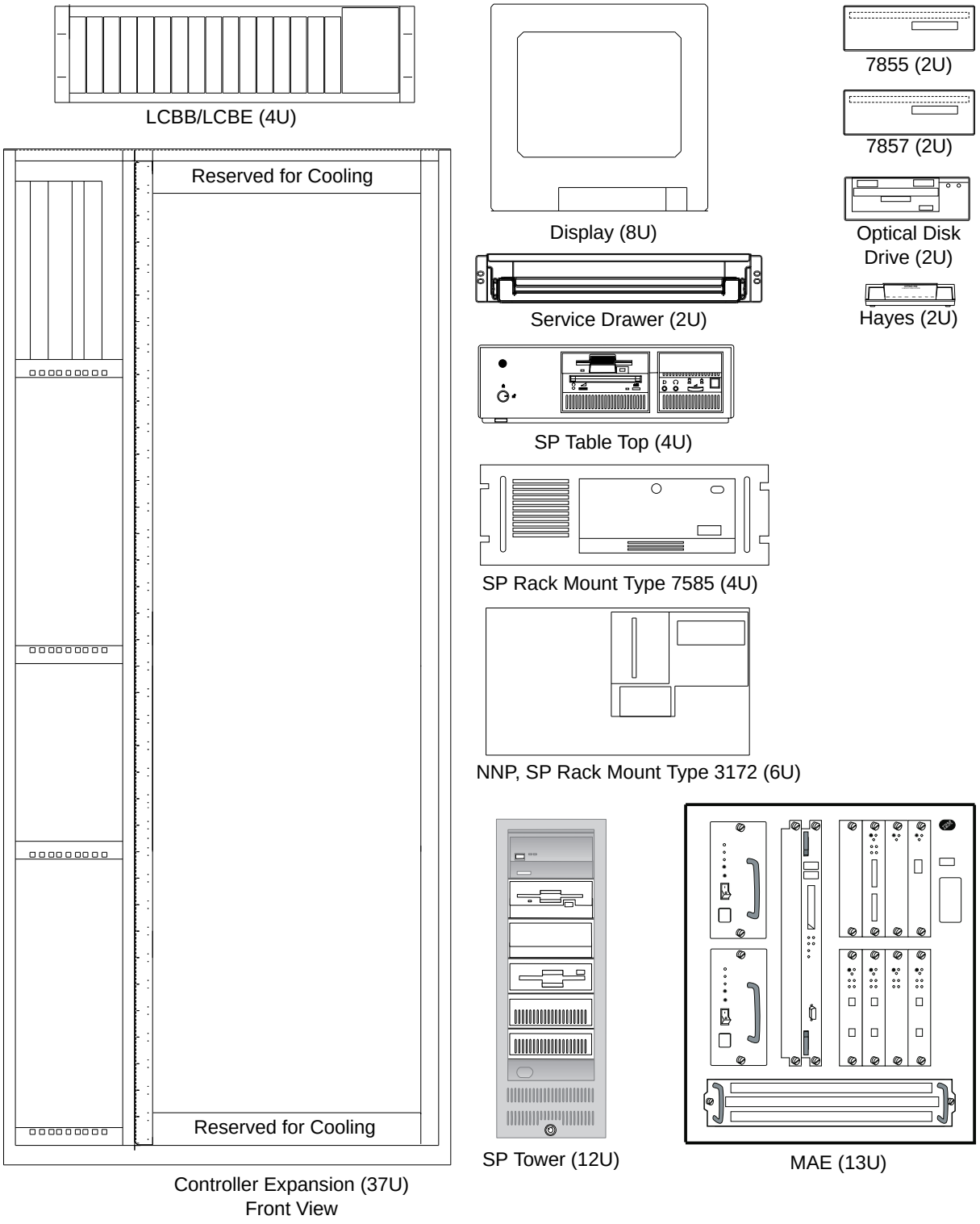


Figure 44-23. Controller Expansion Inventory Chart (Front View)

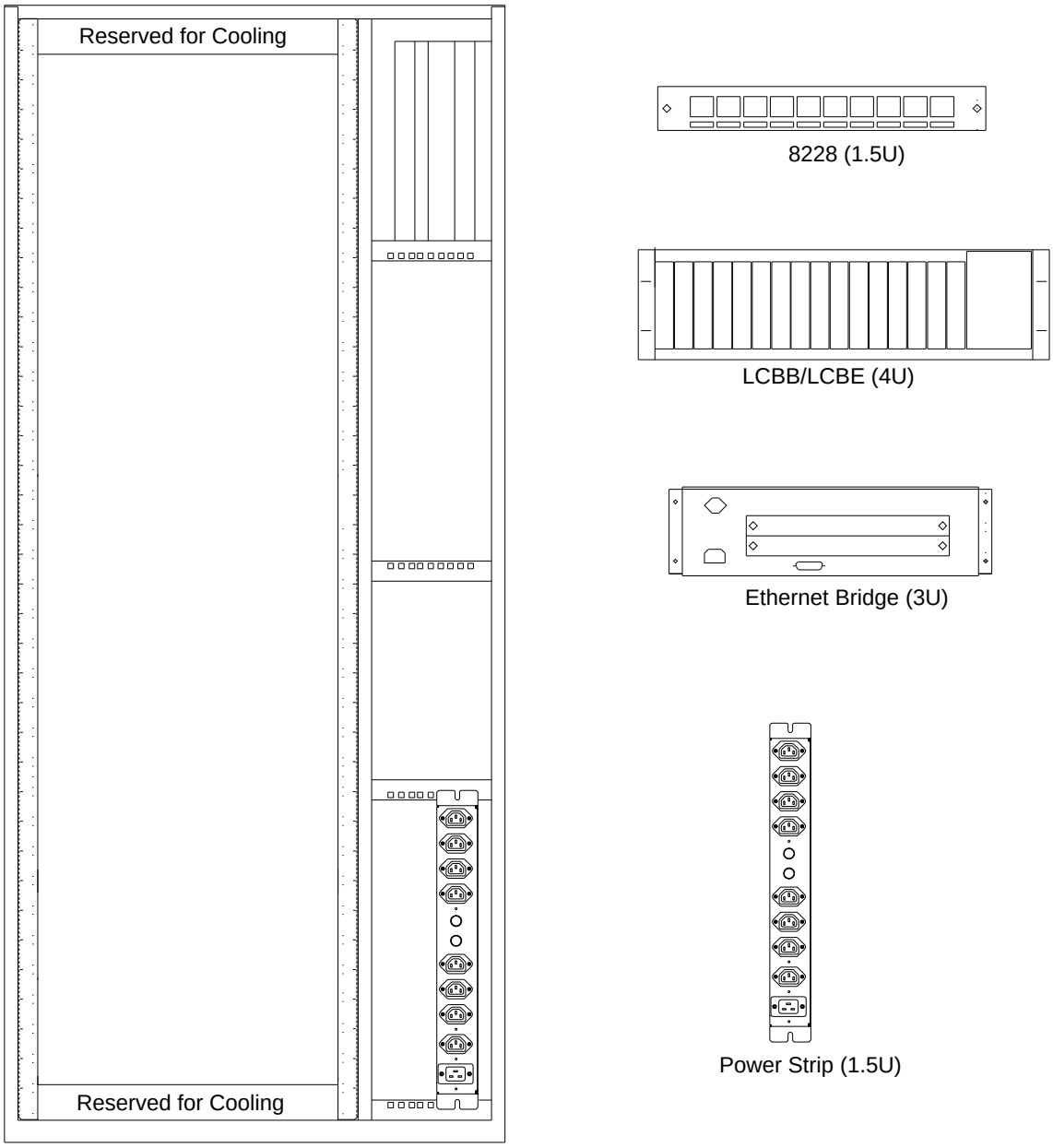


Figure 44-24. Controller Expansion Inventory Chart (Rear View)

Notes:

1. The units dimensions are scaled to the size of the controller expansion diagram. The values represent the size used to set up the units in the controller expansion; it is not the size of the units themselves.
2. The attachment holes along each side of the controller expansion are divided into units of measure called EIA units. Each EIA unit (U) equals 44.5 millimeters (1.75 inches).
3. The controller expansion is 37 U high but only 35 are usable. One U must be reserved at the top and bottom for proper cooling.

Explanation of Cable Characteristics

The expression **<x>** in the following sections refers to the column marked **<x>** in the cable tables that start on page 44-63.

<a> Cables to be Ordered and Installed

Cables that may have to be ordered and installed with the 3745/3746 features are:

- Channel attachment and emergency power-off cables (refer to page 44-63and 44-65).
- ESCON jumper and emergency power-off (refer to page 44-67).
- Service processor attachment (refer to page 44-70).
- Token-ring and high-speed line attachment (refer to page 44-75).
- Low-/medium-speed Line Attachment (refer to page 44-82).
- Active Remote Connectors (ARCs) (refer to page 44-84).

<b> Feature Code

The order code of each attachment feature is given if applicable.

<c> LIC Type

The type of LIC corresponding to the line is given if applicable.

Cable Lengths

Three types of cable length are available:

<d> <e> Fixed-Length Cables: Cable lengths are given in column <e>.

In European, Middle Eastern, and African countries, these cables may be automatically delivered with the 3745/3746 or MES, depending on the feature code in column <b> and the country. For the 3746-9x0, this applies to the ESCON jumper cables, LIC12 cables, and token-ring cables. This requires the specify code 2999 in the 3745/3746 configuration.

In other countries, order fixed-length cables (for example ESCON jumper, LIC12, or token-ring) by their cable group number in column <d>.

The part numbers of fixed-length cables are not included in these tables. They are the same as those given in column <f> for short cables.

<f> <g> Custom-Length Short Cables: Order these cables by their part number in European, Middle Eastern, and African countries or by their cable group number (CG) in other countries. Specify the required length up to the maximum length given in column <g>.

<h> <i> Custom-Length Long Cables: Order these cables by their part number in column <h> and indicate the required length up to the maximum length given in column <i>.

<j> <k> Country

Features may or may not be available in a particular country:

- Column <j> for the USA, Canada, Latin American, Asian, and Pacific countries.
- Column <k> for the European, Middle Eastern, and African countries.

In these two columns:

– Y means that the feature is available.
– N means that the feature is not available.

How to Determine Cable Length

To determine a cable length, add the following distances:

1. From the bottom of the 3745/3746 frame to the bottom of the attached device, including:
   - Cable routing and bends
   - Twice the height of the raised floor, if any.
2. From the bottom of the attached device to its connector.

Except for the ARCs, the cable is shipped with a length equal to the ordered length, plus 1.5 m (5 ft) to take into consideration the cable length required inside the machine.

See *Selecting and Ordering IBM Machine External Cables,* GA23-0278.

<l> Frame: This column gives the name of the frame or frames to which the cables must be connected. The following abbreviations are used:

- BF is 3745 (base frame)
- 11 is 3746-A11
- 13 is 3746-L13
- 14 is 3746-L14
- 15 is 3746-L15

Cabling Identification

Use Chapter 43 to prepare the cabling plan. It provides information on how to use the plugging sheets. There is a set of example plugging sheets starting on page 43-18.

Cable Weight

Communication data line cable weights up to 0.35 kg/m (0.25 lb/ft) for the heaviest cable.

Plenum Cables

For details on plenum cables refer to the *National Electrical Code*, ZR23-4223. The plenum cables are listed in the following tables.

Modems

Refer to page 44-71, and also see *Power Supply and Telecommunication Connections for IBM Modems,* GA33-0054 for modem cable information.

For the Hayes modem, the cables are shipped according to the modem part number ordered. Refer to Table 44-11 on page 44-71.

Cable Information

Channel Attachment Cables and Emergency Power-Off Cables (3745 Model 17A)

Feature				According to Your Requirements, Order:				Country	
Channel Adapter, TPS, and Emergency Power Off (EPO) (See Note 1)	Feature Code	Conn ID	No. of Cables	Fixed-Length Cable (See Note 2)		Custom-Length Cable (See Note 3 and Note 4)		USA CAN LA AP	E/ME/A
				CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)		
<a>	<b>	<b>		<d>	<e>	<h>	<i>	<j>	<k>
First channel	1563 or 1573	1	2	0185	12 (40)	0185 5460185	122(400)	Y	Y
Second channel	1563 or 1573	3	2	0185	12 (40)	0185 5460185	122(400)		
or first TPS	8320	3	2	0185	12 (40)	0185 5460185	122(400)		
Third channel	1563 or 1573	5	2	0185	12 (40)	0185 5460185	122(400)		
Fourth channel	1563 or 1573	7	2	0185	12 (40)	0185 5460185	122(400)		
or second TPS	8320	7	2	0185	12 (40)	0185 5460185	122(400)		
First EPO	1563 or 1573	41	1	(See Note 5)		1178 5351178	122(400)		
Second EPO	1563 or 1573 or 8320	43	1			1178 5351178	122(400)		
Third EPO	1563 or 1573	45	1			1178 5351178	122(400)		
Fourth EPO	1563 or 1573 or 8320	47	1			1178 5351178	122(400)		

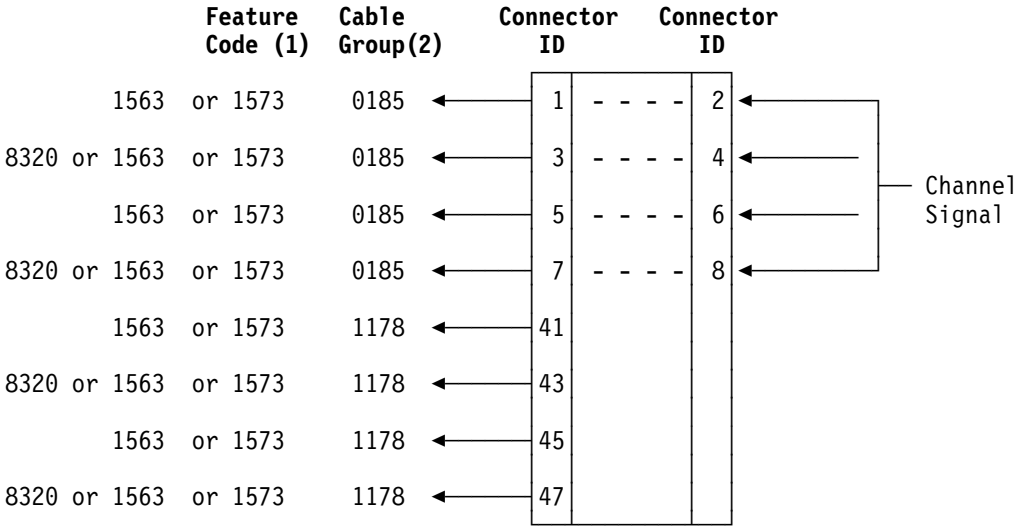
TPS = two-processor switch.

Notes:

1. The emergency power-off (EPO) cable is also called the power control cable.
2. The fixed-length standard cable group 0185 is available in European, Middle Eastern, and African only. It is automatically shipped with each channel adapter and TPS when the feature number 2999 is specified in the 3745 configuration.
3. For data streaming, the maximum cumulative cable length is 122 m (400 ft) unless modified by system or channel limitation. Maximum cable length must be reduced by 4.5 m (15 ft) for each control unit between the 3745 and the channel.

   For non-data streaming, the maximum length is 61 m (200 ft) unless modified by the general control-to-channel cabling schematic.
4. In the U.S.A., Canada, Latin America, Asia and Pacific countries, order cables by group number up to the maximum length specified.
5. The EPO fixed-length standard cable is no longer shipped with the channel adapter or TPS in European, Middle Eastern, and African countries. If an EPO cable is required, order it by P/N up to the maximum length.

3745 Model 17A Channel Cabling Schematic



Notes:

1. Each of the two-processor switches (feature code 8320) takes the place of one channel adapter (feature code 1563) or one buffer chaining channel adapter (BCCA) (feature code 1573).
2. Cable group for signal cables is 0185. Cable group for power control cables is 1178.
3. Each of the four possible power control cables (1178) can be associated to any of the four possible channel attachments. Therefore, a host with a channel attachment to the 3746 Model 900 can power control the 3745 and 3746 Model 900 units via one power control cable.
4. For a 3745 with 3746-900, one of the four possible power control cable connection IDs of the 3745 must be reserved for internal power control.

Channel Attachment Cables and EPO Cables (3745 Models 21A, 31A, 41A 61A, and 3746 Model A11)

