



5494 Remote Control Unit

User's Guide

Release 3.0

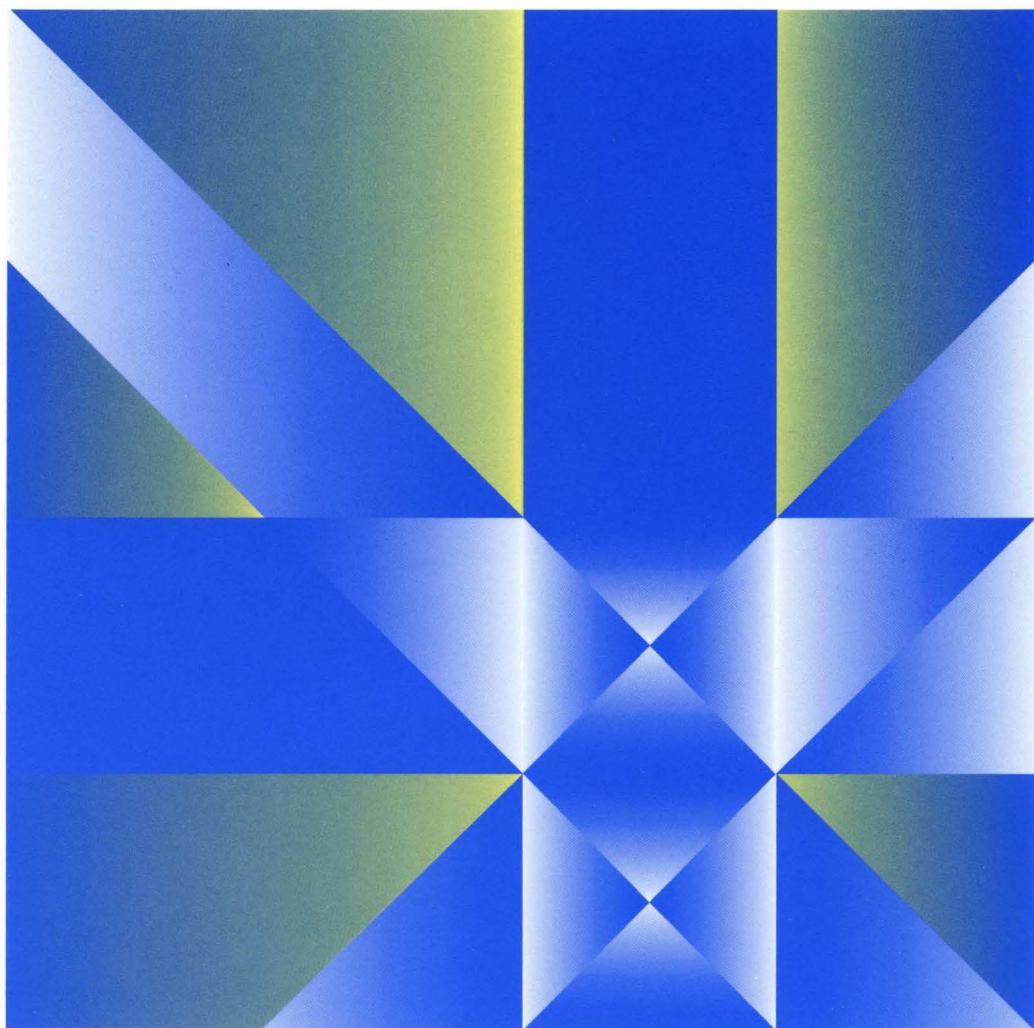
GA27-3960-03

5494 Remote Control Unit

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Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page xiii.

| **5494 Microcode**

| In this document, the term **code** refers to microcode.

| **AS/400 VxRy**

| In this document, the term **AS/400 VxRy** refers to the OS/400 version *x* and release *y* numbers.

| **Fourth Edition (November 1994)**

| This edition applies to Release 3.0 of the IBM 5494 Remote Control Unit and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

Notices	xiii
Electronic Emission Notices	xiii
Japanese Voluntary Control Council for Interference (VCCI) Statement	xiv
Safety Notices	xiv
United Kingdom	xiv
World Trade Safety Information	xiv
European Community (EC) Mark of Conformity Statement	xv
Translated Safety Notices	xvi
Trademarks	xvi
 About This Manual	xix
Who Should Read This Manual	xix
How This Manual Is Organized	xix
Part 1: Setting Up and Configuring Your 5494	xix
Part 2: Operating Your 5494	xx
Related Publications	xxi
5494 Library	xxi
Cabling	xxi
Application System/400 (AS/400)	xxi
Communication/Protocols	xxi
Local Area Networks (LANs)	xxii
Programmable Workstations	xxii
Systems Network Architecture (SNA)	xxiii
 Summary of Changes	xxv
Fourth Edition (November 1994)	xxv

Part 1. Setting Up and Configuring Your 5494

Chapter 1. Getting Started	1-1
Overview	1-2
Matching Configuration Parameters	1-2
Configuring the AS/400 System	1-3
Configuration Examples	1-3
 Chapter 2. Checking Equipment and Setting Up the Workstations	2-1
Introduction	2-2
Equipment You Need	2-2
Twinaxial Cables	2-4
Setting Up Workstations	2-5
 Chapter 3. Setting Up the 5494	3-1
Introduction	3-2
5494 Physical Features	3-2
Setting Up the 5494	3-4
Connecting Workstations to the 5494	3-8
Connecting Twinaxial Workstations to the 5494	3-8
Connecting the 5494 to a Token-Ring Network	3-10
Connecting the 5494 to an Ethernet Network	3-12

Connecting the 5494 Communication Cable	3-13
Completing Setup	3-14
Chapter 4. Installing and Using the 5494 Utility Program	4-1
Introduction	4-2
Utility Program Requirements	4-2
Utility Program Uses	4-3
Installation of the Utility Program	4-4
Updating an Existing Version	4-5
Installing the Utility Program on a Stand-Alone PC or PS/2 Computer	4-6
Installing the Utility Program on a DOS PWS Connected to a Twinaxial Port	4-6
Installing the Utility Program on a DOS PWS with a LAN Connection	4-7
Installing the Utility Program on an OS/2 PWS	4-8
Configuring the Remote Access Function for DOS	4-9
Configuring a LAN-Attached PWS	4-9
Configuring a Twinaxial-Attached PWS	4-10
Starting the Utility Program Using the Remote Access Function for DOS	4-11
Configuring Communications Manager/2 1.1 for Utility Program Local Access	4-12
Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function	4-16
Starting the Utility Program Remote Access Function on a Communications Manager/2 1.1 System	4-19
Chapter 5. Configuring Your System	5-1
Introduction	5-4
Selecting a Configuration Workstation	5-4
Configuring the 5494 from a PWS	5-5
Entering Configuration Mode Using a PWS	5-5
Using the Utility Program	5-6
Transferring Configuration Data to the 5494	5-9
Configuring the 5494 from an NWS	5-11
Entering Information on NWS Configuration Screens	5-11
Entering Configuration Mode Using an NWS	5-12
Beginning Configuration	5-13
Completing Configuration for SDLC Communication	5-20
Completing Configuration for X.25 Communication	5-24
Completing Configuration for X.21 Switched Communication	5-31
Completing Configuration for X.21 Leased Communication	5-35
Completing Configuration for Token-Ring AS/400 Attachment	5-38
Completing Configuration for Ethernet AS/400 Attachment	5-41
Completing Configuration for Token-Ring Gateway	5-44
Completing Configuration for Ethernet Gateway	5-48
Completing Screen 1	5-51
Configuring Network Information	5-52
Configuring for Primary and Alternate AS/400 Systems	5-59
Completing Screen 2	5-63
Saving NWS Configuration Data	5-63
Chapter 6. Configuring for Support of Host-Initiated PWS Sessions	6-1
PWS Configuration	6-2
AS/400 Configuration	6-2

Part 2. Operating Your 5494

Chapter 7. Communicating with Your AS/400 System	7-1
Introduction	7-2
Before You Establish Communication	7-2
Establishing Communication by Manual Dialing	7-5
Establishing Communication by Auto-Dialing	7-6
Establishing Communication by Manual Answering	7-7
Establishing Communication from a PWS	7-8
Establishing Communication in X.25	7-9
Changing Your AS/400 System	7-13
Changing the AS/400 System with an NWS	7-14
Registering Online Facilities (X.21 Switched)	7-16
Registering Online Facilities with a PWS	7-16
Registering Online Facilities with an NWS	7-17
Ending a Communication Link	7-18
Ending Communication from a PWS	7-19
Ending Communication from an NWS	7-20
Reestablishing Communication after Logical Link Termination	7-21
Reestablishing Communication from a PWS	7-21
Reestablishing Communication from an NWS	7-22
Chapter 8. Using Problem Determination Procedures	8-1
Introduction	8-2
Problem Determination Procedures	8-2
Power-On Options	8-7
Operator Panel Indicators	8-8
LCD Display Format and Operation	8-8
Message Format Before Normal Operation	8-9
Message Format During Normal Operation	8-10
5250 Workstation Format	8-11
Requesting 5494 Status Information	8-12
Verifying Workstation Connection	8-13
Before You Begin Verification	8-13
LAN Connection	8-13
5250 Connection	8-14
Setting the Date and Time	8-15
Viewing the Date and Time	8-15
Setting the Date	8-15
Setting the Time	8-16
Displaying the Latest Error Log Entries	8-17
Information for the Advanced User	8-19
LCD Display Diagnostics Information	8-19
NWS or PWS Diagnostics Information	8-20
Running Extended Diagnostics	8-20
Chapter 9. Message Codes and System Reference Codes (SRCs)	9-1
Message Codes	9-2
System Reference Codes	9-4
SRCs 100 through 198	9-4
SRCs 0000 through 0177	9-5
SRCs 100000 through FFFFFF	9-18
SRCs FFxxxxxxxx and **xxxxxxxx	9-55
Chapter 10. Utility Program Reference Codes and Messages	10-1
Installation Reference Codes	10-2