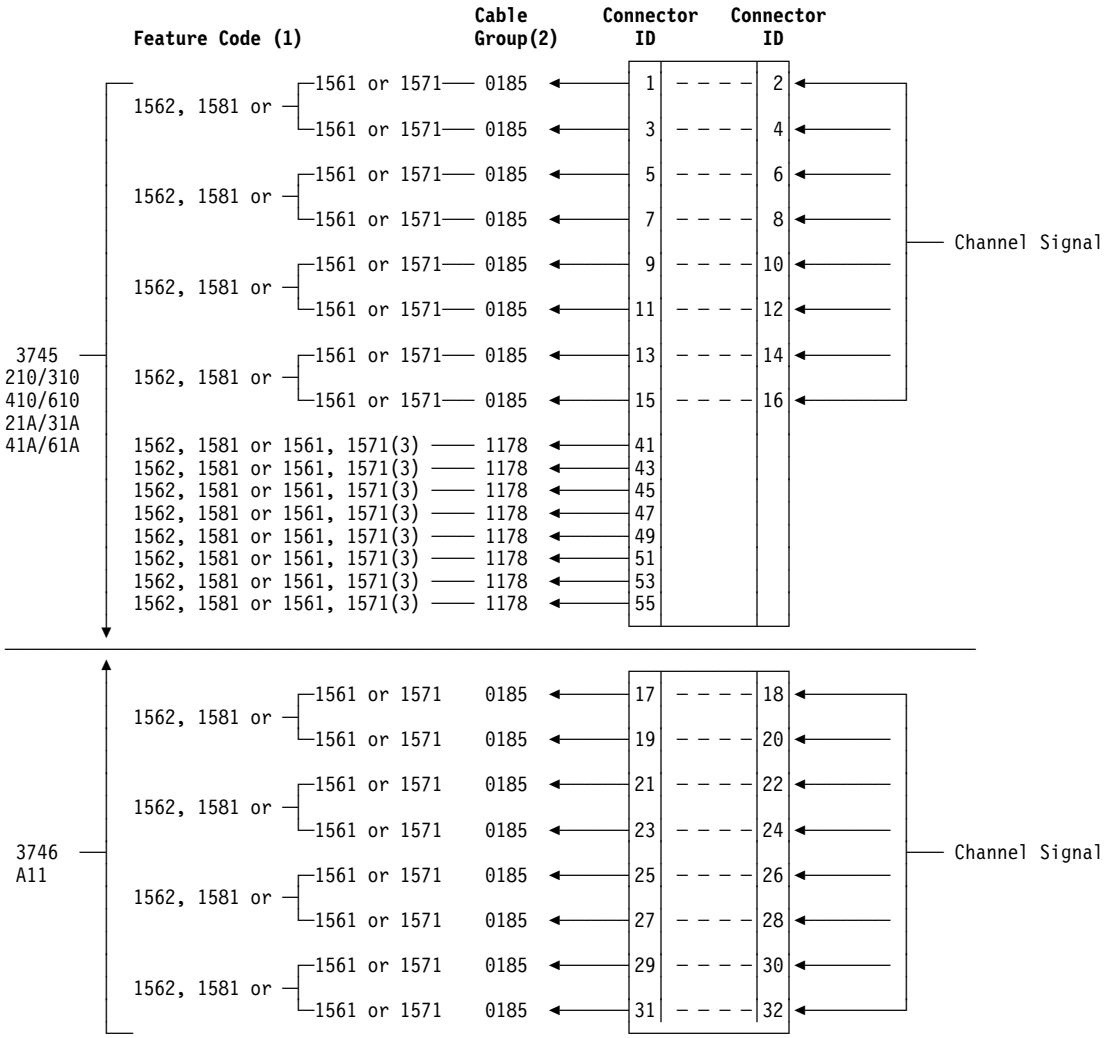
Feature				According to Your Requirements, Order:				Country		
Channel adapter, CATPS, and Emergency Power Off (EPO) (See Note 1)	Feature Code	Conn ID	No. of Cables	Fixed-Length Cable (See Note 2) CG	Length m (ft)	Custom-Length Cable (See Note 3 and Note 4) CG or Part No.	Maximum Length m (ft)	USA CAN LA AP	E/ME/A	Frame
<a>	<b>	<b>		<d>	<e>	<h>	<i>	<j>	<k>	<l>
First CATPS or 1st and 2nd Channel Adapters	1562 or 1581 — 1561 or 1571	1	2	0185	12 (40)	0185 5460185	122(400)	Y	Y	BF
		3	2	0185	12 (40)	0185 5460185	122(400)			
Second CATPS or 3rd and 4th Channel Adapters	1562 or 1581 — 1561 or 1571	5	2	0185	12 (40)	0185 5460185	122(400)			
		7	2	0185	12 (40)	0185 5460185	122(400)			
Third CATPS or 5th and 6th Channel Adapters	1562 or 1581 — 1561 or 1571	9	2	0185	12 (40)	0185 5460185	122(400)			
		11	2	0185	12 (40)	0185 5460185	122(400)			
Fourth CATPS or 7th and 8th Channel Adapters	1562 or 1581 — 1561 or 1571	13	2	0185	12 (40)	0185 5460185	122(400)			
		15	2	0185	12 (40)	0185 5460185	122(400)			
Fifth CATPS or 9th and 10th Channel Adapters	1562 or 1581 — 1561 or 1571	17	2	0185	12 (40)	0185 5460185	122(400)			A11
		19	2	0185	12 (40)	0185 5460185	122(400)			
Sixth CATPS or 10th and 11th Channel Adapters	1562 or 1581 — 1561 or 1571	21	2	0185	12 (40)	0185 5460185	122(400)			
		23	2	0185	12 (40)	0185 5460185	122(400)			
Seventh CATPS or 12th and 13th Channel Adapters	1562 or 1581 — 1561 or 1571	25	2	0185	12 (40)	0185 5460185	122(400)			
		27	2	0185	12 (40)	0185 5460185	122(400)			
Eighth CATPS or 14th and 15th Channel Adapters	1562 or 1581 — 1561 or 1571	29	2	0185	12 (40)	0185 5460185	122(400)			
		31	2	0185	12 (40)	0185 5460185	122(400)			
1st EPO	1561, 1562, 1571, 1581	41	1	(See Note 5)		1178 5351178	122(400)			BF
2nd EPO	1561, 1562, 1571, 1581	43	1			1178 5351178	122(400)			
3rd EPO	1561, 1562, 1571, 1581	45	1			1178 5351178	122(400)			
4th EPO	1561, 1562, 1571, 1581	47	1			1178 5351178	122(400)			
5th EPO	1561, 1562, 1571, 1581	49	1			1178 5351178	122(400)			
6th EPO	1561, 1562, 1571, 1581	51	1			1178 5351178	122(400)			
7th EPO	1561, 1562, 1571, 1581	53	1			1178 5351178	122(400)			
8th EPO	1561, 1562, 1571, 1581	55	1			1178 5351178	122(400)			

CATPS is channel adapter with two processor switch.

Notes:

1. The emergency power-off (EPO) cable is also called the power control cable.
2. The fixed-length cable (group 0185) is available in European, Middle Eastern, and African countries only. It is automatically shipped with each channel adapter and CATPS, when the feature number 2999 is specified in the 3745 configuration.
3. For data streaming, the maximum cumulative cable length is 122 m (400 ft) unless modified by system or channel limitation. Maximum cable length must be reduced by 4.5 m (15 ft) for each control unit between the 3745 and the channel.
   For non data streaming, the maximum length is 61 m (200 ft) unless modified by general control-to-channel cabling schematic.
4. In the U.S.A., Canada, Latin America, Asia and Pacific countries, order cables by group number up to the maximum length specified.
5. The EPO fixed-length standard cable is no longer shipped with the channel adapter or CATPS in European, Middle Eastern, and African countries. If an EPO cable is required, order it by P/N up to the maximum length.

3745 Models 21A, 31A, 41A, 61A, and 3746 Model A11 Channel Cabling Schematic



Notes:

1. Each channel adapter with two-processor switch (CA feature code 1562 or BCCA feature code 1581) takes the place of two channel adapters (feature code 1561) or of two buffer chaining channel adapters (feature code 1571)
2. Cable group for signal cables is 0185. Cable group is 1178 for power control cables.
3. Each of the 8 possible power control cables (1178) can be associated to any of the 16 possible channel attachments. Therefore, a host with a channel attachment to the 3746 Model A11 or 900 can power control the 3745 and 3746 Nways Multiprotocol Controllers via one power control cable.
4. For a 3745 with 3746-900, one of the eight possible power control cable connection IDs of the 3745 must be reserved for internal power control.

ESCON Jumper Cables and Emergency Power-Off Cables (3746-9x0)

For general information about ESCON planning, refer to *Planning for Enterprise Systems Connection Links*, (GA23-0367).

The ESCON channel adapters use multimode fibers (LED). Multimode fiber-optic jumper cables with duplex connectors at both ends are required to directly connect the 3746 to ESCON channels, or ESCON Directors. A fixed-length duplex-to-duplex 62.5/125-micron multimode fiber-optic jumper cable is either automatically shipped or must be ordered for each ESCON channel coupler of the 3746, as indicated in Figure 44-25 on page 44-68.

Note: IBM recommends using IBM duplex-to-duplex jumper cables between the ESCON-capable device (3746) and distribution panels. In some cases, attaching a jumper cable to a distribution panel could require jumper cables with other connector types for the distribution panel end, (for example, Duplex-to-ST jumper cables or Duplex-to-FC/PC jumper cables), depending upon the type of connectors used by the ESCON trunk cable and the type of couplers/adapters available on the distribution panel.

Notes for Figure 44-25 on page 44-68

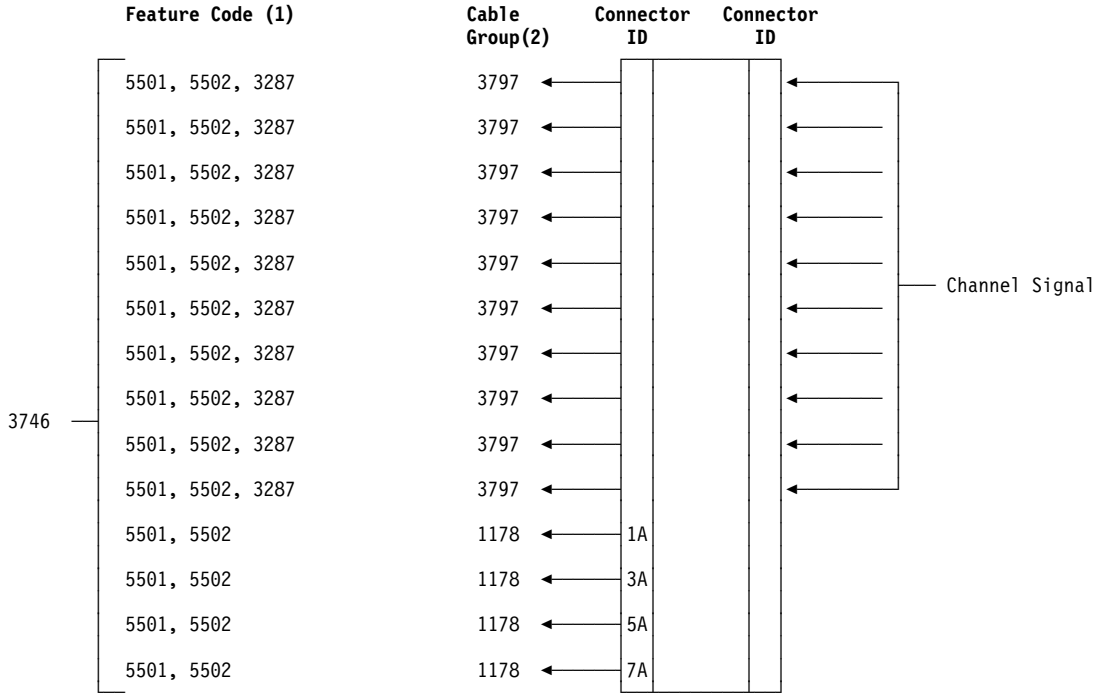
1. The emergency power-off (EPO) cable is also called the power control cable.
2. To order, specify cable group 3797 and one of these lengths, as determined by the IBM Installation Planning Representative.
3. When using the specify code 2999 in your configuration order, the 31 m (100 ft) jumper cable is automatically shipped with the ESCON coupler. If it is determined by the IBM Installation Planning Representative that another length is required, order one of the other fixed-length cables by part number and length.
4. To order, specify cable group 1178, and a length not exceeding the maximum stated.
5. Custom-length duplex-to-duplex jumper cables up to 500 m (1640 ft), jumper cables with a duplex connector at one end (3746) and another type of connector at the other end (distribution panel), and fiber optic adapters and couplers used in distribution panels can be purchased from IBM.
6. The EPO fixed-length standard cable is no longer shipped with the ESCON coupler in the Europe, Middle East, and Africa countries. If an EPO cable is required, order it by P/N up to the maximum length.
7. Feature Code 5501 (ESCON Coupler Type 1) cannot be ordered for the 3746-950.

The notes for the figure below are on page 44-67.

Feature			According to Your Requirements, Order:			
ESCON Coupler & Emergency Power Off (EPO) (See Note 1)	Feature Code	Cables	Fixed-Length Cable		Custom-Length Cable	
			Part CG or Number	m (ft)	Part CG or Number	Maximum Length m (ft)
<a>	<b>		<d>	<e>	<f>	<g>
ESCON (except Europe, Middle East, and Africa)	5501 5502 3287 (See note 7)	1	3797 (See note 2)	4 (12) 7 (20) 13 (40) 22 (70) 31 (100) 46 (150) 61 (200) 77 (250) 92 (300) 107 (350) 122 (400)	14F3797 (See note 5)	500 (1640)
EPO (except Europe, Middle East, and Africa)	5501 5502 3287 (See note 7)	1			1178 5351178 (See note 4)	122 (400)
ESCON (Europe, Middle East, and Africa)	5501 5502 (See note 7)	1	74F5416 (See note 3) 74F5412 74F5413 74F5414 74F5415 74F9718 74F5417 74F9419 74F9420 74F9421 74F5418	31 (100) 4 (12) 7 (20) 13 (40) 22 (70) 46 (150) 61 (200) 77 (250) 92 (300) 107 (350) 122 (400)	74F5436 (See note 5)	500 (1640)
EPO (Europe, Middle East, and Africa)	5501 5502 (See note 7)	1	(See Note 6)		5351178	122 (400)

Figure 44-25. ESCON Jumper and EPO Cables

3746 Models 900 and 950 Channel Cabling Schematic



Notes:

1. Feature Code 5501 (ESCON Coupler Type 1) cannot be ordered for the 3746-950.
2. Cable group for signal cables is 3797. Cable group for power control cables is 1178.

Service Processor and Network Node Processor Attachment Cables

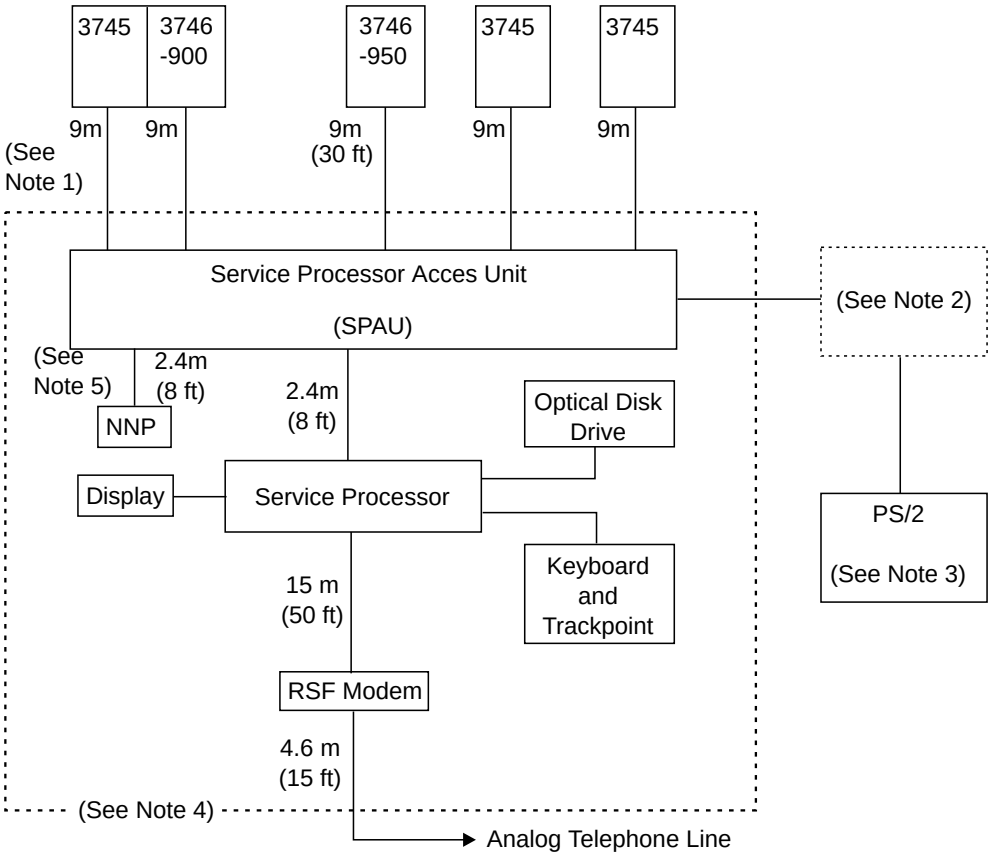


Figure 44-26. Service Processor Attachment Cables (3745 Models 17A, 21A, 31A, 41A, 61A, and 3746-900/950)

Notes:

In the following notes, the part numbers are supplied for replacement purposes:

1. Token-ring cable shipped automatically with each 3745 and 3746-9x0. The part number are:
   - USA and Canada: 76F9440
   - For all other countries: 76F9441.

   If the 9-m cable is not long enough to connect the 3745/3746-9x0 to the SPAU, the Part No 72F1242 for U.S.A. and Canada plenum cable or Part No 72F1236 should be ordered. Refer to page 44-75 for token-ring cable lengths.
2. Connection(s) to user token-ring (16 Mbps) and/or an IBM PS/2 used as an alternate/remote console.
3. LAN-Attached console (via a token-ring).
4. The following signal cables are shipped automatically with the service processor:
   - Service processor to SPAU cable, part number 6339098.
   - Service processor to RSF modem cable, part number 57G7528.

     Note: This cable may also be used to extend the data cable that ships with the Hayes modem, if required.
   - Service processor to display, including a 4 meter (13.1 ft) cable extender, part number 59G1270.
   - Service Processor to keyboard/trackpoint. A 4 meter (13.1 ft) cable is also included, part number 59G1271.

- Service processor to optical disk drive.
- Modem telephone cable, see “IBM 7855 RSF Modem Telephone Cables” on page 44-72 and “IBM 7857 RSF Modem Telephone Cables” on page 44-72.

  Note: In the U.S.A. and Canada, the previously available desktop model of the service processor had an integrated RSF modem with a 15 m (49.2 ft) modem telephone cable, part number 58G5297.

5. Network node processor to SPAU token-ring cable, part number 6339098. This cable is automatically shipped with the network node processor.

RSF Modem

A modem is required for connection to the IBM Remote Support Facility (RSF). The user must provide access to a dedicated analog line of the public switched telephone network, so that the service processor can automatically dial into the IBM Remote Support Facility.

This line can also be used for remote console access from the IBM Support Center to the 3746 via the switched telephone network.

The RSF modem is:

- Shipped with the service processor
- Installed by IBM

Refer to “RSF Modem” on page 44-40 for the RSF modem characteristics.

The part numbers in the following 43-11 to 43-13 tables are provided for information, in case of replacement needs.

Hayes RSF Modem Part Number to Country Reference

Table 44-11. Hayes Modem P/Ns

Country	Part Number
UK	03K5378
France	03K5371
Germany	03K5372
Netherlands	03K5367
Denmark	03K5369
Sweden	03K5379
Finland	03K5370
Switzerland	03K5380
Norway	03K5377
Iceland	03K5374
Australia	03K5366
China	03K5368

Table 44-12. Hayes Modem P/Ns (Cont.)

Country	Part Number
Hong Kong	03K5373
Malaysia	03K5373
Singapore	03K5373
Indonesia	03K5375
India	03K5375
Philippines	03K5375
Thailand	03K5375
Sri Lanka	03K5375
Vietnam	03K5375
New Zealand	03K5376
Taiwan	03K5381
USA	03K5365
Canada	03K5365

Note: Ordering the part number next to a country will supply the Hayes modem with all the correct power and line cables for that country.

IBM 7857 RSF Modem Telephone Cables

Table 44-13. IBM 7857 Modem Cables

Country	Part Number
Albania	89G2554
Argentina	89G2554
Australia	89G2564
Austria	89G2544
Belgium	89G2545
Bolivia	89G2554
Brazil	89G2554
Bulgaria	89G2554
Canada	89G2562
China	89G2554
Colombia	89G2554
Costa Rica	89G2554
Croatia	89G2554
Cyprus	89G2577
Czech Republic	89G2554
Denmark	89G2546
Egypt	89G2554
El Salvador	89G2554
Ecuador	89G2554
Finland	89G2547
France	89G2548

Table 44-13. IBM 7857 Modem Cables

Country	Part Number
Germany	89G2549
Greece	89G2554
Guatemala	89G2554
Honduras	89G2554
Hong Kong	89G2565
Hungary	89G2554
Iceland	89G3145
Ireland	89G2554
Israel	89G3131
Italy	89G2551
Japan	89G2562
Korea	89G2554
Kuwait	89G2554
Luxemburg	89G3134
Macedonia	89G2554
Mexico	89G2554
Netherlands	89G2552
New Zealand	89G2577
Norway	89G2553
Pakistan	89G2554
Panama	89G2554

Table 44-13. IBM 7857 Modem Cables

Country	Part Number
Paraguay	89G2554
Peru	89G2554
Poland	89G2554
Portugal	89G2554
Romania	89G2554
Russia	89G2554
Saudi Arabia	89G2554
Slovakia	89G2554
Slovenia	89G2554
South Africa	89G3135
Spain	89G2554
Sweden	89G2555
Switzerland	89G2556
Taiwan	89G2554
Thailand	89G2554
Turkey	89G2554
UK	89G2577
Ukraine	89G2554
Uruguay	89G2554
US	89G2562
Venezuela	89G2554

IBM 7855 RSF Modem Telephone Cables

Table 44-14. IBM 7855 Modem Cables

Country	Part Number
Albania	66X0879
Argentina	53F6095
Austria	74F4485
Belgium	74F4507
Bosnia	See note
Bulgaria	66X0879
Canada	53F6095
Chile	53F6095
China	74F4504
Croatia	See note
Cyprus	03F7852
Czech Republic	66X0879
Denmark	74F4488
Egypt	See note

Table 44-14. IBM 7855 Modem Cables

Country	Part Number
France	74F4493
Greece	See note
Hong Kong	74F4504
Hungary	66X0879
Iceland	74F4502
Israel	93F1532
Italy	74F4498
Japan	53F6095
Luxemburg	66X0879
Macedonia	See note
Netherlands	74F4500
New Zealand	03F7852
Norway	74F4490

Table 44-14. IBM 7855 Modem Cables

Country	Part Number
Pakistan	66X0879
Philippines	53F6095
Poland	See note
Portugal	See note
Saudi Arabia	See note
Serbia	See note
Slovenia	See note
South Africa	66X2114
Spain	93F1528
Sweden	74F4502
Thailand	74F4504
UK	74F4504
Uruguay	89G2554
USA	53F6095
Venezuela	89G2554

Note: The cable with a part number 74F8370 is supplied with spade lugs on one end instead of a plug.

Token-Ring Attachment and High-Speed Line Attachment Cables (3745)

Feature		Maximum Number of Cables per Feature	According to Your Requirements, Order:						Country		
			Fixed-Length Cable		Custom-Length Cable						
					Short Cable			Long Cable			
Token-Ring Attachment and High-Speed Line	Feat Code		CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA CAN LA AP	E/ME/A	Frame
<a>	<b>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>	<l>
Token-ring attachment	(See Note 7)	2	1666 (See Note 6)	21.3(70)	1667 61X3229	21.3(70)	61X3229	44.2(145)	Y	N	BF
Token-ring attachment (plenum cable)	(See Note 7)	2	(See Note 6)		76F8641	21.3(70)	76F8641	44.2(145)	USA Canada	N	
Token-ring attachment	(See Note 7)	2	1666 (See Note 6)	9 (30)	1667 61X3229	21.3(70)	61X3229	44.2(145)	N	Y	
V.35 DCE (See Notes 1 and 2)	(See Note 8)	1	5831	10 (33)	5830 58X9344	10 (33)	58X9344	35 (115) (See Note 5)	Y	Y	
V.35 DCE (See Note 1) (plenum cable)	(See Note 8)	1			76F8633	10 (33)	76F8633	35 (115) (See Note 5)	USA Canada	N	
X.21 DCE (See Notes 1 and 2)	(See Note 8)	1	5833	10 (33)	5832 58X9345	10 (33)			Y	Y	
X.21 DCE (See Note 1) (plenum cable)	(See Note 8)	1			76F8634	10 (33)			USA Canada	N	
V.35 direct att. (See Note 1)	(See Note 8)	1	5837 (See Note 9)	10 (33)	5836 58X9347	10 (33)	58X9347	100 (328)	Y	Y	
V.35 direct att. (See Note 1) (plenum cable)	(See Note 8)	1			76F8635	10 (33)	76F8635	100 (328)	USA Canada	N	
X.21 direct att. (See Note 1)	(See Note 8)	1	5839 (See Note 9)	10 (33)	5838 58X9348	10 (33)			Y	Y	
X.21 direct att. (See Note 1) (plenum cable)	(See Note 8)	1			76F8636	10 (33)			USA Canada	N	
X.21 Transfix (See Notes 2 and 4)	(See Note 8)	1	5835	10 (33)	5834 58X9346	10 (33)			N	Y	
X.21 EIA-547 DCE	(See Note 8)	1	5844	10 (33)	5842 11F4837	10 (33)	11F4837	35 (115)	Y	N	
X.21 EIA-547 DCE (plenum cable)	(See Note 8)	1			76F8637	10 (33)	76F8637	35 (115)	USA Canada	N	
X.21 EIA-547 direct attache.	(See Note 8)	1	5845	10 (33)	5843 11F4838	10 (33)	11F4838	100 (328)	Y	N	
X.21 EIA-547 direct attache. (Plenum cable)	(See Note 8)	1			76F8638	10 (33)	76F8638	100 (328)	USA Canada	N	

Notes: See page 44-74.

Notes:

1. Direct connections (without any modem):
   a. **3745/3746 to IBM 2210 Multiprotocol Router, IBM 2216 Multiaccess Connector, or 3746 (Multiaccess Enclosure)**
   The 3745 or 3746 must use a V.35 DCE cable and the IBM 2210 or IBM 2216 or Multiaccess Enclosure V.35 must use a direct attach cable (clocking must be provided by the 2210, 2216 or multiaccess enclosure).
   b. **3745/3746 to 3745/3746, 3720, or 3725 connections**:
      - If the 3745/3746 is defined as main (NCP generation parameters: direct clocking), it has a V.35 or X.21 direct-attachment cable.
      - If the 3745/3746 is defined as tributary (NCP generation parameters: external clocking), it has a V.35 or X.21 DCE cable. The total length of the two cables must not exceed 100m (328 ft) for V.35, or 10m (33 ft) for X.21.
2. In European, Middle Eastern, and African countries, the cable group delivered by default when using specific code 2999 with this feature is:

   5831 (V.35 DCE) in Belgium, Denmark, Finland, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland and Turkey.
   5835 (X.21 Transfix) in France.
   5833 (X.21 DCE) in other European, Middle Eastern, and African countries.
3. The cable group numbers 5837 and 5839 are not available in European, Middle Eastern, and African countries. Order by the cable part number in European, Middle Eastern, and African countries.
4. X.21 Transfix is available in France only. This cable must be used for those Transfix DCEs which do not support the "Control" and "Indicator" signaling over the X.21 interface.
5. This length is authorized with the special clocking option only (transmit clocking loop back to DCE). Without this option, the maximum cable length is 15m (50 ft).
6. Token-ring cables for the 3745 are not interchangeable with token-ring cables for the 3746-900, due to differing connectors on the machine side.
7. For the 3745 Models 21A, 31A, 41A, and 61A, the feature code is 4760 or 4770. For the 3745 Model 17A, the feature code is 4771.
8. For the 3745 Models 21A, 31A, 41A, and 61A, the feature code is 4740. For the 3745 Model 17A, the feature code is 4741. Each 4740 or 4741 feature code provides two ports. Only one port can be active at a time.
9. To attach an IBM 6629, a short cable having a maximum length of 5 meters (16 ft) must be ordered.

Token-Ring (TIC3) and High-Speed Line (LIC12) Attachment Cables (3746-9x0)

Feature				According to Your Requirements, Order:						Country	
				Fixed-Length Cable		Custom-Length Cable					
						Short Cable		Long Cable			
Token-Ring Attachment	Feat Code	LIC Type	Maximum Number of Cables per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA CAN LA AP	E/ME/A
<a>	<b>	<c>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>
Token-ring attachment	5601	NA	1	7003 (See Note 6)	21.3(70)	7004 72F1236	21.3(70)	72F1236	44.2(145)	Y	N
Token-ring attachment (Plenum cable)	5601	NA	1	7005 (See Note 6)	21.3(70)	7006 72F1242	21.3(70)	72F1242	44.2(145)	USA Canada	N
Token-ring attachment	5601	NA	1	7003 (See Note 6)	9 (30)	7004 72F1236	9.0(30)	72F1236	44.2(145)	N	Y
V.35 DCE (See Notes 1 and 2)	5212	12	1	5831	10 (33)	5830 58X9344	10 (33)	58X9344	35 (115) (See Note 5)	Y	Y
V.35 DCE (See Note 1) (Plenum cable)	5212	12	1	7007	10 (33)	7008 76F8633	10 (33)	76F8633	35 (115) (See Note 5)	USA Canada	N
X.21 DCE (See Notes 1 and 2)	5212	12	1	5833	10 (33)	5832 58X9345	10 (33)			Y	Y
X.21 DCE (See Note 1) (Plenum cable)	5212	12	1	7009	10 (33)	7010 76F8634	10 (33)			USA Canada	N
V.35 direct attachment (See Note 1)	5212	12	1	5837 (See Note 3)	10 (33)	5836 58X9347	10 (33)	58X9347	100 (328)	Y	Y
V.35 direct attachment (See Note 1) (Plenum cable)	5212	12	1	7011	10 (33)	7012 76F8635	10 (33)	76F8635	100 (328)	USA Canada	N
X.21 direct attachment (See Note 1)	5212	12	1	5839 (See Note 3)	10 (33)	5838 58X9348	10 (33)			Y	Y
X.21 direct attachment (See Note 1) (Plenum cable)	5212	12	1	7013	10 (33)	7014 76F8636	10 (33)	76F8636	10 (33)	USA Canada	N
X.21 Transfix (See Notes 2 and 4)	5212	12	1	5835	10 (33)	5834 58X9346	10 (33)			N	Y
X.21 EIA-547 DCE	5212	12	1	5844	10 (33)	5842 11F4837	10 (33)	11F4837	35 (115)	Y	N
X.21 EIA-547 DCE (Plenum cable)	5212	12	1	7015	10 (33)	7016 76F8637	10 (33)	76F8637	35 (115)	USA Canada	
X.21 EIA-547 direct attachment	5212	12	1	5845	10 (33)	5843 11F4838	10 (33)	11F4838	100 (328)	Y	
X.21 EIA-547 direct attachment (Plenum cable)	5212	12	1	7017	10 (33)	7018 76F8638	10 (33)	76F8638	100 (328)	USA Canada	

Notes: See page 44-76.

Notes:

1. Direct connections (without any modem):
   - **3746 to IBM 2210 Multiprotocol Router or IBM 2216 Multiaccess Connector**
     The 3746 must use a V.35 DCE cable and an IBM 2210 or IBM 2216 V.35 direct attach cable (the 2210 or 2216 must provide clocking to the 3746).
   - **3746 to a 3746 Model 900, Model 950, or a 3745**
     – The 3745/3746 defined as main (for direct clocking) has a direct-attachment cable (V.35 or X.21).
     – The 3745/3746 defined as tributary (for external clocking), has a DCE cable (V.35 or X.21).

   The total length of the two cables must not exceed 100 m (328 ft) for V.35, or 10 m (33 ft) for X.21.
2. In European, Middle Eastern, and African countries, the cable group delivered by default when using specific code 2999 with this feature is:
   - 5831 (V.35 DCE) in Belgium, Denmark, Finland, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey.
   - 5835 (X.21 Transfix) in France.
   - 5833 (X.21 DCE) in other European, Middle Eastern, and African countries.

   To attach an IBM 6629, a short cable having a maximum length of 5 meters (16 ft) must be ordered
3. The cable group numbers 5837 and 5839 are not available in European, Middle Eastern, and African countries. Order the cable by part number in these countries.
4. X.21 Transfix is available in France only. This cable must be used for those Transfix DCEs which do not support the "Control" and "Indicator" signaling over the X.21 interface.
5. This length is authorized with the special clocking option only (transmit clocking loop back to DCE). Without this option, the maximum cable length is 15m (50 ft).
6. Token-ring cables for a 3745 are not interchangeable with token-ring cables for the 3746, due to differing connectors on the machine side.

Line Interface Attachment (LIC) Cables (3745, 3746-L13/L15) (Part 1 of 3)

Feature			Maximum Number of Cables per Feature	According to Your Requirements, Order:						Country		
				Fixed-Length Cable		Custom-Length Cable						
						Short Cable		Long Cable				
LIC	Feat Code	LIC Type		CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA CAN LA AP	E/ME/A	Frame
<a>	<b>	<c>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>	<l>
V.24 DCE (Japan NTT) (See Notes 1, and 2)	4911	1	4			1621 6398662	13.5 (45)	6398782	100 (328)	Japan	N	BF 13 14 15
V.24 DCE X.21 bis oper. (Japan NTT) (See Note 2)	4911	1	4			8153 61F4505	13.5 (45)	61F4507	100 (328)			
V.25 auto call (Japan NTT) (See Note 2)	4911	1	4			1634 6398664	13.5 (45)	6398786	35 (115)			
V.25 auto call (Caducee France)	4911	1	4			1622 6398667	13.5 (45)	6398783	35 (115)	N	Y	
V.25 RS-366 auto call (UK)	4911	1	4			1635 6398670	13.5 (45)	6398787	35 (115)			
V.35 DCE (French PTT modem) (See Notes 3and 5)	4931	3	1	1619	13.5 (45)	1619 6398671	13.5 (45)	6398789	100 (328)			
V.24 DCE (Belgium) (See Notes 1 and 4)	4911	1	4	1620	13.5 (45)	1620 6398672	13.5 (45)	6398780	100 (328)			
X.21 DCE Transfix (France) (See Note 6)	4942	4B	1	1609	13.5 (45)	1609 58X9488	13.5 (45)	6398661	122 (400)			
V.35 direct attachment (France) (See Note 7)	4931	3	1			1623 65X9900	13.5 (45)	65X9900	122 (400)			

Notes: See page 44-78.

Notes:

1. This cable does not support X.21 bis operation.
2. Cable for:
   - Nippon Telegraph and Telephone (NTT) modem
   - Japanese original equipment manufacturer (OEM) modem
3. Includes the adapter, part number 1749352.
4. This cable can be used in conjunction with an ARC/3745 V.24 DCE assembly, feature number 648x (see pages 44-84 and 44-85). However, to be in compliance with the European Telecommunication standard NET2, it is recommended to use the ARC/3745 V.24 DCE in conjunction with a custom-length long cable having a maximum length of 13.5 m (45 ft).
5. This cable can be used in conjunction with an ARC/3745 V.35 DCE assembly feature number 658x (see pages 44-84 and 44-85). However, to be in compliance with the European Telecommunication standard NET2, it is recommended to use the ARC/3745 V.35 DCE in conjunction with a custom-length short cable having a maximum length of 13.5 m (45 ft).
6. This cable must be used for those Transfix DCEs which do not support the "Control" and "Indicator" signaling over the X.21 interface. This cable can be used in conjunction with an ARC/3745 X.21 DCE assembly feature number 662x (see pages 44-84 and 44-85). However, to be in compliance with the European Telecommunication standard NET2, it is recommended to use the ARC/3745 X.21 DCE in conjunction with a custom-length short cable having a maximum length of 13.5 m (45 ft).
7. This cable can be used in conjunction with the ARC/3745 V.35 DTE, feature number 6580 (see pages 44-84 and 44-85).

Line Interface Attachment (LIC) Cables (3745, 3746-L13/L15) (Part 2 of 3)

Feature				According to Your Requirements, Order:						Country		
				Fixed-Length Cable		Custom-Length Cable						
						Short Cable		Long Cable				
LIC	Feat Code	LIC Type	Maximum Number of Cables per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	Maximum Length m (ft)	USA CAN LA AP	E/ME/A	Frame
<a>	<b>	<c>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>	
V.25 RS-366 auto call	4911	1	4	1616	13.5 (45)	1610 6398668	13.5 (45)	6398788	35 (115)	Y	Y	BF 13 14 15
V.25 RS-366 auto call (Plenum cable)	4911	1	4		13.5 (45)	76F8614	13.5 (45)	76F8615	35 (115)	USA Canada	N	
V.24 RS-232-C direct attachment (See Note 1)	4911	1	4	1607	13.5 (45)	1612 7837397	13.5 (45)	7837398	122 (400)	Y	Y	
V.24 RS-232-C direct attach. (See Note 1) (Plenum cable)	4911	1	4		13.5 (45)	76F8616	13.5 (45)	76F8617	122 (400)	USA Canada	N	
V.35 DCE (See Notes 2 and 10)	4931	3	1	1613	13.5 (45)	1618 58X9485	13.5 (45)	6398665	100 (328)	Y	Y	
V.35 DCE (Plenum cable) (See Note 10)	4931	3	1		13.5 (45)	76F8618	13.5 (45)	76F8619	100 (328)	USA Canada	N	
V.35 direct attachment (See Note 11)	4931	3	1	1605	13.5 (45)	1623 58X9484	13.5 (45)	6398657	122 (400)	Y	Y	
V.35 direct attachment (Plenum cable) (See Note 11)	4931	3	1		13.5 (45)	76F8620	13.5 (45)	76F8621	122 (400)	USA Canada	N	
X.21 DCE (See Notes 3 and 13)	4941 4942	4A 4B	4 1	1606	13.5 (45)	1624 58X9487	13.5 (45)	6398658	122 (400)	Y	Y	
X.21 DCE (Plenum cable) (See Note 13)	4941 4942	4A 4B	4 1		13.5 (45)	76F8622	13.5 (45)	76F8623	122 (400)	USA Canada	N	

Notes: See page 44-81.

Line Interface Attachment (LIC) Cables (3745, 3746-L13/L15) (Part 3 of 3)

Feature				According to Your Requirements, Order:						Country		
				Fixed-Length Cable		Custom-Length Cable						
						Short Cable		Long Cable				
LIC	Feat Code	LIC Type	Maximum Number of Cables per Feature	CG	Length m (ft)	CG or Part No.	Maximum Length m (ft)	Part No.	CAN Length m (ft)	USA LA AP	E/ME/A	Frame
<a>	<b>	<c>	<a>	<d>	<e>	<f>	<g>	<h>	<i>	<j>	<k>	
X.21 direct attachment (See Note 14)	4941 4942	4A 4B	4 1	1608	30 (100)	1625 58X9486	30 (100)	6398660	122 (400)	Y	Y	BF 13 14 15
X.21 direct attachment (Plenum cable) (See Note 14)	4941 4942	4A 4B	4 1		30 (100)	76F8624	30 (100)	76F8625	122 (400)	USA Canada	N	
V.24 RS-232-C direct attach. (See Notes 4 and 12)	4911	1	4	1611	13.5 (45)	1627 7837395	13.5 (45)	7837396	122 (400)	Y	Y	
V.24 RS-232-C direct attach. (See Notes 4 and 12) (Plenum cable)	4911	1	4		13.5 (45)	76F8626	13.5 (45)	76F8627	122 (400)	USA Canada	N	
V.24 RS-232-C DCE (See Notes 5, 6, and 9)	4911	1	4	1604	13.5 (45)	1628 6398643	13.5 (45)	6398785	100 (328)	Y	Y	
V.24 RS-232-C DCE (See Notes 6 and 9) (Plenum cable)	4911	1	4		13.5 (45)	76F8628	13.5 (45)	76F8629	100 (328)	USA Canada	N	
V.24 RS-232-C DCE X.21 bis operation (See Notes 7 and 9)	4911	1	4	8154	13.5 (45)	8152 61F4504	13.5 (45)	61F4506	100 (328)	Y	Y	
V.24 RS-232-C DCE X.21 bis operation (See Note 9) (Plenum cable)	4911	1	4		13.5 (45)	76F8630	13.5 (45)	76F8631	100 (328)	USA Canada	N	
Telecommunic-ation cord (See Note 8)	7865 7825	5 6	2 1		15 (50)					Y	Y	

Notes: See page 44-81.