Run-Time Messages	10-3
Appendix A. Safety Notices	A-1
Danger Notices	A-2
U.S. English	A-2
Belgian Dutch	A-2
Brazilian Portuguese	A-2
Canadian French	A-2
Chinese	A-2
Danish	A-2
Finnish	A-3
French	A-3
German	A-3
Italian	A-3
Japanese	A-3
Korean	A-3
Norwegian	A-3
Portuguese	A-3
Russian	A-4
Spanish	A-4
Swedish	A-4
Caution Notices	A-4
U.S. English	A-4
Belgian Dutch	A-4
Brazilian Portuguese	A-5
Canadian French	A-5
Chinese	A-5
Danish	A-5
Finnish	A-5
French	A-6
German	A-6
Italian	A-6
Japanese	A-6
Korean	A-7
Norwegian	A-7
Portuguese	A-7
Russian	A-7
Spanish	A-8
Swedish	A-8
Appendix B. Configuring the AS/400 for Communication with the 5494	B-1
Configuring the AS/400	B-1
Using Automatic Configuration on the AS/400 System	B-1
Configuring a Line to the Network	B-2
Configuring an APPC Controller	B-2
Configuring a Mode	B-3
Configuring an RWS Controller	B-4
Configuring Nonprogrammable Workstation Devices	B-5
Connecting the Communication Links Example	B-7
Communicating with Your AS/400 System	B-10
Appendix C. System Configuration Examples	C-1
AS/400 System Connection Using a Token-Ring Network	C-2
Token-Ring Network Matching Parameters	C-3

5494 Configuration	C-4
AS/400 System Network Attributes	C-4
AS/400 System Line Description	C-5
AS/400 System APPC Controller Description	C-6
AS/400 System Mode Description	C-6
AS/400 System Remote Workstation Controller Description	C-7
AS/400 System Device Description for Displays Attached to the 5494	C-7
Programmable Workstation Using DOS PC Support/400	C-8
AS/400 System Connection Using an Ethernet Network	C-9
Ethernet Network Matching Parameters	C-10
5494 Configuration	C-11
AS/400 System Network Attributes	C-11
AS/400 System Line Description	C-12
AS/400 System APPC Controller Description	C-13
AS/400 System Mode Description	C-13
AS/400 System Remote Workstation Controller Description	C-14
AS/400 System Device Description for Displays Attached to the 5494	C-14
Programmable Workstation Using DOS PC Support/400	C-15
AS/400 System Connection Using an SDLC Leased Line with Token-Ring	
Gateway	C-16
SDLC Leased Line with Token-Ring Gateway Matching Parameters	C-17
5494 Configuration	C-18
AS/400 System Network Attributes	C-18
AS/400 System Line Description	C-19
AS/400 System APPC Controller Description	C-20
AS/400 System Mode Description	C-20
AS/400 System Remote Workstation Controller Description	C-21
AS/400 System Device Description for Displays Attached to the 5494	C-21
Programmable Workstation Using DOS PC Support/400	C-22
AS/400 System Connection Using an SDLC Switched/V.25 bis Autodial Line	
with Ethernet Gateway	C-23
SDLC Switched/V.25 bis Autodial Line with Ethernet Gateway Matching	
Parameters	C-24
5494 Configuration	C-25
AS/400 System Network Attributes	C-25
AS/400 System Line Description	C-26
AS/400 System APPC Controller Description	C-27
AS/400 System Mode Description	C-27
AS/400 System Remote Workstation Controller Description	C-28
AS/400 System Device Description for Displays Attached to the 5494	C-28
Programmable Workstation Using DOS PC Support/400	C-29
AS/400 System Connection Using an X.21 Switched Line	
X.21 Switched Line Matching Parameters	C-31
5494 Configuration	C-32
AS/400 System Network Attributes	C-32
AS/400 System Line Description	C-33
AS/400 System APPC Controller Description	C-34
AS/400 System Mode Description	C-34
AS/400 System Remote Workstation Controller Description	C-35
AS/400 System Device Description for Displays Attached to the 5494	C-35
Programmable Workstation Using DOS PC Support/400	C-36
AS/400 System Connection Using an X.21 Leased Line	
X.21 Leased Line Matching Parameters	C-38
5494 Configuration	C-39

AS/400 System Network Attributes	C-39
AS/400 System Line Description	C-40
AS/400 System APPC Controller Description	C-41
AS/400 System Mode Description	C-41
AS/400 System Remote Workstation Controller Description	C-42
AS/400 System Device Description for Displays Attached to the 5494	C-42
Programmable Workstation Using DOS PC Support/400	C-43
AS/400 System Connection Using an X.25 PVC	C-44
X.25 PVC Matching Parameters	C-45
5494 Configuration	C-46
AS/400 System Network Attributes	C-46
AS/400 System Line Description	C-47
AS/400 System APPC Controller Description	C-48
AS/400 System Mode Description	C-49
AS/400 System Remote Workstation Controller Description	C-49
AS/400 System Device Description for Displays Attached to the 5494	C-50
Programmable Workstation Using DOS PC Support/400	C-50
AS/400 System Connection Using an X.25 SVC	C-51
X.25 SVC Matching Parameters	C-52
5494 Configuration	C-53
AS/400 System Network Attributes	C-54
AS/400 System Line Description	C-54
AS/400 System APPC Controller Description	C-55
AS/400 System Mode Description	C-56
AS/400 System Remote Workstation Controller Description	C-56
AS/400 System Device Description for Displays Attached to the 5494	C-57
Programmable Workstation Using DOS PC Support/400	C-57
AS/400 System Connection Using an SDLC Leased Line with Token-Ring	
Gateway Through an APPN Network Node	C-58
SDLC Leased Line with Token-Ring Gateway Through an APPN Network	
Matching Parameters	C-59
5494 Configuration	C-60
AS/400 System A Network Attributes	C-61
AS/400 System B Network Attributes	C-61
AS/400 System A Line Description	C-62
AS/400 System A APPC Controller Description	C-63
AS/400 System Mode Description	C-64
AS/400 System B Remote Workstation Controller Description	C-64
AS/400 System Device Description for Displays Attached to the 5494	C-65
Programmable Workstation 1 Using DOS PC Support/400	C-65
Programmable Workstation 2 Using DOS PC Support/400	C-66
AS/400 System Connection Using an SDLC Leased Line through an SNA	
Subarea Network	C-67
Matching Parameters	C-68
3745 System Generation File Entries	C-70
AS/400 System Configuration	C-72
AS/400 System Connection Using Token-Ring Through an SNA Subarea	
Network	C-77
Matching Parameters	C-78
3745 System Generation File Entries	C-80
AS/400 System Configuration	C-83
Appendix D. Local Area Network Addressing Considerations	D-1
Token-Ring Physical Address Format Considerations	D-1

Ethernet Physical Address Format Considerations	D-2
Bridged LAN Considerations	D-2
Token-Ring to Ethernet Address Conversion	D-4
Appendix E. Key Sequences	E-1
IBM Typewriter Keyboard	E-3
Test Request Key Sequence	E-3
System Request Key Sequence	E-3
Local Copy Key Sequence	E-3
IBM Typewriter Data Entry Keyboard	E-4
Test Request Key Sequence	E-4
System Request Key Sequence	E-4
Local Copy Key Sequence	E-4
IBM 122-Key Keyboard	E-5
Test Request Key Sequence	E-5
System Request Key Sequence	E-5
Local Copy Key Sequence	E-5
IBM Enhanced (102-Key) Keyboard	E-6
Test Request Key Sequence	E-6
System Request Key Sequence	E-6
Local Copy Key Sequence	E-6
IBM PC, PC XT, and Portable PC Keyboard	E-7
Test Request Key Sequence	E-7
System Request Key Sequence	E-7
Local Copy Key Sequence	E-7
IBM Personal Computer AT Keyboard	E-8
Test Request Key Sequence	E-8
System Request Key Sequence	E-8
Local Copy Key Sequence	E-8
IBM Personal System/2 Computer Keyboard	E-9
Test Request Key Sequence	E-9
System Request Key Sequence	E-9
Local Copy Key Sequence	E-9
Appendix F. Ordering Replacement Diskettes	F-1
Glossary	X-1
Index	X-11

Figures

2-1.	5494 Standard Equipment Shipped with the Product	2-3
3-1.	Front View of the 5494	3-2
3-2.	Back View of 5494 with Twinaxial Expansion Adapter in Slot 2	3-2
3-3.	Back View of 5494 with 5494 Token-Ring Adapter in Slot 3	3-2
3-4.	Back View of 5494 with 5494 Ethernet Adapter in Slot 3	3-3
4-1.	CM/2 1.1 Overview - Local Access	4-12
4-2.	CM/2 1.1 Overview - Remote Access	4-17
5-1.	Configuration Screen for Initial SDLC Configuration	5-13
5-2.	Partial Configuration Screen for SDLC, Cursor Location	5-14
5-3.	NWS Setup Screen	5-17
5-4.	NWS Screen Example	5-18
5-5.	NWS Customized Screen	5-18
5-6.	Customized Screen Display Example	5-19
5-7.	Partial Configuration Screen 1 for SDLC, Field AA = 0	5-20
5-8.	Summary of SDLC Configuration Parameters	5-20
5-9.	Partial Configuration Screen 1 for X.25, Field AA = 1	5-24
5-10.	Summary of X.25 Configuration Parameters	5-24
5-11.	Partial Configuration Screen 1 for X.21 Switched, Field AA = 2	5-31
5-12.	Summary of X.21 Switched Configuration Parameters	5-31
5-13.	Partial Configuration Screen 1 for X.21 Leased, Field AA = 3	5-35
5-14.	Summary of X.21 Leased Configuration Parameters	5-35
5-15.	Partial Configuration Screen 1 for Token-Ring, Field AA = 4	5-38
5-16.	Summary of Token-Ring AS/400 Attachment Configuration Parameters	5-38
5-17.	Partial Configuration Screen 1 for Ethernet, Field AA = 5	5-41
5-18.	Summary of Ethernet AS/400 Attachment Configuration Parameters	5-41
5-19.	Partial Configuration Screen 1 for SDLC with Token-Ring Gateway	5-44
5-20.	Summary of Token-Ring Gateway Configuration Parameters	5-44
5-21.	Partial Configuration Screen 1 for SDLC with Ethernet Gateway	5-48
5-22.	Summary of Ethernet Gateway Configuration Parameters	5-48
5-23.	Configuration Screen 2	5-52
5-24.	Summary of Network Configuration Parameters on NWS Screen 2	5-54
B-1.	APP Controller Description Example	B-2
B-2.	RWS Controller Description Example	B-4
B-3.	Device Description Example	B-6
B-4.	Initial RWS Controller Status	B-7
B-5.	RWS Controller Status After Being Varied On	B-7
B-6.	Initial SDLC Leased Line Status	B-8
B-7.	SDLC Leased Line Status After Being Varied On	B-8
B-8.	Final SDLC Leased Line Status	B-9
B-9.	Final Status of the RWS Controller	B-9
B-10.	Virtual Controller Status for PWS	B-9
C-1.	Example of Physical Attachment of an AS/400 System, IBM 3745, and IBM 5494	C-67
C-2.	Example of Physical Attachment of an AS/400 System, IBM 3745, and IBM 5494	C-77
D-1.	Token-Ring MAC Destination Address Format	D-1
D-2.	Token-Ring MAC Source Address Format	D-1
D-3.	Ethernet Physical Address Format	D-2
D-4.	8209 LAN Bridge Addressing	D-3

Tables

4-1. Accessibility of 5494 Utility Program Functions During Normal Operation	4-2
5-1. Keyboard Codes	5-16
5-2. Matching Configuration Parameters	5-53
9-1. Diagnostic Codes for 18xxdd, 19xxdd, and 1Axxdd Errors	9-32
B-1. Local Location Addresses	B-6
D-1. Controller Description (CTLD) Addresses Specified by AS/400 Systems and Addresses As Seen By the 5494.	D-3
D-2. Example Conversion Table	D-4

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About This Manual

This manual explains how to set up and configure the IBM^{*} 5494 Remote Control Unit to communicate with an IBM Application System/400^{*} (AS/400^{*}) system. This manual also explains problem determination procedures and system reference codes.