Notes:

1. Direct attachment for the IBM 3101 Display Terminal and the asynchronous data terminal equipments (DTE).
2. Cable for LIC3 except for the French Post Telephone and Telegraph (PTT) modem.
3. Cable for LIC4 except for Transfix DCEs requiring "C" to be wrapped on "I" in the cable.
4. Direct attachment for synchronous DTE.
5. Cable for LIC1 except for Belgium and for Nippon Telegraph and Telephone (NTT) modem.
6. This cable does not support X.21 bis operation.
7. Cable for LIC1 except for Nippon Telegraph and Telephone (NTT) modem.
8. For LIC types 5 and 6, the cables are delivered with the LICs. The cable lengths are always 15 meters (50 feet). The telephone cable part numbers are specific to certain countries as follows:

Countries	Telephone Cable Part Numbers
Austria	65X8475
Belgium	65X8476
Germany	65X8476
Denmark	65X8482
France	65X8479
Israel	65X8477
Italy	65X8480
Japan	65X8484
Hong Kong	65X8485
Netherlands	65X8474
New Zealand	65X8472
South Africa	65X8473
Sweden	65X8481
Switzerland	65X8486
UK	65X8472
US, Canada	65X8471
Other countries	65X8483

9. This cable can be used in conjunction with an ARC/3745 V.24 DCE assembly feature 648x (see pages 44-84 and 44-85). However, to be in compliance with the European Telecommunication standard NET2, it is recommended to use the ARC/3745 V.24 DCE in conjunction with a custom-length long cable type having a maximum length of 13.5 m (45 ft).
10. This cable can be used in conjunction with an ARC/3745 V.35 DCE assembly feature 658x (see pages 44-84 and 44-85). However, to be in compliance with the European Telecommunication standard NET2, it is recommended to use the ARC/3745 V.35 DCE in conjunction with a custom-length long cable having a maximum length of 13.5 m (45 ft).
11. This cable can be used in conjunction with the ARC/3745 V.35 DTE assembly feature 6580 (see pages 44-84 and 44-85).
12. This cable can be used in conjunction with the ARC/3745 V.24 DTE assembly feature 6480 (see pages 44-84 and 44-85).
13. This cable must not be used for those Transfix DCEs which do not support the "Control" and "Indicator" signaling over the X.21 interface.
    This cable can be used in conjunction with an ARC/3745 X.21 DCE assembly feature 662x (see pages 44-84 and 44-85). However, to be in compliance with the European Telecommunication standard NET2, it is recommended to use the ARC/3745 X.21 DCE in conjunction with a custom-length long cable having a maximum length of 13.5 m (45 ft).
14. This cable can be used in conjunction with the ARC/3745 X.21 DTE assembly feature 6620 (see pages 44-84 and 44-85).

Low- and Medium-Speed Line Attachment (LIC11) Cables (3746-9x0)

This cable connects the LIC11 to the line connection box base (LCBB). Refer to the figure on page 44-34. The LIC11 cable is provided with a predefined fixed-length and must be ordered with the LIC11 feature (see column **<d>** below for LIC11 cable ordering codes).

Feature			Maximum Number of Cables per Feature	According to Your Requirements, Order:			Country	
				Fixed-Length Cable				
LIC11	Feat Code	LIC Type			Length m (ft)	Part Number (Note 3)	USA CAN LA AP	E/ME/A
<a>	<b>	<c>	<a>	<d>	<e>		<j>	<k>
	5210	11	1	9913 (Note 1)	1.3 (4)	58G5601	Y	Y
(plenum cable)	5210	11	1	9715 (Note 5)	5.5 (18) (Note 4)	17G5915	USA/Canada	N
	5210	11	1	9714 (Note 5)	5.5 (18) (Note 4)	58G5602	Y	Y
(plenum cable)	5210	11	1	9717 (Note 5)	13.5 (45) (Note 4)	17G5916	USA/Canada	N
	5210	11	1	9716 (Note 5)	13.5 (45) (Note 4)	58G5603	Y	Y
(plenum cable)	5210	11	1	5219 (Note 2)	33.5 (110) (Note 4)	17G5917	USA/Canada	N
	5210	11	1	5218 (Note 2)	33.5 (110) (Note 4)	58G5604	Y	Y
(plenum cable)	5210	11	1	5221 (Note 2)	68.5 (226) (Note 4)	17G5918	USA/Canada	N
	5210	11	1	5220 (Note 2)	68.5 (226) (Note 4)	58G5605	Y	Y
(plenum cable)	5210	11	1	5223 (Note 2)	103.5 (341) (Note 4)	17G5919	USA/Canada	N
	5210	11	1	5522 (Note 2)	103.5 (341) (Note 4)	58G5606	Y	Y

Notes:

1. This code is a specific code for the 3746 machine or MES order. This cable connects a LIC11 to a LCBB installed in the 3746.
2. This code is a feature code for the 3746 machine or MES order.
3. Part number for LIC11 cables are provided for information only. The codes listed in Col **<d>** must be used to order LIC11 cables with the 3746 machine or MES.
4. The actual cable length is the table value plus 1.5 m (5 ft). See “How to Determine Cable Length” on page 44-61.
5. This code is a specific code for the 3746 machine or MES order.

ISDN Attachment (LIC16) Cables (3746-9x0)

The LIC16 cable is automatically provided with a predefined fixed-length cable.

Feature			Maximum Number of Cables per Feature	According to Your Requirements, Order:			Country	
				Fixed–Length Cable				
	Feat Code	LIC Type			Length m (ft)	Part Number	World Wide Except Germany	World Wide
<a>	<b>	<c>	<a>	<d>	<e>		<j>	<k>
ISDN E1	5216	16	1		30 (100)	80G3984		Y

Active Remote Connector (ARC) Assemblies (3746-9x0)

The ARC assembly connects the modem or terminal (direct attachment) to the line connection box (LCB). There are two types of ARC assemblies:

ARC assembly A
The cable is part of the ARC component and cannot be separated from the ARC card. This type of ARC is no longer available from IBM.

ARC assembly B
The cable is separate from the ARC and is included in the ARC assembly. The cable length and connector type are determined by the feature code used in the ARC order.

The ARC assemblies are optional features and must be ordered with the 3746 machine or MES.

Note: An ARC cable connects to one of the following:

DCE A modem attachment

DTE A direct attachment

ARC Assemblies A: The information in Table 44-15 is included for reference only as the ARCs in this category are no longer available from IBM.

Table 44-15. ARC Assemblies A

ARC Assembly	Connected To a	ARC Name (feature code)	Length m (ft) (See Note 1)		ARC Assembly	Connected To a	ARC Name (feature code)	Length m (ft) (See Note 1)
ARC V.24 (See note 2)	DTE	ARC1B (6400)	15 (50)		ARC/3745 V.24 (See note 3)	DTE	ARC1D (6480)	5 (17)
ARC V.24 (See notes 2 and 6)	DCE	ARC1A1 (6405) ARC1A2 (6415)	5 (17) 12 (40)		ARC/3745 V.24 (See note 3)	DCE	ARC1C (6485)	5 (17)
ARC V.35 (See notes 2 and 5)	DTE	ARC3B (6500)	15 (50)		ARC/3745 V.35 (See note 3)	DTE	ARC3D (6580)	5 (17)
ARC V.35 (See notes 2 and 4)	DCE	ARC3A1 (6505) ARC3A2 (6515)	5 (17) 15 (50)		ARC/3745 V.35 (See note 3)	DCE	ARC3C (6585)	5 (17)
ARC X.21 (See note 2)	DCE	ARC4A1 (6605) ARC4A2 (6615)	5 (17) 15 (50)		ARC/3745 X.21 (See note 3)	DCE	ARC4C (6625)	5 (17)
ARC X.21 Transfix (See note 7)	DCE	ARC4A3 (6630) ARC4A4 (6635)	5 (17) 15 (50)		ARC/3745 X.21 (See note 3)	DTE	ARC4D (6620)	5 (17)
ARC X.21 (See note 2)	DTE	ARC4B (6600)	15 (50)					

Note: The notes for this table are found on page 44-89.

ARC Assemblies B

These ARC assemblies consist of an ARC card and a separate cable. The possible cable lengths depend on the type of connection. Table 44-16 shows the feature code for each combination of ARC card type, connection mode, and cable length. The ARC assemblies must be ordered with the 3746 machine or MES.

Each part of Table 44-16 corresponds to a category of interface and lists all the available lengths up to the maximum allowed for this category.

Table 44-16 (Page 1 of 2). ARC Assemblies B and Their Cables. The notes for this table are on page 44-89.

ARC Card Type	Connected to a	ARC Name (at MOSS-E)	ARC Cable Length m (ft) (See note 1)	Feature Code
V.24	DCE	ARC1A0	0.6 (2)	6406
V.24	DCE	(See notes 2 and 6)	1.2 (4)	6402
V.24	DCE		2.4 (8)	6404
V.24	DCE		5 (17)	6405
V.24	DCE		10 (33)	6410
V.24	DCE		12 (40)	6415
V.24	DTE	ARC1B0 (See note 2)	15 (50)	6400
V.24	3745 DCE cable	ARC1C0	0.6 (2)	6486
V.24	3745 DCE cable	(See notes 2 and 3)	1.2 (4)	6482
V.24	3745 DCE cable		2.4 (8)	6484
V.24	3745 DCE cable		5 (17)	6485
V.24	3745 DTE cable	ARC1D0 (See notes 2 and 3)	5 (17)	6480
V.35	DCE	ARC3A0	0.6 (2)	6506
V.35	DCE	(See notes 2 and 4)	1.2 (4)	6502
V.35	DCE		2.4 (8)	6504
V.35	DCE		5 (17)	6505
V.35	DCE		10 (33)	6510
V.35	DCE		15 (50)	6515
V.35	DTE	ARC3B0 (See notes 2 and 5)	15 (50)	6500
V.35 3745 DCE	3745 DCE cable	ARC3C0	0.6 (2)	6586
V.35 3745 DCE	3745 DCE cable	(See notes 2 and 3)	1.2 (4)	6582
V.35 3745 DCE	3745 DCE cable		2.4 (8)	6584
V.35 3745 DCE	3745 DCE cable		5 (17)	6585
V.35 3745 DTE	3745 DTE cable	ARC3D0 (See notes 2 and 3)	5 (17)	6580

Table 44-16 (Page 2 of 2). ARC Assemblies B and Their Cables. The notes for this table are on page 44-89.

ARC Card Type	Connected to a	ARC Name (at MOSS-E)	ARC Cable Length m (ft) (See note 1)	Feature Code
X.21	DCE	ARC4A0	0.6 (2)	6606
X.21	DCE	(See note 2)	1.2 (4)	6602
X.21	DCE		2.4 (8)	6604
X.21	DCE		5 (17)	6605
X.21	DCE		10 (33)	6610
X.21	DCE		15 (50)	6615
X.21	DTE	ARC4B0 (See note 2)	15 (50)	6600
X.21	DCE (Transfix)	ARC4E0	5 (17)	6630
X.21	DCE (Transfix)	(See note 7)	15 (50)	6635
X.21	3745 DTE cable	ARC4D0 (See notes 2 and 3)	5 (17)	6620
X.21	3745 DCE cable	ARC4C0	0.6 (2)	6626
X.21	3745 DCE cable	(See notes 2 and 3)	1.2 (4)	6622
X.21	3745 DCE cable		2.4 (7)	6624
X.21	3745 DCE cable		5 (17)	6625

Cables for ARC Assemblies B

New cables, at different lengths, or with a different connector, can be ordered separately from the ARC assemblies B when the ARC card type does not need to be changed. These cables can be procured from IBM by their part numbers.

Table 44-17 (Page 1 of 2). Cables for ARC Assemblies B. The notes for this table are on page 44-89.

ARC (Card Type)	Connected to a	Cable Length m (ft) (See note 1)	Cable Part Number
V.24	DCE	0.6 (2)	58G5610
V.24	DCE	1.2 (4)	58G5611
V.24	DCE	2.4 (8)	58G5612
V.24	DCE	5 (17)	58G5613
V.24	DCE	10 (33)	58G5614
V.24	DCE	12 (40)	58G5615
V.24	DTE	15 (50)	58G5616
For these DCE cables, see note 3.			
V.24	3745 DCE cable	0.6 (2)	58G5640
V.24	3745 DCE cable	1.2 (4)	58G5641
V.24	3745 DCE cable	2.4 (8)	58G5642
V.24	3745 DCE cable	5 (17)	58G5643
For this DTE cable, see note 3.			
V.24	3745 DTE cable	5 (17)	58G5644

Table 44-17 (Page 2 of 2). Cables for ARC Assemblies B. The notes for this table are on page 44-89.

ARC (Card Type)	Connected to a	Cable Length m (ft) (See note 1)	Cable Part Number
For these DCE cables, see note 4.			
V.35	DCE	0.6 (2)	58G5620
V.35	DCE	1.2 (4)	58G5621
V.35	DCE	2.4 (8)	58G5622
V.35	DCE	5 (17)	58G5623
V.35	DCE	10 (33)	58G5624
V.35	DCE	15 (50)	58G5625
For this DTE cable, see note 5.			
V.35	DTE	15 (50)	58G5626
For these DCE cables, see note 3.			
V.35 3745 DCE	3745 DCE cable	0.6 (2)	58G5645
V.35 3745 DCE	3745 DCE cable	1.2 (4)	58G5646
V.35 3745 DCE	3745 DCE cable	2.4 (8)	58G5647
V.35 3745 DCE	3745 DCE cable	5 (17)	58G5648
For this DTE cable, see note 3.			
V.35 3745 DTE	3745 DTE cable	5 (17)	58G5649
X.21	DCE	0.6 (2)	58G5630
X.21	DCE	1.2 (4)	58G5631
X.21	DCE	2.4 (8)	58G5632
X.21	DCE	5 (17)	58G5633
X.21	DCE	10 (33)	58G5634
X.21	DCE	15 (50)	58G5635
X.21	DTE	15 (50)	58G5636
For these DCE cables, see note 8.			
X.21	DCE (Transfix)	5 (17)	58G5637
X.21	DCE (Transfix)	15 (50)	58G5638
For these DCE cables, see note 3.			
X.21	3745 DCE cable	0.6 (2)	58G5650
X.21	3745 DCE cable	1.2 (4)	58G5651
X.21	3745 DCE cable	2.4 (8)	58G5652
X.21	3745 DCE cable	5 (17)	58G5653
For this DTE cable, see note 3.			
X.21	3745 DTE cable	5 (17)	58G5654

Plenum and X.21 Bis Cables for ARC Assemblies A and B

For installations requiring plenum cables (USA and Canada: Table 44-18) or X.21 bis cables (Table 44-19), 3745 plenum or X.21 bis cables must be used with:

- ARC assemblies A that have a 3745-type connector
- ARC assembly B cables that have a 3745-type connector

  Use the shortest ARC assembly B cable (refer to Table 44-16 on page 44-85) that will allow the 3745-type connector end to be easily accessible for connection to the 3745-type cable.

Figure 44-27 shows how a 3745 plenum or X.21 bis cable is used with an ARC assembly that has a 3745-type connector.

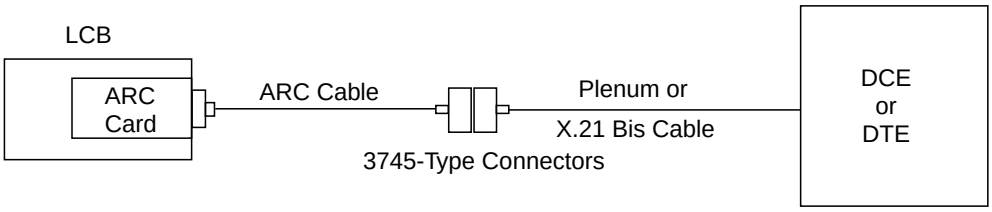


Figure 44-27. 3745 Plenum or X.21 Bis Cable Connected to an ARC Assembly

Maximum Cable Length

The cables listed in Table 44-18 and Table 44-19 should not be longer than the maximum length indicated in column 3. The lengths are determined by the signal transmission properties of the cables.

Table 44-18. 3745 Plenum Cables for ARC Assemblies. The notes for this table are on page 44-89.

3745 Plenum Cable Type	Connected To A	Maximum Length m (ft) See note 1.	3745 Part Number
V.24	DCE	15 (49)	76F8628
V.24	DCE	20 (65)	76F8629
V.24 (X.21 bis)	DCE	15 (49)	76F8630
V.24 (X.21 bis)	DCE	20 (65)	76F8631
V.24	DTE	15 (50)	76F8626
V.24	DTE	20 (65)	76F8627
V.35	DCE	15 (49)	76F8618
V.35	DCE	20 (65)	76F8619
V.35	DTE	15 (50)	76F8620
V.35	DTE	20 (65)	76F8621

Table 44-19. 3745 V.24/X.21 Bis Cables for ARC Assemblies

3745 V.24/X.21 bis Cable Type	Connected To A	Maximum Length m (ft) See note 1.	3745 Part Number
Japan	DCE	15 (49)	61F4505
(NTT modem)	DCE	20 (65)	61F4507
All countries	DCE	15 (49)	76F4504
except Japan	DCE	20 (64)	76F4506

Notes:

1. Unlike the other cable tables, these are the actual cable lengths. For cables attached to ARCs inside the 3746 frame, do not forget to add 1.5m (5 ft.) to the length of the cable measured outside the frame.

   For each category of ARC interface, (V.24 DCE for example,) the longest ARC cable specified in the table (12 meters in this example,) is the maximum supported length between the ARC card and the connection to the data communication equipment (DCE, DTE, or equivalent).

   In the case of ARCs connected to the 3745-type cables, this maximum is 20 meters, including the length of the 3745-type cable.

   Non-IBM ARC cables are not supported.

   Other cabling alternatives, such as passive patch panels, should use the shortest ARC cable length possible, because of the intermediate cable being introduced between the patch panel and the DTE or DCE.

2. Plenum cables are not available for the ARCs. If a plenum cable is to be used, order the equivalent ARC/3745 and the plenum cable corresponding to your need. Refer to “Plenum and X.21 Bis Cables for ARC Assemblies A and B” on page 44-88.

   For example, if a plenum cable is to be used in the U.S. or Canada for an ARC V.24 DCE, do not order an ARC1A0. Instead order the following:

   - An ARC V.24 for 3745 DCE cable (ARC1C0) from page 44-85
   - One of the 3745 V.24 DCE plenum cables from page 44-88

3. Connects to 3745 cables listed in “Plenum and X.21 Bis Cables for ARC Assemblies A and B” on page 44-88.
4. When connected to a French DCE, use a French DCE adapter between the cable and the DCE. This adapter is automatically shipped with the ARC.
5. When connected to a French DTE use a French DTE adapter between the cable and the DTE. This adapter is automatically shipped with the ARC.
6. For Japan, the wrap function on the cable connector is performed by using a wrap plug shipped with the machine.
7. For Transfix (France only). The ARCs named ARC4A3, ARC4A4, and ARC4E0 (X.21 DCE - Transfix) provide internal wrapping of the "Control" (C) and "Indicate" (I) leads. They are primarily designed for those Transfix DCEs (France) that do not support the "I" and "C" signaling of the X.21 interface.
8. For Transfix (France only).

Multiaccess Enclosure Cables

CAUTION-Preview

In the future there will be a 10 meter “cable” supplied to connect the multiaccess enclosure directly to the connectivity switch in the base 3746-9x0. The multiaccess enclosure must be within 6 meters of this frame. 1.5 meters of cable is necessary on each side for the connection itself. This will become available at a future date.

The following adapter cables are available for use with the multiaccess enclosure

EIA-232E/V.24 Fanout Cable (FC#3701)

A schematic of the EIA-232E/V.24 Fanout Cable (FC#3701) is found in Figure 44-28 below:

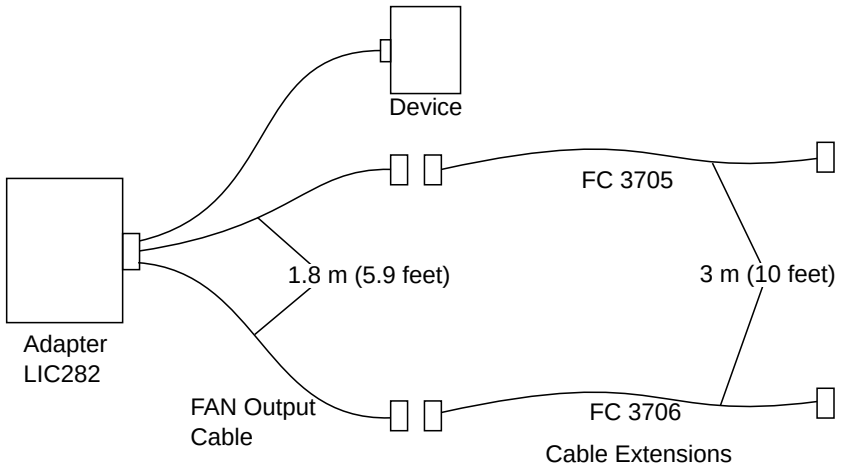


Figure 44-28. EIA-232 Fanout Schematic

This fanout cable provides eight connections (25-pin D-shell male,) each of which is 1.8 meters (5.9 feet) in length. Each connection is suitable for connection to a EIA-232/V.24 modem.