Who Should Read This Manual

Part 1, "Setting Up and Configuring Your 5494" is for the person who sets up and configures the 5494.

Part 2, "Operating Your 5494" is for 5494 operators. Operators must know how to operate at least one of the workstations listed in the *IBM 5494 Remote Control Unit Planning Guide*.

How This Manual Is Organized

Part 1: Setting Up and Configuring Your 5494

Chapter 1, Getting Started

This chapter explains how to get started with the process of setting up and configuring the 5494.

Chapter 2, Checking Equipment and Setting Up the Workstations

This chapter lists the equipment you need to install the 5494. This chapter also explains how to set up your workstations.

Chapter 3, Setting Up the 5494

This chapter explains how to set up the 5494 and how to connect the communication cable to the 5494.

Chapter 4, Installing and Using the 5494 Utility Program

This chapter explains the requirements and uses of the Utility Program and how to install the Utility Program on a personal computer or IBM Personal System/2^{*} (PS/2^{*}) computer fixed disk. This chapter also explains how to configure IBM Operating System/2^{*} (OS/2^{*}) Communications Manager/2 for use with the Utility Program.

Chapter 5, Configuring Your System

This chapter explains how to enter your 5494 configuration information using a personal computer or PS/2 computer in stand-alone mode, an attached programmable workstation (PWS), or an attached nonprogrammable workstation (NWS). It also explains how to copy configuration information from a diskette to the 5494.

Chapter 6, Configuring for Support of Host-Initiated PWS Sessions

This chapter explains considerations for configuring support of host-initiated PWS sessions.

Part 2: Operating Your 5494

Chapter 7, Communicating with Your AS/400 System

This chapter explains how to establish and end communication with the AS/400 system.

Chapter 8, Using Problem Determination Procedures

This chapter explains how to isolate and solve problems that can occur during operation. This chapter also explains general information on 5494 operations to help with problem solving.

Chapter 9, Message Codes and System Reference Codes (SRCs)

This chapter lists the message codes and system reference codes (SRCs) that can appear on the workstation screen.

Chapter 10, Utility Program Reference Codes and Messages

This chapter lists the reference codes that can appear on your programmable workstation (PWS) screen during installation and operation of the 5494 Utility Program.

Appendix A, Safety Notices

This appendix lists all of the safety notices used in this book.

Appendix B, Configuring the AS/400 for Communication with the 5494

This appendix explains the steps you perform to configure the 5494 on the AS/400 system. It also explains which parameters must match on the 5494 and the AS/400.

Appendix C, System Configuration Examples

This appendix provides sample system parameters and simple diagrams that illustrate how to connect the 5494 to the AS/400 system.

Appendix D, Local Area Network Addressing Considerations

This appendix provides information about Ethernet address formats.

Appendix E, Key Sequences

This appendix lists the special key sequences used in this book for all supported 5250 workstation keyboards.

Appendix F, Ordering Replacement Diskettes

This appendix explains how to order replacement diskettes for your 5494.

Related Publications

The following publications contain related information:

5494 Library

- *IBM 5494 Remote Control Unit Planning Guide*, GA27-3936
- *IBM 5494 Remote Control Unit User's Guide*, GA27-3960
- *IBM 5494 Remote Control Unit Functions Reference*, SC30-3533
- *IBM 5494 Remote Control Unit Maintenance Information*, SY27-0327
- *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference*, GA27-3909
- *IBM 5494 Remote Control Unit National Language Support for Arabic*, GA27-3910
- *IBM 5494 Remote Control Unit National Language Support for Hebrew*, GA27-3911

Cabling

- *LAN Cabling System Planning and Installation Guide*, GA27-3361
- *IBM Cabling System Problem Determination Guide for Twinaxial Applications*, GA21-9491
- *IBM 5299 Terminal Multiconnector Model 3 Planning, Installation and Problem Analysis Guide*, GA27-3749
- *Using the Cabling System with Communication Products*, GA27-3620
- *Cabling System Optical Fiber Planning and Installation Guide*, GA27-3943

Application System/400 (AS/400)

- *IBM AS/400 Communications: Configuration*, SC41-3401
- *IBM AS/400 Local Area Network Support*, SC41-3404
- *IBM AS/400 X.25 Network Support*, SC41-3405
- *IBM AS/400 Communication: Management*, SC41-3406
- *IBM AS/400 Workstation Customization Programming*, SC41-3605
- *IBM AS/400 Programming: Performance Tools/400*, SC41-3340
- *IBM AS/400 Programming: Work Management*, SC41-3306
- *IBM AS/400 Remote Work Station Support*, SC41-3402

Communication/Protocols

- *Data Communications Concepts*, GC21-5169
- *Implementation of X.21 Interface, General Information Manual*, GA27-3287
- *Synchronous Data Link Control Concepts*, GA27-3093
- *The X.25 Interface for Attaching SNA Nodes to Packet-Switched Data Networks General Information Manual*, GA27-3345

- *The X.25 1984.1988 Interface for Attaching SNA Nodes to Packet-Switched Data Networks General Information Manual*, GA27-3761

Local Area Networks (LANs)

- *IBM Local Area Network Administrator's Guide*, GA27-3748
- *IBM Local Area Network Concepts and Products*, GG24-3178
- *The Ethernet: A Local Area Network, Version 2.0*, November, 1982, XNSS-018211, Third Printing, 1985
- *IBM Multisegment LAN Design Guidelines*, GG24-3398
- *IBM Token-Ring Network Installation Guide*, GA27-3678
- *IBM Token-Ring Network Architecture Reference*, SC30-3374
- *IBM Token-Ring Network Guide to Small Networks*, SK2T-0300
- *IBM Token-Ring Network Introduction and Planning Guide*, GA27-3677
- *IEEE 802.3 Local Area Network Considerations*, GG22-9422
- *LAN Technical Reference: IEEE 802.2 and NetBIOS Application Program Interfaces*, SC30-3587
- *LAN Technical Reference: Ethernet Adapter Interface*, SC30-3661
- *LAN Technical Reference: Token-Ring Network Adapter Interface*, SC30-3588
- *IBM Token-Ring Network Problem Determination Guide*, SX27-3710

Programmable Workstations

- *IBM 5494 and OS/2 Extended Services: Connecting Remote User Groups with AS/400*, GG24-3828
- *IBM Operating System/2 Extended Edition System Administrator's Guide for Communications*, G01F-0302
- *IBM Operating System/2 Extended Edition Communications Manager*, Z360-2786
- *IBM Extended Services for Operating System/2 Information and Planning Guide*, G326-0161
- *IBM AS/400 Connection Program/400 for UNIX** Environment User's Guide*, SC41-0179
- *IBM Client Access/400 DOS Setup*, SC41-3556
- *IBM Client Access/400 OS/2 Setup*, SC41-3520
- *IBM PC Support/400: DOS Installation and Administration Guide*, SC41-0006
- *IBM PC Support/400: OS/2 Installation and Administration Guide*, SC41-0007
- *IBM Communications Manager/2 Workstation, Installation and Configuration Guide*, SC31-6174

Systems Network Architecture (SNA)

- *IBM Systems Network Architecture Advanced Peer-to-Peer Networking Architecture Reference*, SC30-3422
- *IBM Systems Network Architecture Formats*, GA27-3136
- *IBM Systems Network Architecture LU 6.2 Reference: Peer Protocols*, SC31-6808
- *IBM Systems Network Architecture Technical Overview*, GC30-3073
- *IBM Systems Network Architecture Concepts and Products*, GC30-3072
- *IBM AS/400 Communications: Advanced Peer-to-Peer Networking Support*, SC41-3407
- *IBM AS/400 APPN with PS/2 APPN, 3174 APPN, 5394 and Subarea Networking*, GG24-3717
- *IBM S3/X and AS/400 APPN Nodes Using the SNA/LEN Subarea Network*, GG24-3288

Summary of Changes

Fourth Edition (November 1994)

This manual supports the IBM 5494 Remote Control Unit Release 3.0. Throughout this manual, all references to 5494 model numbers have been removed. All 5494 models, however, are supported by Release 3.0.

In OS/400 Version 3 Release 1, PC Support/400 was replaced with Client Access/400. This manual contains references to both applications because they are both supported by the 5494.

Where applicable, information has been added for:

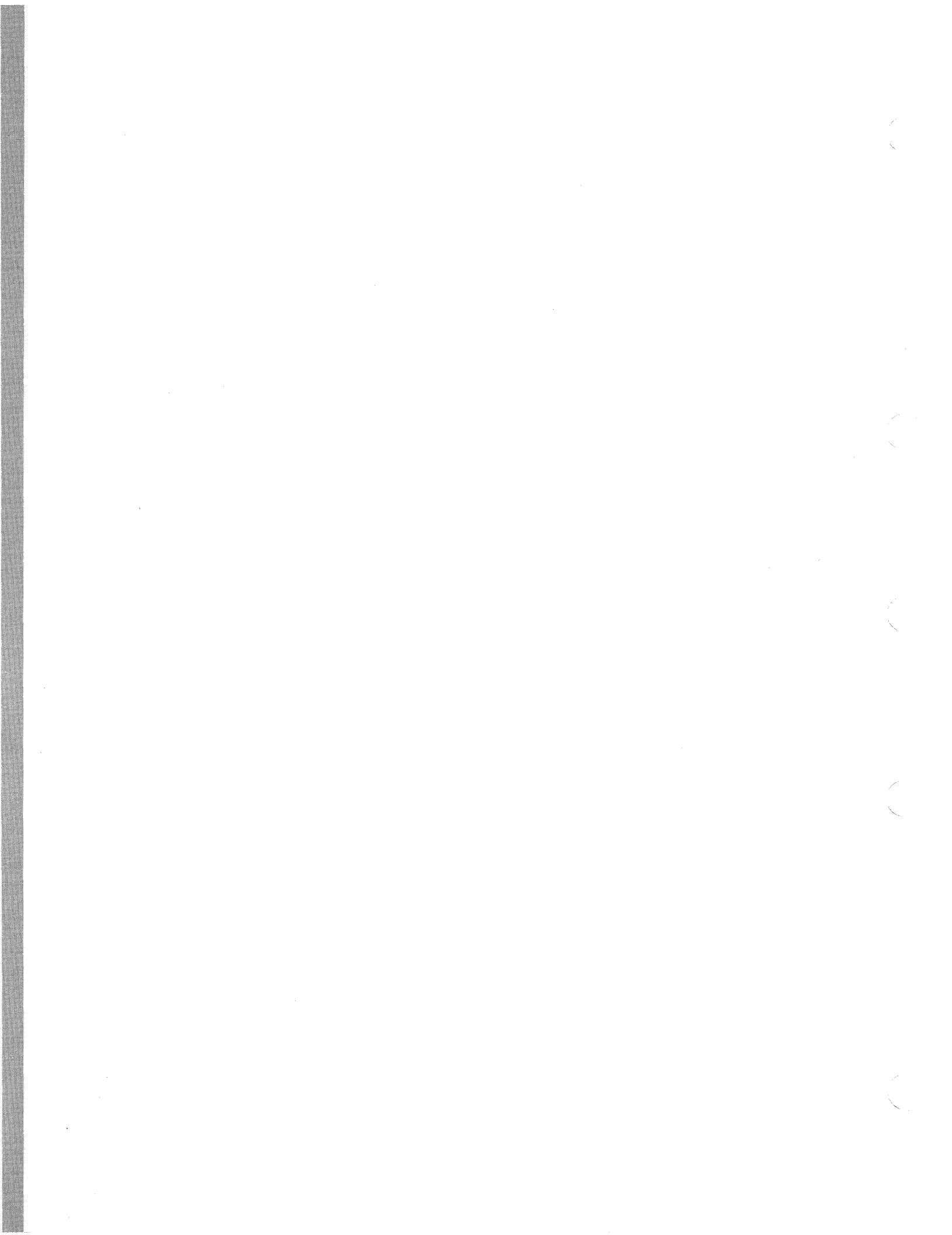
- Ethernet network setup, configuration, and communication establishment. (The 5494 Ethernet Upgrade Kit allows the 5494 to attach to an Ethernet LAN in either an Ethernet AS/400 Communication configuration or an Ethernet Gateway configuration.)
- LAN support of 80 devices, formerly available for token ring in the Token-Ring Upgrade Kit.
- Support has been added for 5494s connected to an AS/400 system through an SNA Subarea Network. This support was previously available as RPQ 8Q0932.
- The 5494 Utility Program with the new remote access function can communicate with any 5494 within the Advanced Peer-to-Peer Network* (APPN*) and update configuration, view diagnostic information, or restart the 5494.
- OS/400 Version 3 Release 1 features supported by the 5494
 - Automatic configuration of remote workstation controllers (RWSs) and devices attached to the 5494
 - 5250 shared addressing support
 - 5250 fax and image support
 - Additional 5494 keyboard codes for country character sets.
- Some terminology changes have been made:

Local Area Network (LAN) – For 5494, LAN refers to either a token-ring or an Ethernet network. Many of the SRCs previously used by token ring are now also used for Ethernet. In the cases where it does apply to one or the other, the SRC reads specifically for token ring or Ethernet. The 5494 cannot have both token-ring and Ethernet LANs operational in the same 5494.

Adjacent Link Station (ALS) – For 5494, ALS is a link station directly connected to the 5494 over which network traffic flows. For link connections that do not pass through an SNA Subarea Network, this refers to the AS/400 system.

Technical changes or additions to the text and illustrations are indicated by a vertical bar (|) to the left of the change.

Part 1. Setting Up and Configuring Your 5494



Chapter 1. Getting Started

Overview	1-2
Matching Configuration Parameters	1-2
Configuring the AS/400 System	1-3
Configuration Examples	1-3

Overview

This overview explains the basic tasks you must perform to add the IBM* 5494 Remote Control Unit (referred to as 5494 in this book) to your network.

First, you must set up the 5494, and attach cables to your workstations for attachment to the 5494.

Second, you must configure the 5494. The 5494 can be configured using a programmable workstation (PWS) or nonprogrammable workstation (NWS). The 5494 comes with a Utility Program on a 3.5-inch diskette, which supports configuration using a PWS. In addition, the Utility Program provides access to concurrent diagnostic facilities for the 5494, and network link establishment facilities. The Utility Program has a menu-driven interface and help text for each screen and configuration parameter.

The 5494 can be configured in any of the following ways using:

- A 5494-attached PWS, running the Utility Program. This type of configuration process is commonly known as an interactive configuration. The Utility Program can access the 5494 locally or remotely using the remote access function.
- A stand-alone PWS (not attached to the 5494), running the Utility Program. A user who is not at the location of the 5494 can save the configuration for the 5494 on a 3.5-inch diskette and then send the diskette to the 5494 location.
- An NWS attached to the 5494 or a personal computer running 5250 emulation and operating as an NWS. When the 5494 is placed in configuration mode, a key sequence on the NWS invokes the configuration screens. When these screens are completed, the 5494 can be restarted to establish communication with the Application System/400* (AS/400*) system.

Note: Because of its menu-driven interface and contextual help screens, many people who are configuring a 5494 for the first time find the process easier to perform when using the Utility Program.

Third, you must configure the AS/400 system. Refer to "Configuring the AS/400 System" on page 1-3 for additional information.

Finally, you must establish communication with the AS/400 system.

Matching Configuration Parameters

To establish communication between the 5494 and the AS/400 system, certain configuration parameters must match. If these parameters do not match, communication cannot be established. Before you configure the 5494, IBM recommends that you become familiar with the AS/400 configuration parameters that relate to the 5494.

See Table 5-2 on page 5-53 for information about the configuration parameters that must match between the 5494 and the AS/400 system.

Configuring the AS/400 System

Before you establish the connection from the 5494 to the AS/400 system, certain tasks must be performed on the AS/400 system to set up the connection. The line, the advanced program-to-program communications (APPC) controller, the mode, the remote workstation (RWS) controller, and the NWS devices must be configured on the AS/400 system.

| A new feature of AS/400 Version 3 Release 1 allows 5494 Remote Control Units to
| be automatically configured. For complete details, refer to "Using Automatic
| Configuration on the AS/400 System" on page B-1.

| System operators can turn on the automatic configuration in order to help them set
| up their system. They can then turn automatic configuration off after the system is
| set up to prevent unauthorized devices from getting configured.

Appendix B, "Configuring the AS/400 for Communication with the 5494," provides a brief overview of the steps required to configure the AS/400 system to communicate with the 5494. Refer to *AS/400 Communications: Configuration and AS/400 Remote Work Station Support* for more information.

Configuration Examples

Appendix C, "System Configuration Examples," provides example configurations. You can refer to these examples before configuring your 5494.

Chapter 2. Checking Equipment and Setting Up the Workstations

Introduction	2-2
Equipment You Need	2-2
Twinaxial Cables	2-4
Setting Up Workstations	2-5

Introduction

This chapter lists equipment you need to install the 5494. This chapter also explains how to set up and attach cables to your workstations for attachment to the 5494. You should have your workstation setup books available for specific information on unpacking and connecting your workstations and setting workstation addresses.

Equipment You Need

Before you begin, make sure that you have all of the equipment you need. The following equipment is shipped in the 5494 package:

- 5494 Remote Control Unit
- Power cord
- Twinaxial Workstation Attachment cable
- 5494 system diskette and backup system diskette
- 5494 utility diskettes for Disk Operating System (DOS) and Operating System/2* (OS/2*) operating systems.
- Communication interface cable
- 5494 publications

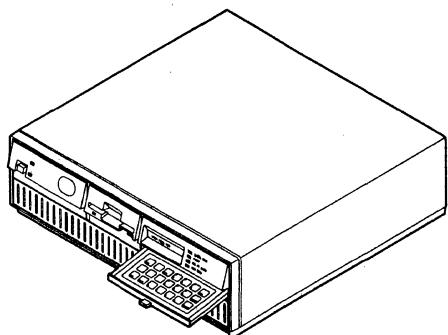
See the illustrations on page 2-3.

Note: The diskettes and the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* are shipped in the 5494, in the pocket below the liquid crystal display (LCD) and keypad.

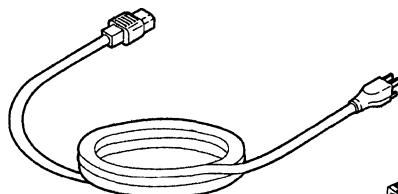
Depending on your installation, you may also need the following equipment:

- 5250 workstations and cables
- Labels for 5250 workstation cables
- Remote Workstation Setup Worksheet (from the *IBM 5494 Remote Control Unit Planning Guide*)
- Modem or DCE
- Token-Ring multistation access unit
- Twinaxial Expansion Kit
- Token-Ring Adapter Kit
- Ethernet Adapter Kit
- LAN cabling.

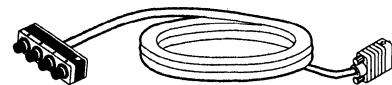
Warning: Do not stack another 5494 or any other electrical equipment directly on top of the 5494. This could result in intermittent errors during operation.



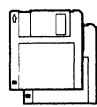
5494 Remote Control Unit



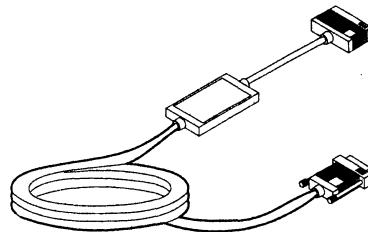
Power Cord



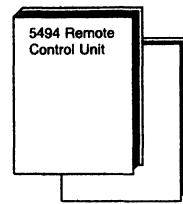
Twinaxial Workstation
Attachment Cable



5494 System Diskettes (2)
and Utility Diskettes (2)



Communication
Interface Cable



5494 Publications

| **Figure 2-1. 5494 Standard Equipment Shipped with the Product**

Twinaxial Cables

See your IBM sales representative to order a set of *IBM Labels for Signal Cables*, GX21-9345. If necessary, you can produce your own labels.

You should complete two labels for each twinaxial cable that connects to a workstation or 5494. After you complete the labels, attach one label to each end of the cable. These labels will help you set up your workstations and 5494s. The labels also aid in problem determination.

For each label, complete the following steps:

- 1 Complete the label using a ball-point pen. This information can also be found in the Remote Workstation Setup Worksheet (from the *IBM 5494 Remote Control Unit Planning Guide*).

Note: You may also want to include the telephone number for a telephone located at each end of the cable.

For this example, 1 is the workstation address of the 3196.
(If this end of the cable is to be connected to a 5494, the box should be left blank.)