Cables 3705 and 3706 are available to complement this cable. FC 3705 attaches to the FC#3701 and extends the cable length an additional 3 meters (10 feet) for attachment to a modem. FC 3706 attaches to FC#3701 and provides clocking to allow devices to be directly attached to the Multiaccess Enclosure without having to use a modem. It is 3 meters (10 feet) in length and provides a female 25-pin D-shell connector.

V.35 Fanout Cable (FC#3702)

This fanout cable provides a 1.2-meter (4-foot) cable to a distribution box containing six 25-pin D-shell male connections.

Cables 3707 and 3708 are available to complement this cable. FC#3707 provides a 3-meter (10-foot) extension cable with a 34-pin male block connector for attachment to a modem. FC#3708 provides a 2-meter (6.6-foot) cable with a 34-pin female block connector for direct-device attachment.

V.36 Fanout Cable (FC#3703)

This fanout cable provides six connections (37-pin D-shell male), each of which is 3 meters (10-foot) in length. Each connection is suitable for connection to a V.36 modem.

Cables 3709 and 3710 are available to complement this cable. FC#3709 provides a 3-meter (10-foot) extension cable with a 37-pin male D-shell connector for attachment to a modem. FC#3710 provides a 3-meter (10-foot) cable with a 37-pin female D-shell connector for direct-device attachment.

X.21 Fanout Cable (FC#3704)

This fanout cable provides eight connections (15-pin D-shell male), each of which is 1.8 meter (5.9 feet) in length. Each connection is suitable for connection to an X.21 modem.

Cables 3711 and 3712 are available to complement this cable. FC#3711 provides a 3-meter (10-foot) extension cable with a 15-pin D-shell male connector for attachment to a modem. FC#3712 provides a 3-meter (10-foot) cable with a 15-pin D-shell female connector for direct-device attachment.

EIA-232E/V.24 Serial Interface Cable (FC#3705)

This cable provides a 3-meter (10-foot) extension cable with a 25-pin D-shell male connector for attachment to a modem.

EIA-232E/V.24 Direct Attach Cable (FC#3706)

This cable provides a 3-meter (10-foot) cable with a 25-pin D-shell female connector for direct-device attachment.

V.35 Serial Interface Cable (FC#3707)

This cable provides a 3-meter (10-foot) extension cable with a 34-pin male block connector for attachment to a modem.

V.35 Direct Attach Cable (FC#3708)

This cable provides a 2-meter (6.6-foot) cable with a 34-pin female block connector for direct-device attachment.

V.36 Serial Interface Cable (FC#3709)

This cable provides a 3-meter (10-foot) extension cable with a 37-pin male D-shell connector for attachment to a modem.

V.36 Direct Attach Cable (FC#3710)

This cable provides a 3-meter (10-foot) cable with a 37-pin female D-shell connector for direct-device attachment.

X.21 Serial Interface Cable (FC#3711)

This cable provides a 3-meter (10-foot) extension cable with a 15-pin D-shell male connector for attachment to a modem.

X.21 Direct Attach Cable (FC#3712)

This cable provides a 3-meter (10-foot) cable with a 15-pin D-shell female connector for direct-device attachment.

Multipurpose RJ-45 Adapter Cable (FC#3713)

This cable provides a 7.6-meter (25-foot) Category 5 cable with an RJ-45 connector for attachment to token-ring hubs or switches or Ethernet 10BASE-T hubs or switches.

RJ-48 T1 ISDN PRI Cable (FC#3714)

This cable provides a 15-meter cable with an RJ-48 connector for attachment to T1 ISDN PRI switches.

ISDN PRI (E1) Cable (FC#3715)

This cable provides a 30-meter (100-foot) cable with “flying leads” suitable for wiring to E1 ISDN PRI switches.

RJ-48 J1 ISDN PRI Cable (FC#3716)

This cable provides a 15-meter (50-foot) cable with a RJ-48 connector for attachment to J1 ISDN PRI switches.

Attachment Cable for V.35 DCE (FC#3799) - 30-cm

This cable provides a 30-cm (1-foot) cable that adapts the standard V.35 34-pin male block connector to the connector required for attachment to V.35 modems in France.

ATM MMF External Cable (FC#5710)

This cable provides a 10-meter cable for attachment to ATM multi-mode fiber connections.

ATM MMF External Cable (FC#5715)

This cable provides a 40-meter cable for attachment to ATM multi-mode fiber connections.

ATM SMF External Cable (FC#5720)

This cable provides a 10-meter cable for attachment to ATM single-mode fiber connections.

ATM SMF External Cable (Fm#5725)

This cable provides a 40-meter cable for attachment to ATM single-mode fiber connections.

ESCON Cable (cable Group#3797)

This cable provides connection to the S/390 server with ESCON Channel.

Note: This cable is not a feature of the multiaccess enclosure and must be ordered separately. Refer to “ESCON Jumper Cables and Emergency Power-Off Cables (3746-9x0)” on page 44-67.

Other Cables.

The following cables are not provided as options for the multiaccess enclosure and must be obtained by a separate cable order through your Installation Planning Representative as required.

- Token-Ring STP Network Adapter Cable (Group#7003)
- Ethernet 10BASE2 Cable

Unshielded Twisted-Pair Cables for Token-Ring LAN Attachment (3746-9x0)

The token-ring MAUs may be attached to a TIC3 using unshielded twisted-pair cables with 100-ohm impedance.

The American National Standards Institute (ANSI), the Electronics Industries Association (EIA), and the Telecommunications Industry Association (TIA) have developed a standard for wiring commercial buildings for telecommunication. This standard provides guidance in the wiring of new commercial buildings and specifies crosstalk and attenuation characteristics up to 16 MHz. (For more information about this standard, see the *EIA/TIA Commercial Building Telecommunication Wiring Standard,* ANSI/EIA/TIA, July 1991.)

The cable and connector used to link a twisted-pair token-ring MAU module to a TIC3 are explained in the following sections:

- "Token-Ring UTP Media Filter"
- "Category 5 UTP Cable"
- "Twisted-Pair Wire Connectors"

Token-Ring UTP Media Filter

The Token-Ring UTP Media Filter (part number 43G3875) links a TIC3 to a 4 or 16 Mbps token-ring network using UTP cabling.

The filter provides the following functions:

- Converts the connector on a TIC3 from DB9 to an 8-pin modular
- Matches impedance from 150 ohms to 100 ohms connector
- Reduces radio frequency emissions for FCC Class A compliance

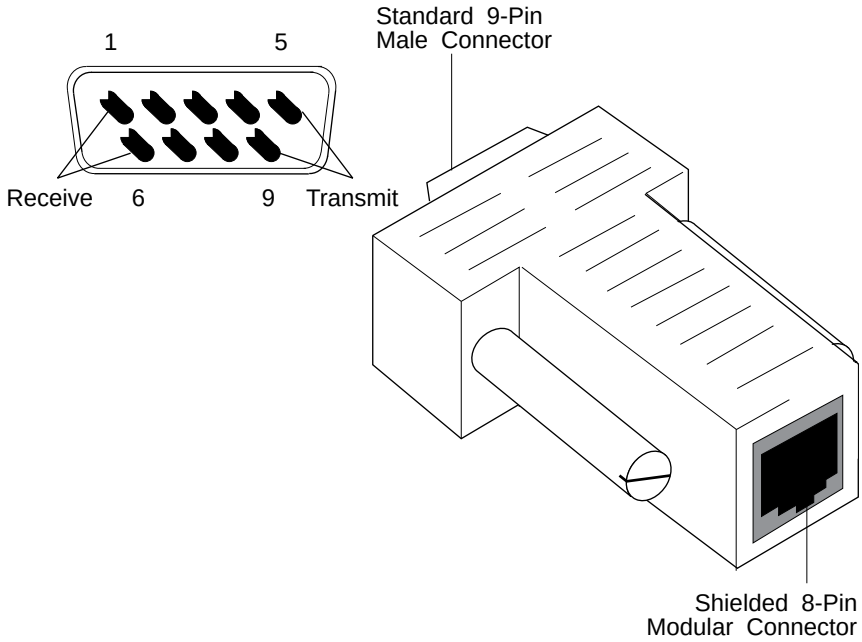


Figure 44-29. IBM Token-Ring UTP Media Filter (Part Number 43G3875)

Refer to Figure 44-30 on page 44-95 for the pin layout of the 8-pin modular connector. Connection of the token-ring UTP media filter to a token-ring MAU is via an attachment cable meeting the following specifications:

- Cable type

  100-ohm UTP meeting or exceeding the specifications for the category 5 cable (the cable may have an optional shield). The cable must contain four twisted pairs.

- Termination

  8-pin modular telephone plugs at each end (optional shielding) meeting or exceeding requirements for category 5 cable connections (refer to Figure 44-30 on page 44-95 for pin layout). If the cable and connector are shielded, the cable shield must terminate on the connector shield. Note that the connector pins must not be used to terminate a cable shield.

- Length

  Up to 100 m (330 ft.).

The UTP media filter is a component of the IBM 8250. Depending on the country, it must be ordered as either an accessory (part number 43G3875) or a feature of the 8250 (FC£3875).

Category 5 UTP Cable

Because cabling manufacturers have developed higher performance UTP cables, EIA/TIA has issued *Additional Cable Specifications for Unshielded Twisted-Pair Cables* (TSB-36) which define category 5 UTP cables. This category is intended for data transmission rates of up to 100 Mbps.

Twisted-Pair Wire Connectors

Attaching cables must use the 802.5 standard pin layout. Cables must be terminated with an 8-pin jack. Figure 44-30 illustrates the proper pin configuration for the cable from the rear.

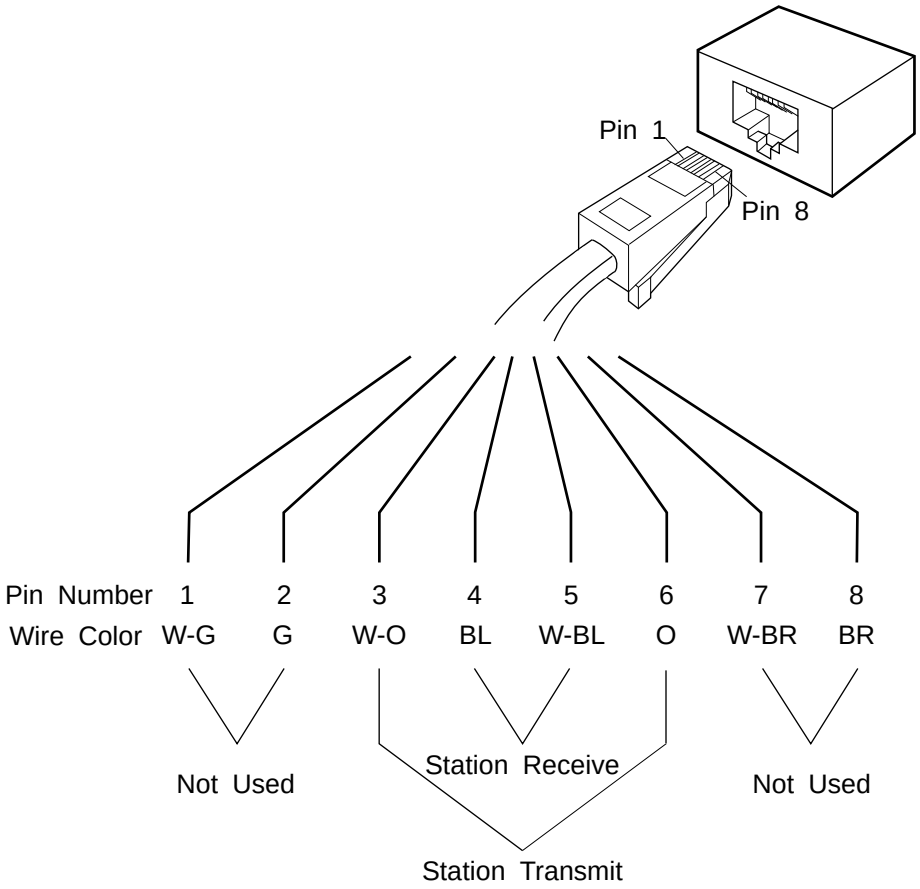


Figure 44-30. Twisted-Pair 8-Pin Connector

Note: This pin configuration is *not* the same as the pin configuration used for 10BASE-T Ethernet cables. If you attempt to connect stations to the hub via cables terminated with the 10BASE-T pin layout, the connection will not work properly.

Appendix A. 3746-9x0 Microcode Levels (EC)

Below is a list of the engineering change (EC) levels and the enhanced functionality they provide. Your IBM representative can obtain a current list. Pay particular attention to the prerequisites and co-requisites in your planning.

This was last updated on: 06/24/97.

LICENSED INTERNAL CODE Requirements (3746-900, 3746-950)

The following describes the functional levels of microcode, starting with the most recent ones. For each level, only the new supported functions are indicated, as they are cumulative with the functions of all the other levels down in the list (older levels).

The EC number indicated for a given ECA number reflects the level of the microcode at the availability date of the ECA. Any further technical level for this ECA increments the alphabetic index (A, B,...) complementing the EC number.

Starting with EC level D46130, the active microcode ECA and EC numbers of the 3746-9x0(s) connected to the Service Processor can be displayed at the MOSS-E console.

EC Level D46130B

Availability: 06/30/97

- Multiaccess Enclosure (FC.3000): ATM, worldwide ISDN Primary, Ethernet, Token-Ring, V.24 up to 64 kbps, V.35/V.36/X.21 up to 2 Mbps
- HPR/RTP and ARB over TR, Ethernet, SDLC, Frame Relay and ESCON
- 3746 NN connectivity increase: 5000 PUs and 15000 APPN/DLUR data sessions per 3746 NN
- HPR/MLTG support over TR, Ethernet, SDLC, Frame Relay and X.25
- X.25 support (FC.5030) for 3746-900/950 (independent from NCP) All traffics (dependent, APPN, HPR and IP), PVCs and SVCs X.25 port sharing between 3746 NN, 3746 IP, NCP ODLC traffic Support for NPM (V2R3 + PTFs)
- Frame Relay switching (FRFH): 3746 lines controlled by the NNP
- CIR for 3746 frame relay lines controlled by the NNP CIR+ Bandwidth Reservation System at DLCI level (APPN, HPR, IP traffic)
- Bandwidth Reservation System (BRS): 3746 PPP lines (IP traffic)
- LIC16 - FC.5216 (Euro-ISDN): enhancement (3746-900/NCP V7R5+) Automatic back-up of frame relay link over ISDN (non- disruptive for NCP to NCP connections) Support of LIC16 for NPM (V2R3 + PTFs)

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- Service Processor Upgrade Type 2 (FC.5052)
- CCM: configuration checking versus installed config (CDF-E)
- Display of the 3746 mcode level (ECA, EC) at MOSS-E console

EC Level D46120A (ECA number 159)

Availability: 12/20/96 (ECA no longer distributed)

- IP over leased lines (PPP) and Frame Relay lines
- NPM support: ports/stations (APPN/HPR), Processor/TIC3 utiliz.
- Frame Relay line and DLCI sharing: NCP (V7R5), 3746 NN and 3746 IP)

EC Level D46120 (ECA number 157)

Availability: 11/29/96 (ECA no longer distributed)

- 3746 NN connectivity increase: 4000 PUs + 12000 APPN/DLUR data sessions per 3746 NN
- Second Expansion Enclosure (FC.5016): 6 processors (total 16)
- Network Node Processor Memory Expansion (FC.5027)
- Service Processor Memory Expansion (FC.5028)
- EMEA only: LIC16 (FC.5216) for Euro.ISDN Primary Support by NCP V7R5 (3746-900)
- FR BAN for INN traffic with remote 372x connected to 2210/2216 (NCP V7R5)
- Back-up Network Node Processor (FC.5022)
- Optimization of processor storage utilization: increased APPN and DLUR connectivity (more PUs/sessions per processor): up to 100% connectivity increase
- Selective load of microcode (APPN/HPR, IP) by category of processors: ESCP2, CLP, TRP2, (CB)TRP2
- NNP no longer required for DCAF TCP/IP consoles on service LAN

EC Level D46100A (ECA number 155)

Availability: 09/20/96 (ECA no longer distributed)

- Ethernet interfaces (FC.5631, FC.5632): APPN/DLUR, HPR, IP....
- 3746 IP Routing (FC.5033) over ESCON, Token-Ring, Ethernet
- 3746 HPR/ANR over ESCON, TR, Ethernet, SDLC, Frame Relay
- 3746 APPN/DLUR over Frame Relay (BNN and BAN). Max connectivity in 3746-950: 500 PUs per CLP 3746-900: 1000 PUs per CLP, including NCP-controlled Frame Relay PUs & X.25 PUs
- APPN/DLUR perf improvement by 30-40% in transactions/sec and data throughput
- Port sharing: ESCON port: traffic for 3746 NN, 3746 IP, NCP-A, and NCP-B TIC3 port: traffic for 3746 NN, 3746 IP, and one NCP
- NetView Topology Manager (3746 APPN/HPR): 3746 local topology
- Network Management (3746 IP): SNMP (NetView/AIX), Telnet, CCM

- CCM: 3746 on-line configuration changes, including ESCON, with automatic deactivation/activation of impacted resources Delete/Copy/Search functions 3746-900 with NNP: ESCON Gen. Assist. replaced by CCM
- Year 2000 support (applicable also to 3745 Models xxA)
- Network Node Processor installation option: no loading of the APPN/HPR microcode in the 3746-900 processors

EC Level D22560D (ECA number 146)

Availability: 03/29/96 (ECA no longer distributed)

- 3746 NN support: LIC11, DLUR for LIC11/LIC12, 4 LIC per CLP, CLP back-up, 16 versus 4 host link stations per ESCP2, 3000 versus 1500 LU sessions per TRP2, 2000 versus 1000 adjacent nodes per 3746 NN, 6000 versus 3000 LU-LU sessions per 3746 NN
- X.25 Support - FC 5030 (3746-900/NCP V7R4)
- Non-ERP support over TIC3 for CNN ANR (3746-900/NCP V7R4)
- 3746-900: 3000 versus 1000 station (aggregate number of PUS over Frame Relay + Virtual Circuits over X.25)

EC Level D22560A (ECA number 144)

Availability: 01/26/96 (ECA no longer distributed)

- 3746 NN support (3746-900, 3746-950): APPN over LIC11, TIC3, and ESCON. DLUR over TIC3. Network Node Processor (FC.5022)
- EGA integrated to MOSS-E (3746-900/NCP)
- 2000 versus 500 PUs on (CB)TRP2 (3746/NCP)

EC Level D22510K (ECA number 142)

Availability: 12/95 - automatically shipped to all the installed 3746-900s (ECA no longer distributed).