These indicate the socket number on the 3196 to which the cable will be connected.

Connect this end to:		Other end connects to:	
Device type/name		Device type/name	
3196		5494	
Location		Location	
Accounting		Accounting	
Workstation address		Workstation address	
(Socket) port		1	Socket/ (port)
		1	0
GX21-9345			

These indicate the port number on the 5494 to which the other end of the cable is connected.

- 2 Complete another label for the other end of the cable.
- 3 If you connect a cable to a station protector, each end of the cable should have a label attached to it. The label should indicate which device is attached to the station protector.

Setting Up Workstations

Before unpacking your workstations, make sure that correctly wired and grounded electrical outlets are available.

Refer to your workstation setup books for specific instructions on unpacking and setting up the workstations.

Use your local area network (LAN) books to set up and connect your workstations to the LAN. When configuring a programmable workstation (PWS), wherever the host LAN address is required, substitute the 5494 LAN address. The PWS may require the address to be entered in token-ring format, even if the LAN is Ethernet. See Appendix D, "Local Area Network Addressing Considerations" on page D-1 for more information on addressing formats. Do not connect the 5494 to the LAN at this time.

To set up the workstations attached to the 5494 twinaxial ports, complete the following steps:

- 1** Unpack the workstations and place them in the designated work areas.
- 2** If any of the 5250 workstations are programmable workstation (PWSs), make sure that the 5250 adapter handler is installed and functioning on these workstations.
- 3** Route the workstation cables according to your floor plan or the *Remote Workstation Setup Worksheet* from the *5494 Remote Control Unit Planning Guide*.
- 4** Set the workstation addresses according to your floor plan or the *Remote Workstation Setup Worksheet*.
For information about setting the addresses for PWSs attached to the 5494 twinaxial ports, refer to the documentation provided with the program you are running in your PWS. For information about setting the addresses for nonprogrammable workstation (NWSs), refer to the documentation that came with the workstations.
- 5** Make sure the last workstation in a cable-thru series is terminated correctly. Many workstations are self-terminating; refer to your workstation documentation for more information.
- 6** Connect the cables to the workstations. Do not connect the cables to the 5494 at this time.

See Chapter 3, "Setting Up the 5494" for instructions for setting up the 5494.

Chapter 3. Setting Up the 5494

Introduction	3-2
5494 Physical Features	3-2
Setting Up the 5494	3-4
Connecting Workstations to the 5494	3-8
Connecting Twinaxial Workstations to the 5494	3-8
Connecting the 5494 to a Token-Ring Network	3-10
Connecting the 5494 to an Ethernet Network	3-12
Connecting the 5494 Communication Cable	3-13
Completing Setup	3-14

5494 Physical Features

Introduction

This chapter explains how to set up the 5494. You can complete the following tasks using the information in this chapter:

- Learn about the 5494 physical features
- Set up the 5494
- Connect workstations to the 5494
- Connect the 5494 to a Token-Ring network
- Connect the 5494 to an Ethernet network

Warning: Do not stack another 5494 or any electrical equipment directly on top of the 5494. This could result in intermittent errors during operation.

5494 Physical Features

The following illustrations show the front and back of the 5494.

Front View of 5494

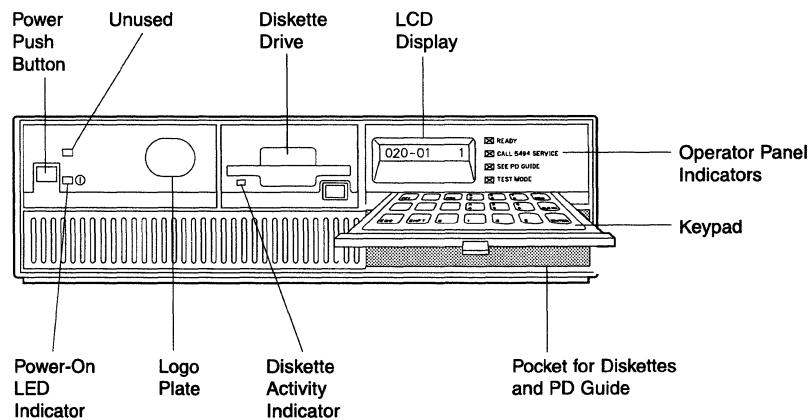


Figure 3-1. Front View of the 5494

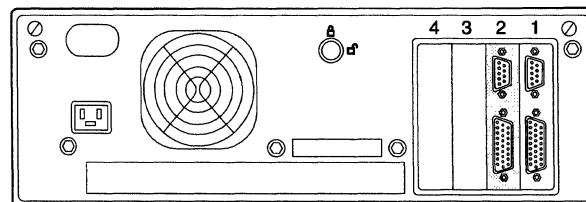


Figure 3-2. Back View of 5494 with Twinaxial Expansion Adapter in Slot 2

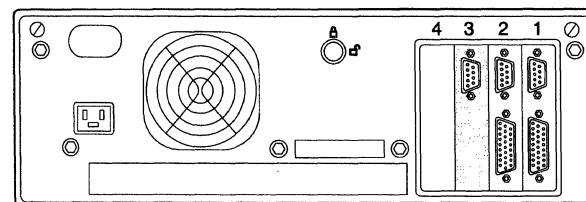


Figure 3-3. Back View of 5494 with 5494 Token-Ring Adapter in Slot 3

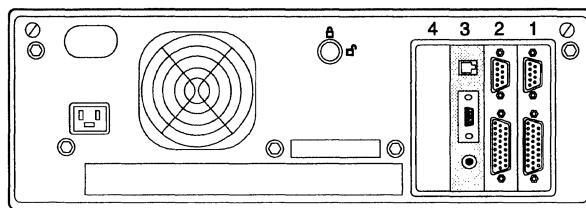


Figure 3-4. Back View of 5494 with 5494 Ethernet Adapter in Slot 3

Diskette Activity Indicator: The amber diskette activity indicator is on the front of the 5494. This indicator comes on when the diskette drive is active.

Warning: Do not remove the diskette from the diskette drive or set the 5494 power push button to OFF while the diskette activity indicator is on.

Keypad: The 21-key keypad allows the operator to perform certain functions without the need for a display station:

- Copy preconfigured diskettes
- Set the date and time
- Set the token-ring speed (if a 5494 Token-Ring Adapter is installed)
- Set the Ethernet media type (if a 5494 Ethernet Adapter is installed)
- Display communication and configuration information.

LCD Display: The 16-position operator panel LCD display informs the operator of the 5494 status.

Operator Panel Indicators: The operator panel has the following indicators:

- Ready

The green Ready indicator comes on when the power-on sequence completes successfully to indicate that the 5494 is ready for operation.

- Call 5494 Service

The amber Call 5494 Service indicator comes on when a problem occurs that requires a 5494 service representative.

- See PD Guide

The amber See PD Guide indicator comes on when a condition is detected that requires problem determination. Chapter 8, "Using Problem Determination Procedures," contains information to help diagnose the problem and recover from errors.

- Test Mode

The amber Test Mode indicator comes on when the 5494 is in test mode or configuration mode. The 5494 Utility Program can access concurrent diagnostics using the 5494 system password when the 5494 is not in test mode. In this case, the Test Mode indicator is not turned on.

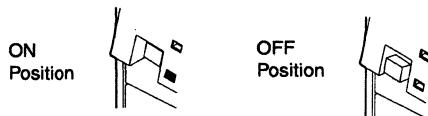
Pocket: The pocket contains the 5494 diskettes and the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference*.

Power-On Indicator: The green Power-On indicator is located on the front of the 5494 next to the power push button. This indicator informs the operator that the 5494 power supply is operating.

Setting Up the 5494

Power Push Button: The power push button has two positions:

- ON (In)
- OFF (Out)



Setting Up the 5494

To set up the 5494, you must complete the following procedures:

- Install optional adapters
- Run the power-on self-tests to verify 5494 operation
- Set the date and time
- Set the token-ring speed (if a 5494 Token-Ring adapter is installed)
- Set the Ethernet media type (if a 5494 Ethernet adapter is installed)

To accomplish these tasks, complete the following steps:

- 1 Make sure that the 5494 power push button is set to **OFF** and the Power-On indicator is off.

CAUTION:

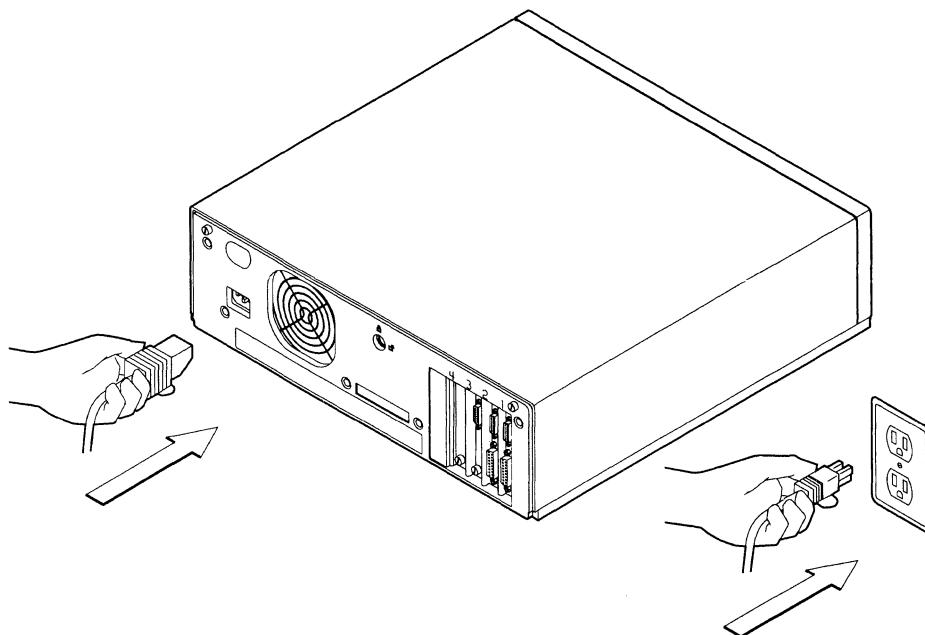
For your safety, you must connect equipment only to a properly wired and grounded outlet. An improperly wired outlet can place hazardous voltage on accessible metal parts of the equipment. You are responsible for outlet wiring.

DANGER

Never work on equipment, or connect or disconnect signal cables during periods of lightning activity.

- 2 If you have a Twinaxial Expansion Kit, Ethernet Adapter Kit, or Token-Ring Adapter Kit, and the adapters are not already installed, install them now. Follow the directions supplied with the kit.

- 3** Connect the power cord to the power cord receptacle on the back of the 5494. Connect the other end of the power cord to a grounded electrical outlet.



- 4** **Do not insert a diskette at this time.** Press the 5494 power push button to set the power ON. The Power-On indicator comes on. The Test Mode indicator comes on, and the following message is displayed on the panel indicating that the 5494 is running tests:

001-01

These tests may take up to 1 minute to complete. The following panel is displayed when the tests complete:

003-02	1
--------	---

- 5** Does the message 003-02 appear?

YES—Continue with step 6.

NO—Write down the message code and any number displayed on the right side of the panel. Refer to the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* for information about the message code and follow the directions listed under Customer Action. (The *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* is stored in the pocket located below the 5494 keypad.)

- 6** Make sure the diskette is write-enabled. The diskette is write-enabled when you cannot see through the adjustable slot in the corner of the diskette. (The diskettes are shipped in the pocket located below the 5494 keypad.)

Insert the system diskette into the 5494 diskette drive.

Setting Up the 5494

- 7** Pull out the 5494 keypad, type **0**, then press **Enter**. When the loading of code is complete, the following panel is displayed:

020-01	1
--------	---

This panel is the extended diagnostics main menu.

Note: If at any time the message code that is displayed on your 5494 does not match the message code in this book, write down the numbers displayed on the panel. Refer to the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* for information about the message code and Customer Action.

- 8** Type **3**, then press **Enter** to set the date and time. The following panel is displayed:

023-01 yy-mm-dd

- 9** Key in the current date. The date is displayed in year-month-day format. Move the cursor by using the right and left arrow keys. Valid entries for the date are numbers in the following ranges:

yy 91 through 50 for year (1991 through 2050)

mm 01 through 12 for month

dd 01 through 31 for day.

- 10** Press **Enter** when you have completed the date entry. The following panel is displayed:

023-02 hh:mm:ss

Note: If your panel displays message code 023-03, you entered a date that is not valid. Press **Enter** and return to step 9.

- 11** Key in the current time. The time is displayed in hour-minute-second format. Move the cursor by using the right and left arrow keys. Valid entries for the time are numbers in the following ranges:

hh 00 through 23 for hour

mm 00 through 59 for minute

ss 00 through 59 for second.

- 12** Press **Enter** when you have completed the time entry. The extended diagnostics main menu is displayed:

020-01	1
--------	---

Note: If your panel displays message 023-04, you entered a time that is not valid. Press **Enter** and return to step 11.

- 13** Will your 5494 be connected to a LAN?

YES—Continue with step 14 on page 3-7.

NO—The date and time are now set. Go to “Connecting Workstations to the 5494” on page 3-8.

14 Which LAN are you using?

Token-Ring LAN?—Continue with step 15.

Ethernet LAN?—Go to step 17.

15 To display your token-ring speed, type **4**, and press **Enter**.

One of the following panels is displayed:

024-01	4 MBPs
--------	--------

024-01	16 MBPs
--------	---------

16 To change your token-ring speed, use the up-arrow (\uparrow) key to select either 4 Mbps or 16 Mbps. When the correct speed appears on the panel, press **Enter**.

Note: If your system planner provided you with worksheets, this information can also be found on the AS/400 Communication Worksheet.

The following panel is displayed:

024-02

The token-ring speed is now set. Go to step 19 on page 3-8.

17 To display your Ethernet media type, type **4**, and press **Enter**. One of the following panels is displayed:

024-04	10BaseT
--------	---------

024-04	10Base2
--------	---------

024-04	10Base5
--------	---------

18 To change your Ethernet media type, use the up-arrow (\uparrow) key to select among 10BASE-T, 10BASE2, and 10BASE5. When the correct media type appears on the panel, press **Enter**.

The following panel is displayed:

024-02

Note: If your system planner provided you with worksheets, this information can also be found on the AS/400 Communication Worksheet.

Connecting Workstations to the 5494

19 Press **Enter** to continue.

The extended diagnostics main menu is displayed:

020-01	1
--------	---

The date, time, and the Token-Ring speed or Ethernet media type are now set. Continue with "Connecting Workstations to the 5494."

Connecting Workstations to the 5494

To connect workstations to the 5494, complete the following steps:

1 Press the 5494 power push button to set the power **OFF**. Remove the system diskette from the diskette drive and disconnect the 5494 power cord from the electrical outlet. Place the diskette in the pocket on the 5494.

CAUTION:

Turn power OFF and unplug the power cord from the receptacle before connecting or disconnecting signal cables.

DANGER

Never work on equipment, or connect or disconnect signal cables during periods of lightning activity.

2 Are you connecting twinaxial workstations? *Twinaxial workstations* are workstations that use twinaxial cable or another cable (such as telephone twisted-pair or IBM Cabling System) to attach to the twinaxial ports of the 5494.

YES—Continue with "Connecting Twinaxial Workstations to the 5494."

NO—Which LAN are you using?

Token-Ring—Go to "Connecting the 5494 to a Token-Ring Network" on page 3-10

Ethernet—Go to "Connecting the 5494 to an Ethernet Network" on page 3-12.

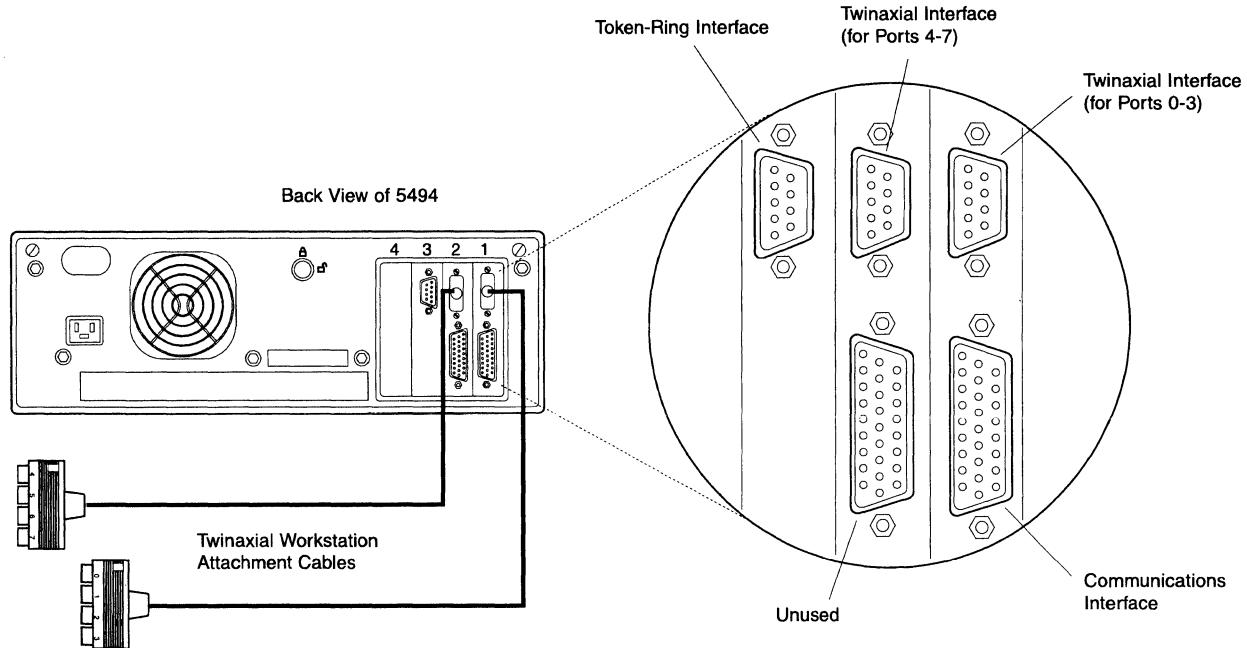
Connecting Twinaxial Workstations to the 5494

Make sure that all cables that will be connected to your 5494 are labeled. If they are not, refer to the *IBM 5494 Remote Control Unit Planning Guide* for information on labeling cables.

To connect twinaxial workstations to the 5494, complete the following steps:

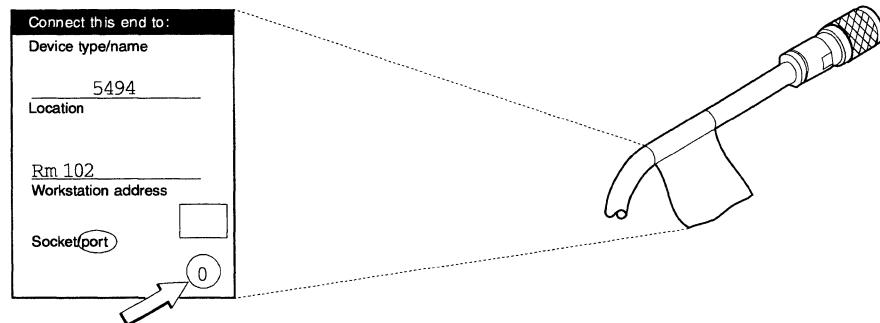
1 Connect the Twinaxial Workstation Attachment cable to the twinaxial interface on the 5494, and turn the thumbscrews clockwise until tight.

Note: The Twinaxial Workstation Attachment cable connected to the slot with the lowest number supports twinaxial ports 0—3. The Twinaxial Expansion Adapter, if installed, supports twinaxial ports 4—7.



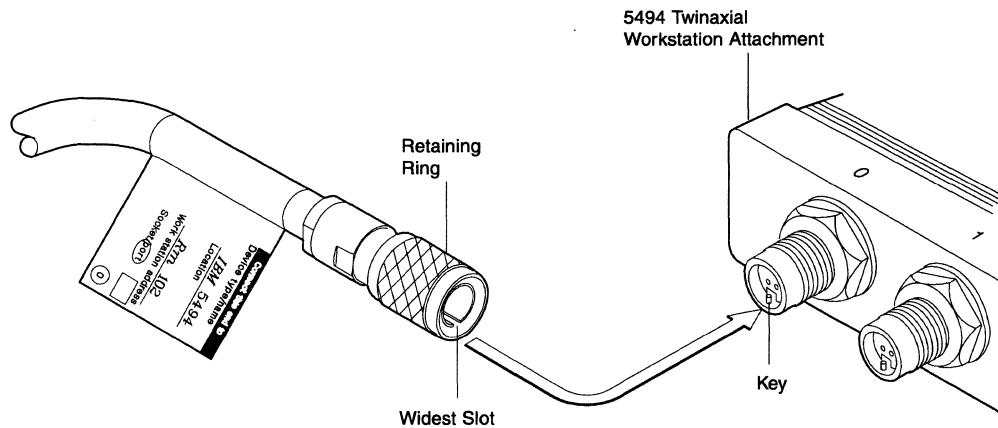
- 2** Find the twinaxial connector of the workstation cable that connects to port 0 on the Twinaxial Workstation Attachment cable. (The twinaxial connectors on the Twinaxial Workstation Attachment cable are called ports.) If you are using telephone twisted-pair (TTP) or IBM Cabling System cables instead of twinaxial cables, refer to the attachment cable documentation to identify your cables.