- V.24 interface (LIC11) support at speeds up to 28.8 kbps (V.35 modems)
- Native IP routing over ESCON channels (3746-900/NCP V7R3)
- Frame Relay frame switching between 3745 & 3746-900 (NCP V7R4)
- ISDN Terminal Adapter (BRI/PRI) attachment (3746-900/V7R2)
- CLP: 1000 stations (aggregate number of PUs over Frame Relay + Virtual Circuits over X.25), in addition to 1000 SDLC PUs

EC Level D22510J (ECA number 138)

Availability: 08/25/95 (ECA no longer distributed)

- CLP: Frame Relay BAN and Frame Relay SAP multiplexing (3746-900/NCP V7R3)

EC Level D22510I (ECA number 137)

Availability: 06/30/95 (ECA no longer distributed)

- CLP: X.25 (3746-900/NCP V7R3/NPSI V3R8)
- NPM 6-900/NCP V7R3)
- ISDN Terminal Adapter (BRI/PRI) attachment (3746-900/V7R2)
- CLP: 1000 stations (aggregate number of PUs over Frame Relay + Virtual Circuits over X.25), in addition to 1000 SDLC PUs

EC level D22510D (ECA number 134)

Availability: 09/13/94 (ECA no longer distributed)

- CLP: Frame Relay (3746-900/NCP V7R2)
- CLP: up to 120 versus 100 active lines
- CLP: up to 1,000 versus 500 active PUs

Appendix B. ESCON MIB

```
IBMESCON-MIB DEFINITIONS ::= BEGIN

IMPORTS
      MODULE-IDENTITY, enterprises, Counter32, OBJECT-TYPE
            FROM SNMPv2-SMI
      OBJECT-GROUP, MODULE-COMPLIANCE
            FROM SNMPv2-CONF
      ifIndex
            FROM RFC1213-MIB;

ibmESCON MODULE-IDENTITY
      LAST-UPDATED "9604150000Z"
      ORGANIZATION "IBM"
      CONTACT-INFO "Bob Moore (remoore @ ralvm6)
                    IBM Corporation
                    800 Park Offices Drive
                    CNMA/664
                    P.O. Box 12195
                    Research Triangle Park, NC 27709, USA
                    Tel:    1 919 254 4436
                    E-mail: remoore@ralvm6.vnet.ibm.com

                    John Rooney (rooney @ yktvmv)

                    Valerie Zoccola (zoccolav @ lgeprofs)"

      DESCRIPTION
          "MIB for managing activity on an ESCON channel from its
          secondary end.

          'ESCON' is a trademark of the IBM Corporation."

      ::= {ibmArchitecture 17 }

ibm              OBJECT IDENTIFIER ::= { enterprises 2 }
ibmArchitecture  OBJECT IDENTIFIER ::= { ibm 5 }

esconPortData    OBJECT IDENTIFIER ::= { ibmESCON 1 }
esconLinkData    OBJECT IDENTIFIER ::= { ibmESCON 2 }
esconStationData OBJECT IDENTIFIER ::= { ibmESCON 3 }
esconConformance OBJECT IDENTIFIER ::= { ibmESCON 4 }

-- This MIB contains three tables, for managing an ESCON configuration
-- as shown here:
--
--         Host 1                                Host 2
--         --------------------------            ---------------
--         .d-1..d-y        d1...d-y.            .             .
--         .                        .            .             .
--         .  PN-1    ...     PN-xx .            .             .
--         --------------------------            ---------------
--              HLA-1 .                          HLA-2 .
--                    .                                .
--                 ----------------------------------------
--                 .            ESCON Director            .
--                 .                                      .
--                 ----------------------------------------
--              CULA-1.                          CULA-2.
--                    .                                .
--            ------------------------------------------------------
--            .    -----------                    ------------    .
--            .    .  ESCON  .                    .  ESCON   .    .
--            .    .  port 1 .                    .  port 2  .    .
--            .    -----------                    ------------    .
--            .                                                   .
--            .             Device supporting this MIB            .
--            ------------------------------------------------------
```

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```
--
--     - ESCON port table represents an ESCON physical port.  As shown,
--       a device may support more than one ESCON port.  This table
--       is indexed by ifIndex from MIB-II.  The entry for this port in
--       ifTable uses the ifType value 73 (ESCON).
--
--       Note that the Control Unit Link Address (CULA), identifying the
--       port on the ESCON Director to which an ESCON port is optically
--       connected, is a non-index object in this table.
--
--     - ESCON link table represents a link between an ESCON device
--       and a "logical host" within an actual host.  This table has
--       a three-part index:
--
--          - ifIndex from MIB-II, identifying the ESCON port
--            supporting the link
--          - esconLinkHostLinkAddress (HLA), identifying the actual
--            host for the link.
--          - esconLinkPartitionNumber (PN), identifying the "logical
--            host" for the link, within the actual host identified
--            by esconLinkHostLinkAddress.
--
--     - ESCON station table represents a link station in an ESCON
--       device.  This table has a four-part index:
--
--          - ifIndex from MIB-II, identifying the ESCON port
--            supporting the link
--          - esconStationHostLinkAddress (HLA), identifying the actual
--            host for the link.
--          - esconStationPartitionNumber (PN), identifying the "logical
--            host" for the link, within the actual host identified
--            by esconLinkHostLinkAddress.
--          - esconStationDeviceAddress (d-n in the figure), identifying
--            the device address by which the host knows the station.
--

-- ****************************************************************
-- IBM ESCON port table
-- ****************************************************************

esconPortTable OBJECT-TYPE
      SYNTAX SEQUENCE OF EsconPortEntry
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "Table of objects that describe an ESCON channel port."

      ::= { esconPortData 1 }

esconPortEntry OBJECT-TYPE
      SYNTAX EsconPortEntry
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "Table of objects that describe an ESCON channel port.  This
          table is indexed by ifIndex from MIB-II."

      INDEX { ifIndex }

      ::= { esconPortTable 1 }

EsconPortEntry ::= SEQUENCE
      {
      esconPortControlUnitLinkAddress OCTET STRING,
      esconPortInFiberStatus INTEGER,
      esconPortOutFiberStatus INTEGER
      }

esconPortControlUnitLinkAddress OBJECT-TYPE
      SYNTAX OCTET STRING (SIZE(2))
      MAX-ACCESS read-only
      STATUS current
```

```
      DESCRIPTION
          "This address identifies the ESCON Director port to which the
          optical fiber from the ESCON device is attached."

      ::= { esconPortEntry 1 }

esconPortInFiberStatus OBJECT-TYPE
      SYNTAX INTEGER {
                     inLoff(1),
                     inOls(2),
                     inIdle(3),
                     inUnknown(4)
                     }
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "Status of the fiber into this device from the host:

                 inLoff       = the light is off on the fiber into
                                this device from the host
                 inOls        = the fiber into this device from the
                                host is in an intermediate state between
                                light-off and light-on
                 inIdle       = the fiber into this device from the
                                host is in the light-on state, and is
                                ready to transfer data from the host to
                                this device
                 inUnknown    = the agent cannot determine the status of
                                the fiber into this device from the host"

      ::= { esconPortEntry 2 }

esconPortOutFiberStatus OBJECT-TYPE
      SYNTAX INTEGER {
                     outDisableReq(1),
                     outDisableForced(2),
                     outLoffForced(3),
                     outOls(4),
                     outOlsForced(5),
                     outEnable(6),
                     outError(7)
                    }
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "Status of the fiber out of this device to the host:

                 outDisableReq    = out disable obtained; the fiber
                                    out of this device into the host
                                    is not in the light-on state
                 outDisableForced = out ESCON emits OLS; the fiber
                                    out of this device into the host
                                    is not in the light-on state
                 outLoffForced    = out ESCON forced light-off; the fiber
                                    out of this device into the host
                                    is not in the light-on state
                 outOls           = the fiber out of this device into the
                                    host is in an intermediate state
                                    between light-off and light-on
                 outOlsforced     = out ESCON forced OLS; the fiber
                                    out of this device into the host
                                    is not in the light-on state
                 outEnable        = the fiber out of this device into the
                                    host is in the light-on state, and is
                                    ready to transfer data from this
                                    device to the host
                 outError         = the status of the fiber out of this
                                    device to the host is none of those
                                    listed above.  This is a state that
                                    should not occur"

      ::= { esconPortEntry 3 }
```

```
-- ****************************************************************
-- IBM ESCON link table
-- ****************************************************************

esconLinkTable OBJECT-TYPE
      SYNTAX SEQUENCE OF EsconLinkEntry
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "Table of objects that describe an ESCON channel link."

      ::= { esconLinkData 1 }

esconLinkEntry OBJECT-TYPE
      SYNTAX EsconLinkEntry
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "Table of objects that describe an ESCON channel link.  This
          table is indexed by ifIndex from MIB-II, by host link address,
          and by (host) partition number."

      INDEX { ifIndex,
              esconLinkHostLinkAddress,
              esconLinkPartitionNumber }

      ::= { esconLinkTable 1 }

EsconLinkEntry ::= SEQUENCE
      {
      esconLinkHostLinkAddress OCTET STRING,
      esconLinkPartitionNumber OCTET STRING,
      esconLinkStatus INTEGER
      }

esconLinkHostLinkAddress OBJECT-TYPE
      SYNTAX OCTET STRING (SIZE(1))
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "This address identifies the ESCON Director port to which the
          optical fiber between the ESCON Director and the host is
          attached."

      ::= { esconLinkEntry 1 }

esconLinkPartitionNumber OBJECT-TYPE
      SYNTAX OCTET STRING (SIZE(1))
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "A number identifying a logical host within an actual host."

      ::= { esconLinkEntry 2 }

esconLinkStatus OBJECT-TYPE
      SYNTAX INTEGER {
                     hlpNotEstab(1),
                     hlpEstab(2),
                     hlpError(3)
                     }
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "Gives the status of the link:

                hlpNotEstab = Host Logical Path not established
                hlpEstab = Host Logical Path established
                hlpError = Host Logical Path error"
```

```
      ::= { esconLinkEntry 3 }


-- ********************************************************************
-- IBM ESCON station table
-- ********************************************************************


esconStationTable OBJECT-TYPE
      SYNTAX SEQUENCE OF EsconStationEntry
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "Table of objects that describe an ESCON channel station."

      ::= { esconStationData 1 }

esconStationEntry OBJECT-TYPE
      SYNTAX EsconStationEntry
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "Table of objects that describe an ESCON channel station.  This
          table is indexed by ifIndex from MIB-II, by host link address,
          by (host) partition number, and by ESCON device address."

      INDEX { ifIndex,
              esconStationHostLinkAddress,
              esconStationPartitionNumber,
              esconStationDeviceAddress }

      ::= { esconStationTable 1 }

EsconStationEntry ::= SEQUENCE
      {
      esconStationHostLinkAddress OCTET STRING,
      esconStationPartitionNumber OCTET STRING,
      esconStationDeviceAddress OCTET STRING,
      esconStationState INTEGER,
      esconStationAttentionDelay INTEGER,
      esconStationAttentionTimeOut INTEGER,
      esconStationMaxBfru INTEGER,
      esconStationUnitSize INTEGER,
      esconStationMaxMsgSizeReceived INTEGER,
      esconStationMaxMsgSizeSent INTEGER,
      esconStationDataPacketsOkReceived Counter32,
      esconStationDataPacketsKoReceived Counter32,
      esconStationDataPacketsSent Counter32,
      esconStationTotalFramesSent Counter32,
      esconStationDataPacketsRetransmitted Counter32,
      esconStationPositiveAckDataPackets Counter32,
      esconStationSecondChanceAttentions Counter32,
      esconStationCommandsRetried Counter32
      }

esconStationHostLinkAddress OBJECT-TYPE
      SYNTAX OCTET STRING (SIZE(1))
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "This address identifies the ESCON Director port to which the
          optical fiber between the ESCON Director and the host is
          attached."

      ::= { esconStationEntry 1 }

esconStationPartitionNumber OBJECT-TYPE
      SYNTAX OCTET STRING (SIZE(1))
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "A number identifying a logical host within an actual host."
```

```
      ::= { esconStationEntry 2 }

esconStationDeviceAddress OBJECT-TYPE
      SYNTAX OCTET STRING (SIZE(1))
      MAX-ACCESS not-accessible
      STATUS current
      DESCRIPTION
          "A unique hexadecimal number allocated to each station on the
          same host link."

      ::= { esconStationEntry 3 }

esconStationState OBJECT-TYPE
      SYNTAX INTEGER {
                     idle(1),
                     cpDefined(2),
                     cpReset (3),
                     cpActive(4),
                     cpDelete(5),
                     cpAbend(6),
                     cldpWait(7),
                     cldpDefinedl(8),
                     cldpError(9),
                     cldpLoad(10),
                     cldpDump(11),
                     deletePending(12),
                     deleted(13),
                     cpXidExpected(14)
                     }
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The current state of the station."

      ::= { esconStationEntry 4 }

esconStationAttentionDelay OBJECT-TYPE
      SYNTAX INTEGER (0 .. 420)
      UNITS "seconds"
      MAX-ACCESS read-write
      STATUS current
      DESCRIPTION
          "Specifies the amount of time in seconds that elapses
          from the receipt of a packet at an ESCON station (when
          no other packets are queued) before that station sends
          buffered data to the Host.

          An update to this object takes effect the next time the station
          establishes communications with the host."

      ::= { esconStationEntry 5 }

esconStationAttentionTimeOut OBJECT-TYPE
      SYNTAX INTEGER (10 .. 840)
      UNITS "seconds"
      MAX-ACCESS read-write
      STATUS current
      DESCRIPTION
          "Specifies the amount of time in seconds that the station is to
          wait for a response to an attention signal it sent to the host
          before initiating channel disconnect.

          An update to this object takes effect the next time the station
          establishes communications with the host."

      ::= { esconStationEntry 6 }

esconStationMaxBfru OBJECT-TYPE
      SYNTAX INTEGER (1 .. 65535)
      MAX-ACCESS read-only
      STATUS current
```

```
      DESCRIPTION
          "Number of buffers in the host buffer pool for receiving data
          from this station."

      ::= { esconStationEntry 7 }

esconStationUnitSize OBJECT-TYPE
      SYNTAX INTEGER (64 .. 4000)
      UNITS "bytes"
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "Maximum size of a buffer, in bytes, that the host can receive
          from this station."

      ::= { esconStationEntry 8 }

esconStationMaxMsgSizeReceived OBJECT-TYPE
      SYNTAX INTEGER (0 .. 65535)
      MAX-ACCESS read-write
      STATUS current
      DESCRIPTION
          "The maximum length of a message that can be received on this
          station.

          An update to this object takes effect the next time the station
          establishes communications with the host."

      ::= { esconStationEntry 9 }

esconStationMaxMsgSizeSent OBJECT-TYPE
      SYNTAX INTEGER (0 .. 65535)
      MAX-ACCESS read-write
      STATUS current
      DESCRIPTION
          "The maximum length of a message that can be sent from this
          station to the host.

          An update to this object takes effect the next time the station
          establishes communications with the host."

      ::= { esconStationEntry 10 }

esconStationDataPacketsOkReceived OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of data packets received from the host by this
            station without Data Check."

      ::= { esconStationEntry 11 }

esconStationDataPacketsKoReceived OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of data packets received from the host by this station
          with Data Check."

      ::= { esconStationEntry 12 }

esconStationDataPacketsSent OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of data packets sent to the host by this station."

      ::= { esconStationEntry 13 }
```

```
esconStationTotalFramesSent OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of data packets and control packets sent to the host
          by this station."

      ::= { esconStationEntry 14 }

esconStationDataPacketsRetransmitted OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of data packets retransmitted by this station"

      ::= { esconStationEntry 15 }

esconStationPositiveAckDataPackets OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of data packets sent by this station to the host that
          the host has positively acknowledged.  When the host sends a
          positive acknowledgement for a group of n data packets, this
          counter is incremented by n."

      ::= { esconStationEntry 16 }

esconStationSecondChanceAttentions OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of times this station has sent a Second Chance
          Attention signal to the host."

      ::= { esconStationEntry 17 }

esconStationCommandsRetried OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "The number of times a command has been retried on this
          station"

      ::= { esconStationEntry 18 }


-- ****************************************************************
-- IBM ESCON conformance
-- ****************************************************************

esconMibCompliances OBJECT IDENTIFIER ::= {esconConformance 1 }

esconMibGroups OBJECT IDENTIFIER ::= {esconConformance 2 }

esconPortGroup OBJECT-GROUP
      OBJECTS {
              esconPortControlUnitLinkAddress,
              esconPortInFiberStatus,
              esconPortOutFiberStatus
              }
      STATUS current
      DESCRIPTION
          "Objects that describe an ESCON channel port."

      ::= { esconMibGroups 1 }
```

```
esconLinkGroup OBJECT-GROUP
      OBJECTS {
              esconLinkStatus
              }
      STATUS current
      DESCRIPTION
          "Objects that describe an ESCON channel link."

      ::= { esconMibGroups 2 }

esconStationGroup  OBJECT-GROUP
      OBJECTS {
              esconStationState,
              esconStationAttentionDelay,
              esconStationAttentionTimeOut,
              esconStationMaxBfru,
              esconStationUnitSize,
              esconStationMaxMsgSizeReceived,
              esconStationMaxMsgSizeSent,
              esconStationDataPacketsOkReceived,
              esconStationDataPacketsKoReceived,
              esconStationDataPacketsSent,
              esconStationTotalFramesSent,
              esconStationDataPacketsRetransmitted,
              esconStationPositiveAckDataPackets,
              esconStationSecondChanceAttentions,
              esconStationCommandsRetried
              }
      STATUS current
      DESCRIPTION
          "Objects that describe an ESCON channel station."

      ::= { esconMibGroups 3 }

esconMibCompliance MODULE-COMPLIANCE
      STATUS current
      DESCRIPTION
          "The compliance statement for the SNMPv2 entities that
          implement the IBM ESCON MIB."

      MODULE -- this module
          MANDATORY-GROUPS {
                          esconPortGroup,
                          esconLinkGroup,
                          esconStationGroup
                          }

          OBJECT esconStationAttentionDelay
          MIN-ACCESS read-only
          DESCRIPTION
              "Write access is not required."

          OBJECT esconStationAttentionTimeOut
          MIN-ACCESS read-only
          DESCRIPTION
              "Write access is not required."

          OBJECT esconStationMaxMsgSizeReceived
          MIN-ACCESS read-only
          DESCRIPTION
              "Write access is not required."

          OBJECT esconStationMaxMsgSizeSent
          MIN-ACCESS read-only
          DESCRIPTION
              "Write access is not required."