Note: Make sure that the label identifies the 5494 as the device type. See the following example.



Connecting the 5494 to a Token-Ring Network

- 3** Align the widest slot in the cable connector with the key in the port.



- 4** Push the connector in and turn the retaining ring clockwise until tight.

- 5** Connect any remaining workstation cables to ports 1—7.

- 6** Does your 5494 have a Token-Ring or Ethernet Adapter installed?

YES—Which LAN are you using?

Token-Ring—Go to “Connecting the 5494 to a Token-Ring Network”

Ethernet—Go to “Connecting the 5494 to an Ethernet Network” on page 3-12.

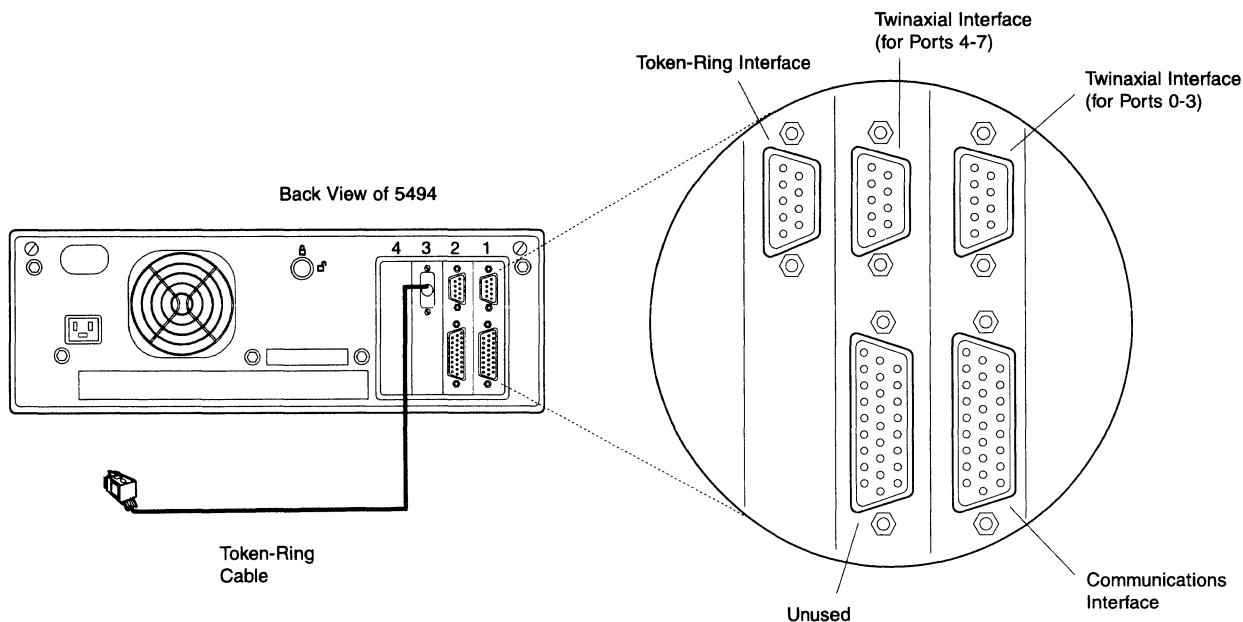
NO—Go to “Connecting the 5494 Communication Cable” on page 3-13.

Connecting the 5494 to a Token-Ring Network

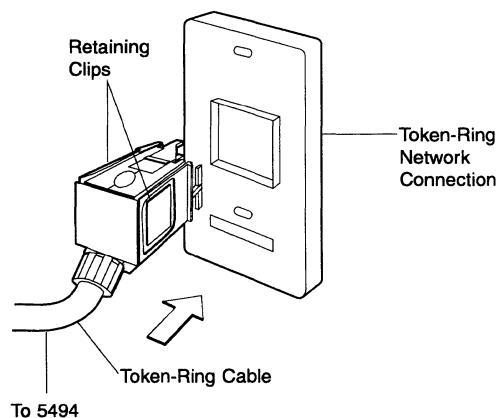
For detailed information regarding 5494 Token-Ring Adapter installation and setup, refer to the *IBM 5494 Token-Ring Adapter Installation and Testing Instructions*. To connect the 5494, configured as either Token-Ring Gateway or Token-Ring AS/400 Attachment to a Token-Ring network, complete the following steps:

- 1** Make sure the Token-Ring network is installed and functioning.
- 2** Make sure the 5494 power push button is set to **OFF**. Disconnect the 5494 power cord from the electrical outlet.

- 3** Connect the Token-Ring cable to the 5494, and ensure it is tightened securely.



- 4** Connect the Token-Ring cable to the Token-Ring network. Make sure the retaining clips on the Token-Ring cable lock into position.



Note: Your Token-Ring network connection may not look like the previous example. You may connect the Token-Ring cable directly to the Token-Ring multistation access unit.

- 5** Are you using the token-ring for AS/400 Attachment?

YES—Go to "Completing Setup" on page 3-14.

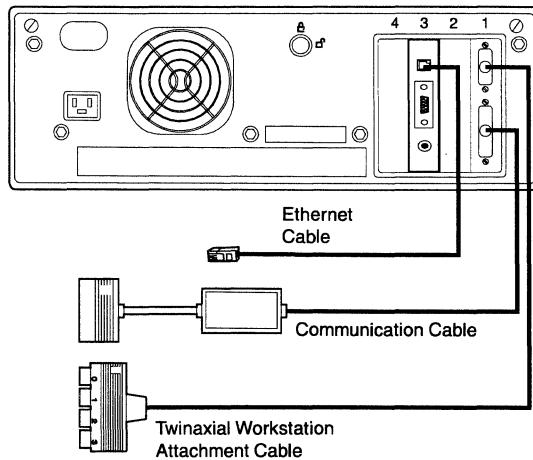
NO—Go to "Connecting the 5494 Communication Cable" on page 3-13.

Connecting the 5494 to an Ethernet Network

For detailed information regarding 5494 Ethernet Adapter installation and setup, refer to the *IBM 5494 Ethernet Adapter Installation and Testing Instructions*. To connect the 5494, configured as either Ethernet Gateway or Ethernet AS/400 Attachment to an Ethernet network, complete the following steps:

- 1** Make sure the Ethernet network is installed and functioning.
- 2** Make sure the 5494 power push button is set to **OFF**. Disconnect the 5494 power cord from the electrical outlet.
- 3** Connect the Ethernet cable to the 5494, and ensure it is tightened securely.

Back View of 5494



- 4** Connect the Ethernet cable to the Ethernet network.

Note: Refer to the *IBM 5494 Remote Control Unit Ethernet Adapter Installation Guide* for additional information.

- 5** Are you using the Ethernet for AS/400 Attachment?

YES—Go to “Completing Setup” on page 3-14.

NO—Go to “Connecting the 5494 Communication Cable” on page 3-13.

Connecting the 5494 Communication Cable

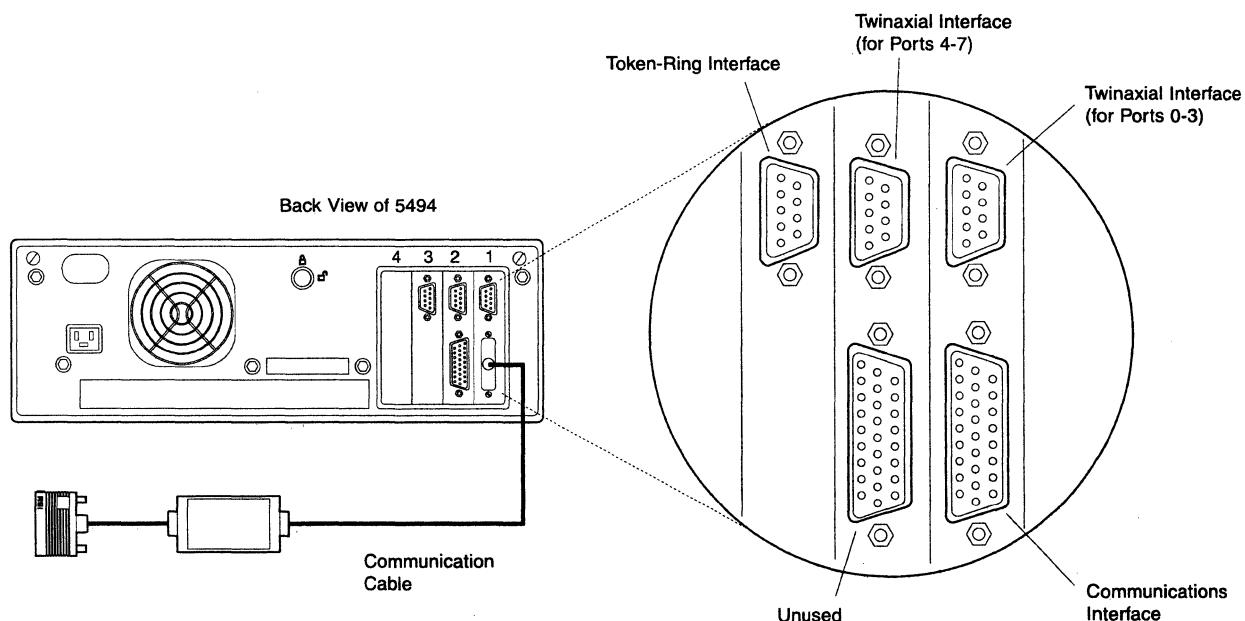
This section explains how to connect the 5494 to the communication cable that is attached to the modem or DCE. If you have a Token-Ring AS/400 Attachment or Ethernet AS/400 Attachment configuration, go to "Completing Setup" on page 3-14.

CAUTION:

Turn the power off and unplug the power cord from the receptacle before connecting or disconnecting signal cables.

To connect the communication cable, complete the following steps:

- 1** Make sure the 5494 power push button is set to **OFF**. Disconnect the 5494 power cord from the electrical outlet.
- 2** Connect the communication cable to the 5494 communications interface, and turn the thumbscrews clockwise until tight. If the Twinaxial Expansion Kit is installed, the communication interface is located on the twinaxial adapter in the lowest slot number.