      ::= { esconMibCompliances 1 }

END
```

Appendix C. Service Processor Customization

When installing your service processor, the service representative will use the service processor customization function to setup your service processor according to your configuration. This function can also be used by the customer to add or modify existing parameters.

To access the function:

1. On the MOSS-E view primary window, double click on the **Service Processor object icon**.
2. Click on **Configuration Management**
3. Double click on **SP customization**
4. If it is the first time that you invoke 'SP Customization', all the items are selected. If you want to select only one item, click on the corresponding check box to deselect the item(s) that you don't want to modify the parameters, then click on **Next>>** and follow the prompts.

The following screens appear during service processor customization.

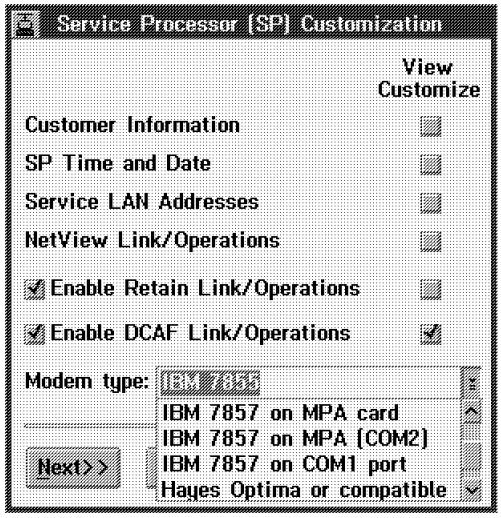

Figure C-1. Service Processor Customization

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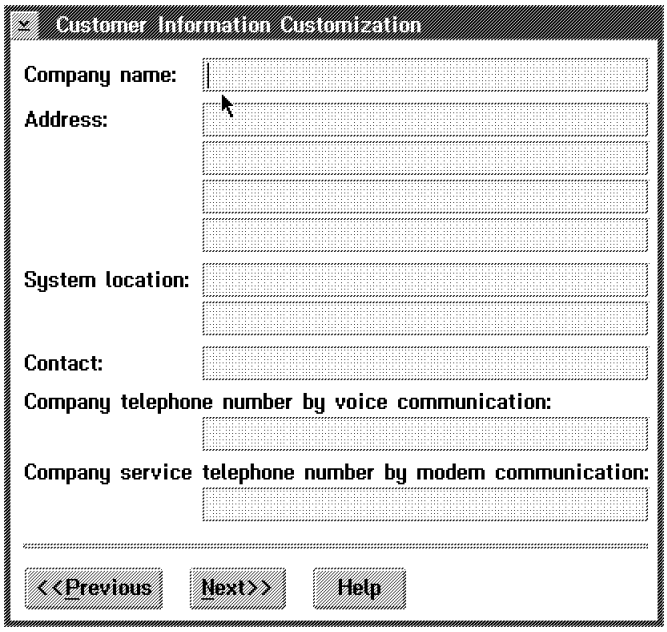

Figure C-2. Customer Information Customization

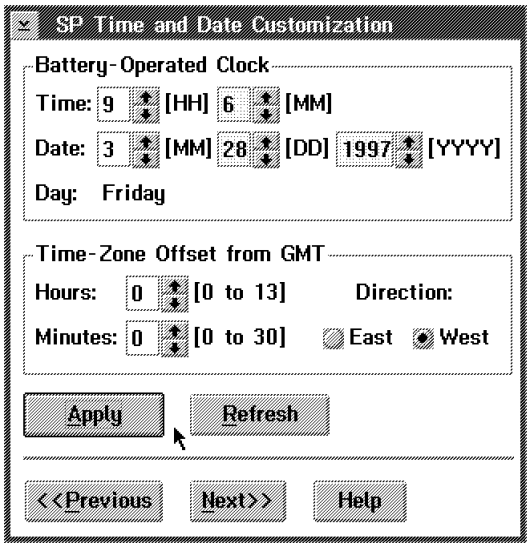

Figure C-3. SP Time and Date Customization

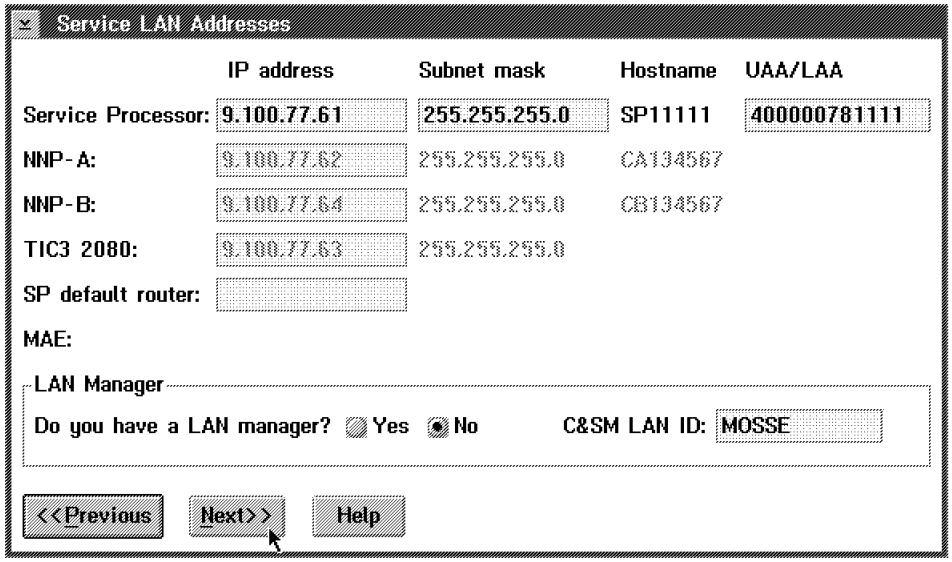

Figure C-4. Service LAN Addresses

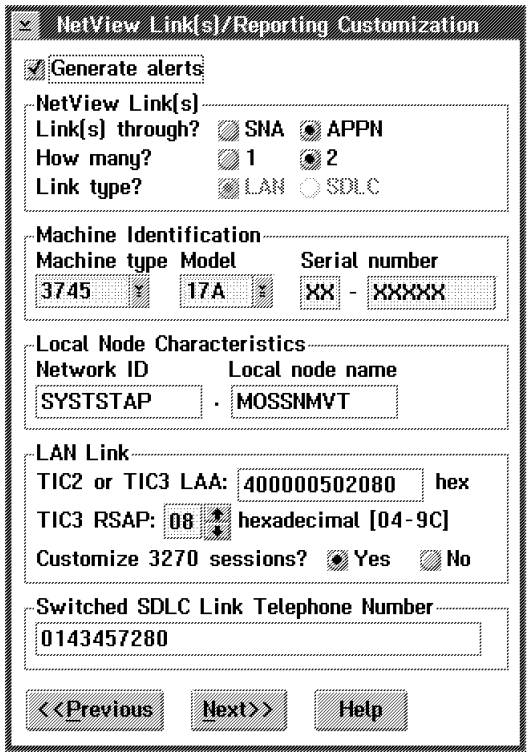

Figure C-5. NetView Link/Reporting Customization

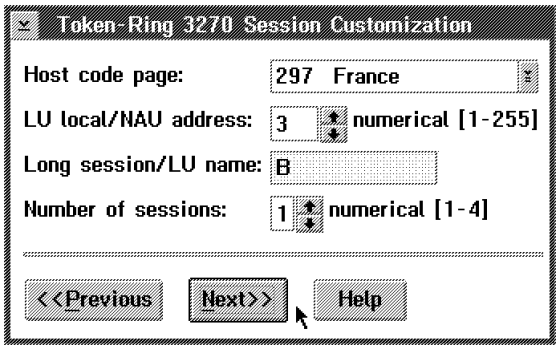

Figure C-6. Token-Ring 3270 Session Customization

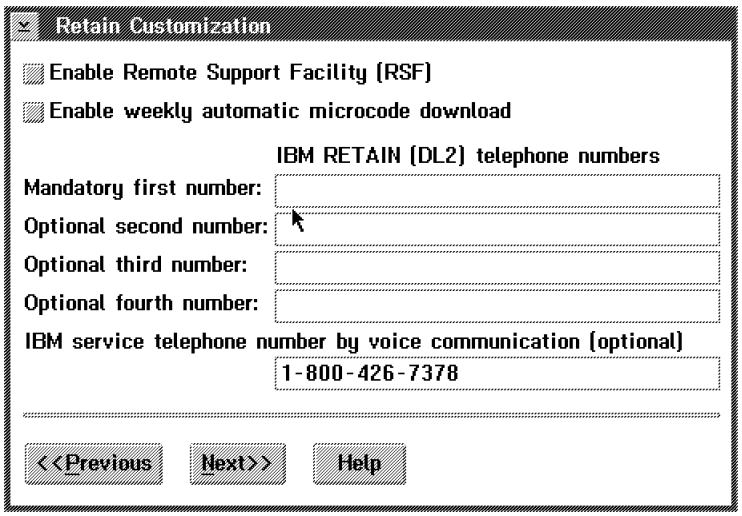

Figure C-7. Retain Customization

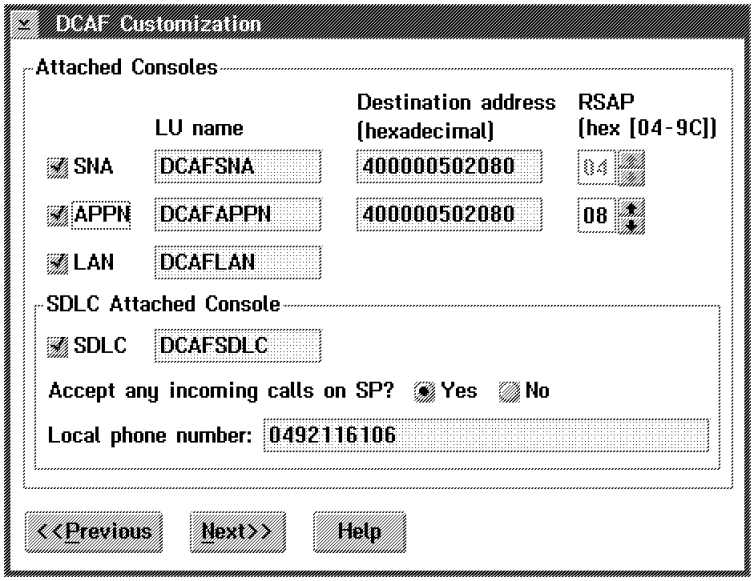

Figure C-8. DCAF Customization

List of Abbreviations

AB	area border
ACF	Advanced Communications Function
ACF/VTAM	Advanced Communications Function for the Virtual Telecommunications Access Method
ANR	automatic network routing
APPN	advanced peer-to-peer networking
ARB	adaptive rate-based flow/congestion control
ARC	active remote connector
ARP	address resolution protocol
AS	autonomous system
ASB	autonomous system border
ASE	autonomous system external
ASCII	American National Standard Code for Information Interchange
AUTO	automatic
BECN	backward explicit congestion notification
BER	box event record
BGP	border gateway protocol
BOOTP	bootstrap protocol
bps	bits per second
BRS	bandwidth reservation system
BSC	binary synchronous communication
C&SM	communications and system management
CBSP	control bus and service processor
CCITT	Comité Consultative International Télégraphique et Téléphonique The International Telegraph and Telephone Consultative Committee
CCU	central control unit
CD	carrier detector
CDF-E	configuration data file - extended
CE	customer engineer
CF3745	3745 and 3746 Configurator and Performance Model
CHPID	channel path id
CIDR	classless inter-domain routing
CIR	committed information rate
CLIST	command list
CLA	communication line adapter
CLP	communication line processor
CM	Communications Manager
CNN	composite network node
CNM	communication network management
COS	cost of service
CP	control point
CR	communications rate
CSU	customer service unit
DCAF	Distributed Console Access Facility
DCE	data circuit-terminating equipment
DDS	digital data service
DE	discard eligibility
DLC	data link control
DLCI	data link connection identifier
DLUR	dependent LU requester
DLUS	dependent LU server
DMUX	double multiplex circuit
DSU	data service unit
DTE	data terminal equipment
DX	duplex
EBCDIC	extended binary-coded decimal interchange code
EBN	extended border node
EC	engineering change
EMIF	ESCON Multiple image Facility
EN	end node
EP	emulation program
EPO	emergency power OFF
ESCA	ESCON channel adapter
ESCC	ESCON channel coupler
ESCD	ESCON Director
ESCON	Enterprise Systems Connection
ESCP	ESCON processor
FDX	full duplex
FECN	forward explicit congestion notification
FRFH	frame relay frame handler
FRSE	frame relay switching equipment
FRTE	frame relay terminating equipment

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HCD Hardware Configuration Definition

HDX half duplex

HI high

HLA host link address

HONE Hands-On Network Environment

HPR high performance routing

ICMP internet control message protocol

IML initial microcode load

INN intermediate network node or IBM Information Network

IOCP Input/Output Configuration Program

IP internet, or internetwork, protocol

IPL initial program load

IPR Installation Planning Representative

ITU-T International Telecommunications Union - Telecommunications (ex-CCITT)

KB kilobyte (processor storage) 1KB = 2^{10} bytes (1 024 bytes)

Kbps kilobits bits per second (speed or communication volume per second) 1Kbps = 1 000 (one thousand) bits per second

LAA locally administered address

LAN local area network

LCB line connection box

LCBB line connection box base

LCBE line connection box expansion

LCP link control protocol

LDM limited distance modem

LED light emitting diode

LIB n line interface board type n

LIC n line interface coupler type n

LSA link state advertisement

LIU n line interface coupler unit type n

LIV link integrity verification

LMI local management interface

LPAR logical partition

LPDA Link Problem Determination Aid

LQ line quality

LU logical unit

MAC medium access control

MAU medium attachment unit

MB megabyte (processor storage) 1MB = 2^{20} bytes (1 048 576 bytes)

Mbps megabits per second (speed or communication volume per second) 1Mbps = 1 000 000 (one million) bits per second

MCL microcode change level

MES miscellaneous equipment specification

MIB management information base

MIH missing interrupt handler

MLC machine level control

MLTG multi-link transmission group

MOSS-E maintenance and operator subsystem - extended

MTP multipoint

MUX multiplex circuit

MVS multiple virtual storage

NAU network addressable unit

NMBA nonbroadcast multiaccess

NCP Network Control Program

NDRS non-disruptive route switching

NGMF NetView Graphic Monitor Facility

NN network node

NNP network node processor

NPM NetView Performance Monitor

NRZI non-return-to-zero inverted

NVT network virtual terminal

ODLC outboard data link control

OSPF open shortest path first

PBN peripheral border node

PCI Peripheral component interconnect

PEP partitioned emulation program

PING packet internet groper

PN peripheral node

PPP point-to-point protocol

PPPNCP point-to-point network control protocol

PTP point-to-point

PTT post, telegraph, and telephone

PU physical unit

PVC permanent virtual circuit

QUAL quality

RCV receive clock

RETAIN	Remote Technical Assistance Information Network
RFS	ready for sending
RIP	routing information protocol
ROS	read-only storage
RSF	remote support facility
RTP	rapid transport protocol
RTS	request to send
SDLC	Synchronous Data Link Control
SMUX	single multiplex circuit
SNBU	switched network backup
SNI	SNA network interconnection
SNMP	simple network management protocol
SPAU	service processor access unit
SRC	service reference code
S/S	start-stop
SVC	switched virtual circuit
TC	test control
TCM	Trellis code modulation
TCP	transmission control protocol
TG	transmission group
THRES	threshold
TICn	token-ring interface coupler type n
TIM	Time Services
TOS	type of service
TPF	Transaction Processing Facility
TRA	token-ring adapter
TRP	token-ring processor
UDP	user datagram protocol
UTP	unshielded twisted pair
VTAM	Virtual Telecommunications Access Method
XID	exchange station identification
XMIT	transmit

Glossary

This glossary defines new terms used in this manual. It also includes terms and definitions from the *IBM Dictionary of Computing,* SC20-1699.

adaptive rate-based flow and congestion control (ARB). A function of High Performance Routing (HPR) that regulates the flow of data over an RTP connection by adaptively changing the sender's rate based on feedback on the receiver's rate. It allows high link utilization and prevents congestion before it occurs, rather than recovering after congestion has occurred.

Advanced Communication Function (ACF). A group of IBM licensed programs. principally VTAM programs. TCAM*, NCP, and SSP, that use the concepts of Systems Network Architecture (SNA), including distribution of function and resource sharing.

Advanced Communications Function for the Virtual Telecommunications Access Method (ACF/VTAM). An IBM licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability.

advanced peer-to-peer networking (APPN). Data communications support that routes data in a network between two or more advanced program-to-program communications (APPC) systems that do not need to be adjacent.

automatic network routing. A function of High Performance Routing (HPR) that is provides a low-level routing mechanism that requires no intermediate storage.

channel adapter (CA). A communication controller hardware unit used to attach the controller to a host processor.

communication controller. A device that directs the transmission of data over the data links of a network; its operation may be controlled by a program executed in a processor to which the controller is connected or it may be controlled by a program executed within the device. For example, the IBM 3745 and 3746 Nways Multiprotocol Controllers.

communications manager. A function of the OS/2 Extended Edition program that lets a workstation connect to a host computer and use the host resources as well as the resources of the other personal computers to which the workstation is attached, either directly or through a host system. The communications manager provides application programming interfaces (APIs) so that users and develop their own applications.

configuration data file - extended (CDF-E). A 3746 Nways Multiprotocol Controller MOSS-E file that contains a description of all the hardware features (presence, type, address, and characteristics).

communications management configuration host node. The type 5 host processor in a communications management configuration that does all network-control functions in the network except for the control of devices channel-attached to a data host nodes. Synonymous with communications management host. See also data host node.

control panel. A panel that contains switches and indicators for the customer's operator and service personnel.

control program. A computer program designed to schedule and to supervise the execution of programs of the controller.

control subsystem. The part of the controller that stores and executes the control program, and monitors the data transfers over the channel and transmission interfaces.

Customer Engineer. See IBM service representative

data circuit-terminating equipment (DCE). The equipment installed at the user's premises that provides all the functions required to establish, maintain, and terminate a connection, and the signal conversion between the data terminal equipment (DTE) and the line. For example, a modem is a DCE.

Note: The DCE may be a stand-alone equipment or integrated in the 3745.

data terminal equipment (DTE). That part of a data station that serves as a data source, data link , or both, and provides for the data communication control function according to protocols. For example, the 3174 and PS/2s are DTEs.

data host node. In a communication management configuration, a type 5 host node that is dedicated to processing applications and does not control network resources, except for its channel adapter-attached or communication adapter-attached devices. Synonymous with data host. See also communications management configuration host node.

direct attachment. The attachment of a DTE to another DTE without a DCE.

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ESCON channel. A channel having an Enterprise System Connection* channel-to-control-unit I/O interface that uses optical cables as a transmission medium.

ESCON channel adapter (ESCA). A communication controller hardware unit used to attach the controller to a host via ESCON fiber optics. An ESCA consists of an ESCON channel processor (ESCP) and an ESCON channel coupler (ESCC).

ESCON channel coupler (ESCC). A communication controller hardware unit which is the interface between the ESCON channel processor and the ESCON fiber optic cable.

ESCON channel processor (ESCP). A communication controller hardware unit which provides the channel data link control for the ESCON channel adapter.

Distributed Console Access Facility. (1) This program product provides a remote console function that allows a user at one programmable workstation (PS/2) to remotely control the keyboard input and monitor the display of output of another programmable workstation. The DCAF program does not affect the application programs that are running on the workstation that is being controlled. (2) An icon that represents the Distributed Console Access Facility.

Enterprise Systems Connection (ESCON). A set of IBM products and services that provides a dynamically connected environment within an enterprise.

Host. See host processor

host processor. (1) A processor that controls all or part of a user application network. (2) In a network, the processing unit where the access method for the network resides. (3) In an SNA network, the processing unit that contains a system services control point (SSCP). (4) A processing unit that executes the access method for attached communication controllers.

High Performance Routing (HPR). An extension of APPN that provides faster traffic throughput, lower delays, and lower storage overheads.

IBM service representative. An individual in IBM who does maintenance services for IBM products or systems. Also called the IBM *Customer Engineer*.

initial microcode load (IML). The process of loading the microcode into an adapter, the MOSS, or the service processor.

Internet. (1) A wide area network connecting disparate networks using the internetwork protocol (IP) (2) A public domain wide area network connecting thousands of disparate networks in industry, education, government and research. The Internet uses TCP/IP as the standard for transmitting information.

Internet address. The numbering system used in IP internetwork communications to specify a particular network, or a particular host on that network with which to communicate.

Internet Control Message Protocol (ICMP). A protocol used by a gateway to communicate with a source host, for example, to report an error in a datagram. It is an integral part of the Internetwork Protocol (IP).

Internetwork Protocol. A protocol that routes data from its source to its destination in an internet environment. It is also called the *Internet Protocol*.

Internetwork. Any wide area network connecting more than one network.

initial program load (IPL). The initialization procedure that causes the 3745 control program (NCP) to begin operation.

LAN-attached console. A PS/2 attached to the token-ring LAN that has the service processor attached. It is used to operate remotely the MOSS and MOSS-E functions.

IP router. A device that enables an Internetwork Protocol (IP) host to act as a gateway for routing data between separate networks.

line interface coupler (LIC). A circuit that attaches up to four transmission cables to the controller (from DTEs, DCEs or telecommunication lines).

locally administered address. In a local area network, an adapter address that the user can assign to override the universally administered address.

maintenance and operator subsystem - extended (MOSS-E). The licensed internal code loaded on the service processor hard disk to provide maintenance and operator facilities to the user and IBM service representative.

microcode. A program that is loaded in a processor (for example, the MOSS processor) to replace a hardware function. The microcode is not accessible to the customer.

modem (modulator-demodulator). See DCE.

Multiple Virtual Storage (MVS). Multiple Virtual Storage, consisting of MVS/System Product Version 1 and the MVS/370 Data Facility Product operating on a System/370* processor.

NetView. An IBM licensed program used to monitor a network, manage it, and diagnose its problems.

nonswitched line. A connection between systems or devices that does not have to be made by dialing. The connection can be point-to-point or multipoint. The line can be leased or private. Contrast with *switched line.*.

ping. A simple IP application that sends one or more messages to a specified destination host requesting a reply. Usually used to verify that the target host exists, or that its IP address is a valid address.

remote console. A PS/2 attached to the 3746 Nways Multiprotocol Controller either by a switched line (with modems) or by one of the communication lines of the user network.

Remote Technical Assistance Information Network (RETAIN).

service processor. The processor attached to a 3745, 3746-900, and 3746-950 via a token-ring LAN.

remote support facility (RSF). RSF provides IBM maintenance assistance when requested via the public switched network. It is connected to the IBM RETAIN database system.

service representative. See IBM service representative

services. A set of functions designed to simplify the maintenance of a device or system.

switched line. A transmission line with which the connections are established by dialing, only when data transmission is needed. The connection is point-to-point and uses a different transmission line each time it is established. Contrast with *nonswitched line*.

Synchronous Data Link Control (SDLC). A discipline for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. SDLC conforms to subsets of the Advanced Data Communication Control Procedures of the American National Standards Institute and High-Level Data Link Control (HDLC) of the International Standards Organization.

synchronous transmission. Data transmission in which the sending and receiving instruments are operating continuously at substantially the same frequency and are maintained, through correction, in a desired phase relationship.

token-ring adapter (TRA) type 3. 3746-900 and 3746-950 line adapter for IBM Token-Ring Network, composed of one token-ring processor card (TRP2), and two token-ring interface couplers type 3 (TIC 3s).

token-ring interface coupler type 2 (TIC2). A circuit that attaches an IBM Token-Ring network to the 3745.

token-ring interface coupler type 3 (TIC3). A circuit that attaches an IBM Token-Ring network to the 3746-900 or 3746-950.

user access area. A specific area in the controller where the customer can install, remove, change, or swap couplers and cables without IBM assistance.

universally administered address. In a local area network, the address permanently encoded in an adapter at the time of manufacture. All universally administered addresses are unique.

user application network. A configuration of data processing products, such as processors, controllers, and terminals, for data processing and information exchange. This configuration may use circuit-switched, packet-switched, and leased-circuit services provided by carriers or PTT. Also called a *user network*.

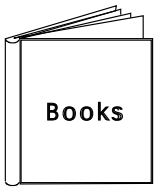
V.24, V.35, and X.21. ITU-T (ex-CCITT) recommendations on transmission interfaces.

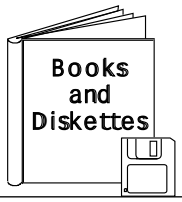
Bibliography

Customer Documentation for the 3745 (Models 210, 310, 410, 610, 21A, 31A, 41A, and 61A), and 3746 (Model 900)

Table X-1 (Page 1 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

This customer documentation has the following formats:





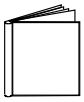
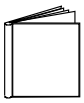
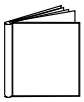
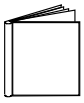
Finding Information		
		3745 Models A and 3746 Books Starting with engineering change (EC) F12380, all of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for this EC.
	SA33-0172	***IBM 3745 Communication Controller*** ***Models 210 to 61A*** ***IBM 3746 Expansion Unit Model 900*** ***Customer Master Index***[1] Provides references for finding information in the customer documentation library.
Evaluating and Configuring		
	GA33-0092	***IBM 3745 Communication Controller*** ***Models 210, 310, 410, and 610*** ***Introduction*** Gives an introduction of the IBM Models 210 to 610 capabilities. For Models A refer to the *Overview*, GA33-0180.
	GA33-0180	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Overview*** Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.
	GA33-0457	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Expansion Unit Model 900*** ***Models 900 and 950*** ***Planning Guide*** Planning for: • Field upgrades • Service processor and alert management configuration • Network integration (NCP, APPN, and IP control) • Physical installation.

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Table X-1 (Page 2 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

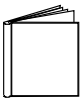
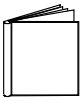
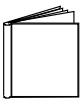
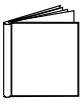
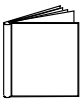
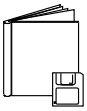
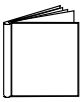
Preparing Your Site		
	GC22-7064	***IBM System/360, System/370, 4300 Processor*** ***Input/Output Equipment Installation Manual-Physical Planning*** (Including Technical News Letter GN22-5490) Provides information for physical installation for the 3745 Models 130 to 610. For 3745 Models A and 3746 Model 900, refer to the *Planning Guide*, GA33-0457.
	GA33-0127	***IBM 3745 Communication Controller*** ***Models 210, 310, 410, and 610*** ***Preparing for Connection*** Helps for preparing the 3745 Models 210 to 610 cable installation. For 3745 Models A refer to the *Connection and Integration Guide*, SA33-0129.
Preparing for Operation		
	GA33-0400	***IBM 3745 Communication Controller All Models***[3] ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Safety Information***[1] Provides general safety guidelines.
	SA33-0129	***IBM 3745 Communication Controller All Models***[3] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Connection and Integration Guide***[1] Contains information for connecting hardware and integrating network of the 3745 and 3746-900 after installation.
	SA33-0416	***Line Interface Coupler Type 5 and Type 6*** ***Portable Keypad Display*** ***Migration and Integration Guide*** Contains information for moving and testing LIC types 5 and 6.
	SA33-0158	***IBM 3745 Communication Controller All Models***[3] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Console Setup Guide***[1] Provides information for: • Installing local, alternate, or remote consoles for 3745 Models 130 to 610 • Configuring user workstations to remotely control the service processor for 3745 Models A and 3746 Model 900 using: – DCAF program – Telnet Client program.
Customizing Your Control Program		
	SA33-0178	***Guide to Timed IPL and Rename Load Module*** Provides VTAM procedures for: • Scheduling an automatic reload of the 3745 • Getting 3745 load module changes transparent to the operations staff.
Operating and Testing		

Table X-1 (Page 3 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

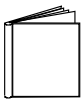
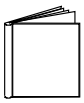
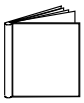
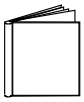
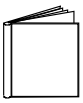
	SA33-0098	***IBM 3745 Communication Controller All Models***[4] ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 130 to 610.
	SA33-0177	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 17A to 61A, and 3746 Model 900 operating as an SNA node (using NCP), APPN/HPR Network Node, and IP Router.
	SA33-0097	***IBM 3745 Communication Controller All Models***[3] ***Advanced Operations Guide***[1] Provides instructions for advanced operations and testing, using the 3745 MOSS console.
	On-line Information	***Controller Configuration and Management Application*** Provides a graphical user interface for configuring and managing a 3746 APPN/HPR Network Node and IP Router, and its resources. Is also available as a stand-alone application, using an OS/2 workstation. Defines and explains all the 3746 Network Node and IP Router configuration parameters through its online help.
	SH11-3081	***IBM 3746 Nways Multiprotocol Controller Models 900 and 950*** ***Controller Configuration and Management: User's Guide***[5] Explains how to use CCM and gives examples of the configuration process.
Managing Problems		
	SA33-0096	***IBM 3745 Communication Controller All Models***[3] ***Problem Determination Guide***[1] A guide to perform problem determination on the 3745 Models 130 to 61A.
	On-line Information	***Problem Analysis Guide*** An online guide to analyze alarms, events, and control panel codes on: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

Table X-1 (Page 4 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900



SA33-0175

IBM 3745 Communication Controller Models A[2]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Alert Reference Guide

Provides information about events or errors reported by alerts for:

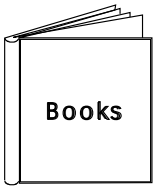
- IBM 3745 Communication Controller Models A[2]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

[1] Documentation shipped with the 3745.
[2] 3745 Models 17A to 61A.
[3] 3745 Models 130 to 61A.
[4] Except 3745 Models A.
[5] Documentation shipped with the 3746-900.

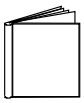
Additional Customer Documentation for the 3745 Models 130, 150, 160, 170, and 17A

Table X-2. Additional Customer Documentation for the 3745 Models 130 to 17A

This customer documentation has the following format:



Finding Information



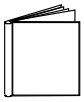
SA33-0142

IBM 3745 Communication Controller
Models 130, 150, 160, 170, and 17A
IBM 3746 Nways Multiprotocol Controller Model 900

Customer Master Index[1]

Provides references for finding information in the customer documentation library.

Evaluating and Configuring



GA33-0138

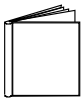
IBM 3745 Communication Controller
Models 130, 150, and 170

Introduction

Gives an introduction about the IBM Models 130 to 170 capabilities, including Model 160.

For Model 17A refer to the *Overview*, GA33-0180.

Preparing Your Site



GA33-0140

IBM 3745 Communication Controller
Models 130, 150, 160, and 170

Preparing for Connection

Helps for preparing the 3745 Models 130 to 170 cable installation.

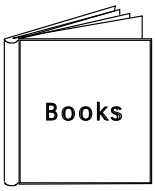
For 3745 Model 17A refer to the *Connection and Integration Guide*, SA33-0129.

[1] Documentation shipped with the 3745.

Customer Documentation for the 3746 Model 950

Table X-3 (Page 1 of 2). Customer Documentation for the 3746 Model 950

This customer documentation has the following formats:

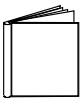


Finding Information

3745 Models A and 3746 Books

Starting with engineering change (EC) F12380, all of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for this EC.

Preparing for Operation



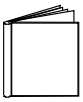
GA33-0400

IBM 3745 Communication Controller All Models[1]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Safety Information[2]

Provides general safety guidelines

Evaluating and Configuring

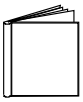


GA33-0180

IBM 3745 Communication Controller Models A[3]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Overview

Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.



GA33-0457

IBM 3745 Communication Controller Models A[2]
IBM 3746 Expansion Unit Model 900
Models 900 and 950

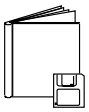
Planning Guide

Planning for:

- Field upgrades
- Service processor and alert management configuration
- Network integration (NCP, APPN, and IP control)
- Physical installation.

Table X-3 (Page 2 of 2). Customer Documentation for the 3746 Model 950

Operating and Testing



SA33-0356

IBM 3746 Nways Multiprotocol Controller Model 950

User's Guide[2]

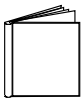
Explains how to:

- Carry out daily routine operations on Nways controller
- Install, test, and customize the Nways controller after installation
- Configure user's workstations to remotely control the service processor using:
  - DCAF program
  - Telnet client program.

On-line information

Controller Configuration and Management Application

Provides a graphical user interface for configuring and managing a 3746 APPN/HPR network node and IP Router, and its resources.
Is also available as a stand-alone application, using an OS/2 workstation.
Defines and explains all the 3746 Network Node and IP Router configuration parameters through its on-line help.



SH11-3081

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Controller Configuration and Management: User's Guide[2]

Explains how to use CCM and gives examples of the configuration process.

Managing Problems

On-line information

Problem Analysis Guide

An on-line guide to analyze alarms, events, and control panel codes on:

- IBM 3745 Communication Controller Models A[3]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

SA33-0175

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Alert Reference Guide

Provides information about events or errors reported by alerts for:

- IBM 3745 Communication Controller Models A[3]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

[1] Models 130 to 61A.
[2] Documentation shipped with the 3746-950
[3] 3745 Models 17A to 61A.

Related Manuals

Related Manuals for 3745

The following documents are indispensable for planning for your 3745 Communication Controllers Models A:

- *IBM 3745 Communication Controller: Console Setup Guide*, GA33-0158
- *IBM 3745 Communication Controller Models A: Overview*, GA33-0180.

Be sure to use the latest editions of the above documents.

Also helpful are:

- *Planning for Integrated Networks*, SC31-8062
- *Planning and Reference for NetView, NCP, and VTAM*, SC31-7122.
- *Virtual Telecommunications Access Method V3 R4: Resource Definition Reference*, SC31-6438

The following Enterprise Systems Connection (ESCON) documents may be helpful:

- *Introducing the Enterprise Systems Connection*, GA23-0383
- *Enterprise Systems Connection Migration*, GA23-0383
- *Planning for Enterprise Systems Connection Links*, GA23-0367
- *Introducing Enterprise Systems Connection Directors*, GA23-0363.

The following *IBM International Technical Support Centers* "redbooks" are generally very helpful:

- *Frame Relay Guide*, GG24-4463
- *3746-900 and NCP Version 7 Release 2*, GG24-4464.

The following Network Control Program (NCP) documents may be helpful:

- For NCP V6 R2:
  - *Network Control Program V6 R2: Migration Guide*, SC31-6216
  - *Network Control Program V6 R2, ACF/SSP V3 R8, EP R11: Resource Definition Guide*, SC31-6209-01
  - *Network Control Program V6 R2, ACF/SSP V3 R8, EP R11: Resource Definition Reference*, SC31-6210-01
  - *Network Control Program V6 R2: Planning and Implementation Guide*, GG24-4012
  - *Network Control Program V6 R2, ACF/SSP V3 R8, EP R11: Library Directory*, SC31-6215.
- For NCP V6 R3:
  - *Network Control Program V6 R3: Migration Guide*, SC31-6217
  - *Network Control Program V6 R3, ACF/SSP V3 R9, EP R11: Resource Definition Guide*, SC31-6209-02
  - *Network Control Program V6 R3, ACF/SSP V3 R9, EP R11: Resource Definition Reference*, SC31-6210-02 Guide,
  - *Network Control Program V6 R3, ACF/SSP V3 R9, EP R11: Library Directory*, SC31-6218.
- For NCP V7 R1:
  - *Network Control Program V7 R1: Migration Guide*, SC31-6219
  - *Network Control Program V7 R1, ACF/SSP V4 R1, EP R12: Resource Definition Guide*, SC31-6223-00
  - *Network Control Program V7 R1, ACF/SSP V4 R1, EP R12: Resource Definition Reference*, SC31-6224-00
  - *Network Control Program V7 R1, ACF/SSP V4 R1, EP R12: Library Directory*, SC31-6220.
- For NCP V7 R2:
  - *Network Control Program V7 R2, ACF/SSP V4 R2, EP R12: Generation and Loading Guide*, SC31-6221.
  - *Network Control Program V7 R2: Migration Guide*, SC31-6258-00
  - *Network Control Program V7 R2, ACF/SSP V4 R2, EP R12: Resource Definition Guide*, SC31-6223-01

  - *Network Control Program V7 R2, ACF/SSP V4 R2, EP R12: Resource Definition Reference*, SC31-6224-01
  - *Network Control Program V7 R2, ACF/SSP V4 R2, EP R12: Library Directory*, SC31-6259.
- For NCP V7 R3:
  - *Network Control Program V7 R3: Migration Guide*, SC31-6258-01
  - *Network Control Program V7 R3, ACF/SSP V4 R3, EP R12: Resource Definition Guide*, SC31-6223-02
  - *Network Control Program V7 R3, ACF/SSP V4 R3, EP R12: Resource Definition Reference*, SC31-6224-02
  - *Network Control Program V7 R3, ACF/SSP V4 R3, EP R12: Library Directory*, SC31-6262.
- For NCP V7 R4:
  - *Network Control Program V7 R4: Migration Guide*, SC30-3786
  - *Network Control Program V7 R4, ACF/SSP V4 R4, EP R12: Resource Definition Guide*, SC31-6223-03
  - *Network Control Program V7 R4, ACF/SSP V4 R4, EP R12: Resource Definition Reference*, SC31-6224-03
  - *Network Control Program V7 R4, ACF/SSP V4 R4, EP R12: Library Directory*, SC30-3785.

The following OS/2 document may be of some help:

IBM Extended Services for OS/2 Programming Services and Advanced Problem Determination for Communications, SO4G-1007.

For the Distributed Console Access Facility (DCAF) Version 1.3 the following documents are needed:

- *DCAF: Installation and Configuration Guide*, SH19-4068
- *DCAF: User's Guide*, SH19-4069
- *DCAF: Target User's Guide*, SH19-6839.

Related Manuals for 3746-9X0 (APPN)

To learn more about the APPN architecture, including high-performance routing (HPR), adaptive rate based flow and congestion control (ARB), dependent LU requesters/servers (DLURs/DLUSs), and other subjects, refer to:

- *Inside APPN - The Essential Guide to the Next-Generation SNA*, SG24-3669.
- *APPN Architecture and Protocol Implementations Tutorial:ecit, SG24-3669.*

The following Enterprise Systems Connection (ESCON), Virtual Telecommunications Access Method (VTAM), and OS/2 documentation may be also helpful:

- Introducing the Enterprise Systems Connection*, GA23-0383*
- Enterprise Systems Connection Migration*, GA23-0383*
- Planning for Enterprise Systems Connection Links*, GA23-0367*
- Introducing Enterprise Systems Connection Directors*, GA23-0363*
- Virtual Telecommunications Access Method V4R3: Resource Definition Reference*, SC31-6438.*
- IBM Extended Services for OS/2 Programming Services and Advanced Problem Determination for Communications*, SO4G-1007.*

For help with TCP/IP, refer to:

- TCP/IP for MVS: Performance Tuning Guide*, SC31-7188.*

To learn more token-ring configurations and the IEEE 802.2 standard, refer to:

- Token-Ring Network Architecture Reference*, SC30-3374.*

Index

Numerics

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Readers' Comments — We'd Like to Hear from You

3745 Communication Controller Models A
3746 Nways Multiprotocol Controller
Models 900 and 950
Planning Guide

(Part 3/3)
Preliminary Second Edition

Publication No. GA33-0457-0A

Please send us your comments concerning this book. We will greatly appreciate them and will consider them for later releases of the present book.

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Readers' Comments — We'd Like to Hear from You
GA33-0457-0A

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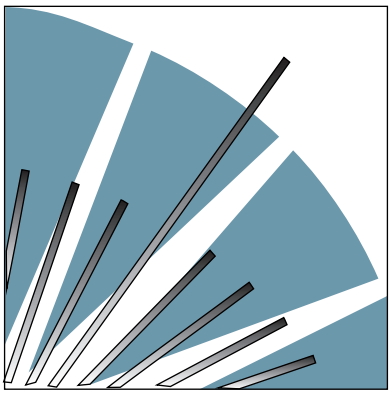

GA33-0457-0A