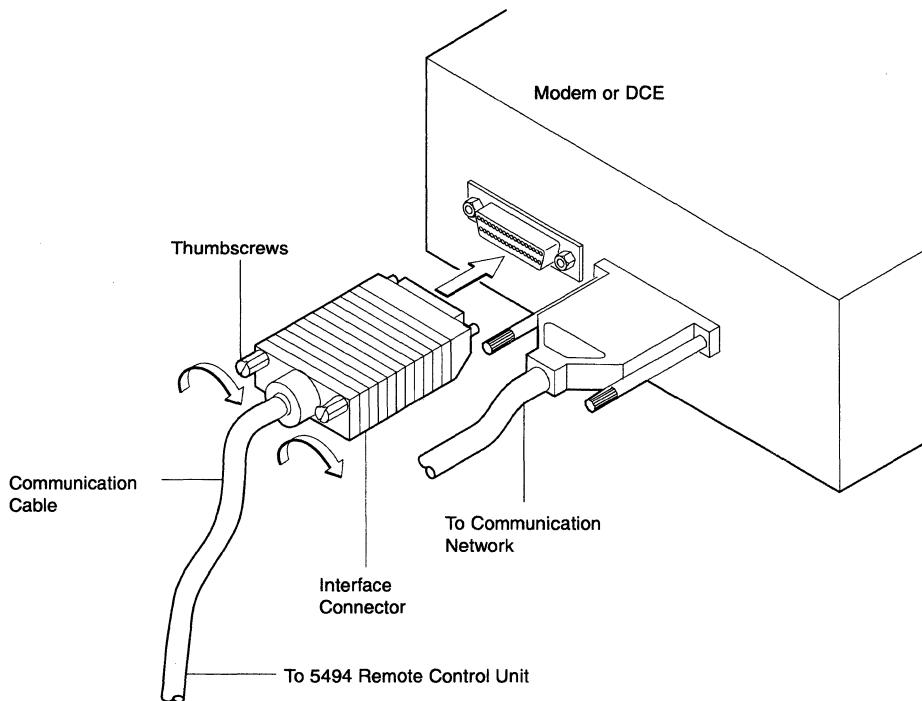


Note: Your 5494 will have other cables attached that are not shown in the preceding illustration.

Connecting the 5494 Communication Cable

- 3** Connect the communication cable to the receptacle on the modem or DCE, and turn the thumbscrews clockwise until tight.

Note: Your cable connector may look different from the example.



CAUTION:

For your safety, you must connect equipment only to a properly wired and grounded outlet. An improperly wired outlet can place hazardous voltage on accessible metal parts of the equipment. You are responsible for outlet wiring.

- 4** Connect the modem or DCE power cable to a correctly grounded power source and set the power to **ON**. Make sure that the modem or DCE is connected to the network. Continue with "Completing Setup."

Completing Setup

Follow these steps to complete setup:

- 1** Connect the 5494 power cord to a grounded electrical outlet.
- 2** Make sure the 5494 System Diskette is write-enabled. Insert the diskette into the 5494 diskette drive.
- 3** Press the 5494 power push button to set the power **ON**. The Power-On indicator comes on.

4 Within 2 minutes, the Ready indicator comes on.

Is the Ready indicator on?

YES—5494 setup is complete. See Chapter 4, “Installing and Using the 5494 Utility Program” or go to Chapter 5, “Configuring Your System” to configure the 5494.

NO—Complete the following steps:

- Make sure all cable connectors are secure.
- If the indicator is still not on, see Chapter 8, “Using Problem Determination Procedures.”
- If an SRC appears on the screen, see Chapter 8, “Using Problem Determination Procedures.”

Connecting the 5494 Communication Cable

Chapter 4. Installing and Using the 5494 Utility Program

Introduction	4-2
Utility Program Requirements	4-2
Utility Program Uses	4-3
Installation of the Utility Program	4-4
Updating an Existing Version	4-5
Installing the Utility Program on a Stand-Alone PC or PS/2 Computer	4-6
Installing the Utility Program on a DOS PWS Connected to a Twinaxial Port	4-6
Installing the Utility Program on a DOS PWS with a LAN Connection	4-7
Installing the Utility Program on an OS/2 PWS	4-8
Configuring the Remote Access Function for DOS	4-9
Configuring a LAN-Attached PWS	4-9
Configuring a Twinaxial-Attached PWS	4-10
Starting the Utility Program Using the Remote Access Function for DOS	4-11
Configuring Communications Manager/2 1.1 for Utility Program Local Access	4-12
Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function	4-16
Starting the Utility Program Remote Access Function on a Communications Manager/2 1.1 System	4-19

Utility Program Requirements

Introduction

This chapter explains the requirements and uses of the 5494 Utility Program and how to install this program on a programmable workstation (PWS). The 5494 Utility Program provides user-friendly panels and help text for performing various functions.

The 5494 Utility Program has a remote access function that provides access to configuration and diagnostic functions through the communication network. This allows you to diagnose a problem, modify configuration, or restart the 5494 from a central site.

Note: When you upgrade your 5494 with a new release of the 5494 System Diskette, you must also update your 5494 Utility Program to the same release level.

During configuration of the 5494, one of the optional fields that you may configure is the 5494 System Password. When configured, this password allows Utility Program access to certain 5494 functions during normal 5494 operation. These functions are otherwise only available if the 5494 is in concurrent mode. Enter concurrent mode during normal 5494 operation by pressing **Req**, typing **290**, and pressing **Enter** on the 5494 operator panel.

The functions available for use in the 5494 Utility Program are determined by the current operating environment of your 5494 and PWS. If the 5494 is in configuration mode, available functions include configuration and reset (restart) of the 5494 (resetting is allowed only if a 5494 System Password has been previously configured). The following table summarizes various operating environments and the Utility Program functions available in the corresponding environments during normal 5494 operation:

Table 4-1. Accessibility of 5494 Utility Program Functions During Normal Operation

Functions	Password Not Configured, 5494 Not in Concurrent Mode	Password Configured, 5494 Not in Concurrent Mode	Password Not Configured, 5494 In Concurrent Mode	Password Configured, 5494 In Concurrent Mode
Concurrent Diagnostics	No Access	Password Access Only	Access Without Password	Access Without Password
Modify Configuration	No Access	Password Access Only	Access Without Password	Access Without Password
Reset (restart) the 5494	No Access	Password Access Only	No Access	Password Access Only

Note: The 5494 Utility Program solicits a response from the 5494 approximately twice a minute to verify the 5494 is still communicating with the 5494 Utility Program.

Utility Program Requirements

The Utility Program can be used on one of the following personal computers:

- Personal computer (PC) or PS/2 computer with DOS 3.3 or higher
- PC or PS/2 computer running OS/2 Extended Edition (EE) 1.3

Note: The IBM-supplied mode #INTER is used for the 5494 Utility Program communication when using OS/2. This mode is not supplied with OS/2 EE 1.3 and can be created using the defaults when you install or upgrade the 5494.

Utility Program. If you have previously installed the 5494 Utility Program, MODE5494 can be renamed to #INTER.

- PC or PS/2 computer running OS/2 with Extended Services (ES)
- PC or PS/2 computer running OS/2 with Communications Manager/2

Utility Program access to a 5494 is possible when the PC or PS/2 computer is directly (locally) attached to the 5494 through a twinaxial port or 5494 LAN Gateway. The Utility Program can also access the 5494 using the remote access function when the PC or PS/2 computer is attached to:

- The AS/400 system with which the 5494 is communicating
- An AS/400 system within the same APPN network as the 5494
- A node within the same SNA subarea network as the 5494
- Another 5494 that is attached to any one of the above

Your PC or PS/2 computer must also have a 3.5-in. 1.44-MB or greater diskette drive and 800 KB of storage available on the fixed disk for operation in interactive mode of the Utility Program.

If you do not have a PC or PS/2 computer that meets these requirements, skip this chapter and go to Chapter 5, "Configuring Your System."

Utility Program Uses

The Utility Program operates in two modes: interactive mode (communicating with a 5494) and stand-alone mode (not communicating with a 5494).

Interactive Mode:

When the Utility Program is used interactively, the PC or PS/2 running it may be directly attached (also known as locally attached) to the 5494 with which it is communicating. Alternatively, the Utility Program may run on a PC or PS/2 that is communicating with the 5494 through a network using the remote access function.

If the PC or PS/2 running the Utility Program is locally attached, either through a twinaxial port or on a 5494 LAN Gateway, the following functions are available:

- Configuration of the 5494 while the 5494 is in configuration mode
- Modification of 5494 configuration during normal 5494 operation (online)¹
- Network Link Establishment when required by the protocol
- Online registration for X.21 switched network facilities
- Access to 5494 diagnostic information (concurrent diagnostics)¹
- Reset and restart the 5494 (5494 System Password required)

If you are using the remote access function, the following subset of functions are available:

- Modification of 5494 configuration during normal 5494 operation (online)¹
- Access to 5494 diagnostic information¹
- Reset and restart the 5494 (5494 System Password required)

¹ These functions require the 5494 Utility Program user to enter the 5494 System Password unless the 5494 is in concurrent mode. Enter concurrent mode by pressing **Req**, typing **290**, and pressing **Enter** on the 5494 operator panel during normal operation.

Beginning Installation of the Utility Program

To use the Utility Program in interactive mode, you must install the Utility Program on the PC or PS/2 computer fixed disk.

Stand-Alone Mode:

The Utility Program can be used in stand-alone mode to configure the 5494. Used in stand-alone mode, the Utility Program is executed on a PC or PS/2 which is not communicating with the 5494. The configuration information is saved on diskette and later loaded on the 5494.

To use the Utility Program in stand-alone mode, you can either install it on the PC or PS/2 computer fixed disk, or you can run the Utility Program from the 5494 Utility Diskette.

Do you want to install the Utility Program?

YES—Continue with “Installation of the Utility Program.”

NO—Go to Chapter 5, “Configuring Your System.”

Installation of the Utility Program

This section contains general directions for installing the Utility Program on the PC or PS/2 computer fixed disk and assumes you have a working knowledge of the DOS or OS/2 operating system.

Two 5494 utility diskettes are shipped with the 5494. One of the diskettes is used with a PC or PS/2 computer that has DOS 3.3 or later installed. The other diskette is used with a PC or PS/2 computer that has OS/2 1.3 or higher installed.

The INSTALL command stores files in the subdirectories **C:\5494UP** and **C:\5494UP\PANEL** (where C is the fixed disk on which the Utility Program is installed).

For information about error messages received when installing the Utility Program, see Chapter 10, “Utility Program Reference Codes and Messages.”

To install the Utility Program, complete the following steps:

- 1** Set the PC or PS/2 computer to **ON**.
- 2** Make a backup copy of the 5494 Utility Diskette for the PC or PS/2 computer operating system you are using. Store the original 5494 Utility Diskette in a safe place and use the backup copy.
- 3** If you are using OS/2, go to an OS/2 Full Screen.
- 4** Insert the utility diskette into drive A of the PC or PS/2 computer.
- 5** Type **A:** and press **Enter** to make drive A the current drive.

6 Are you installing the Utility Program over an existing Utility Program, and do you want to preserve the previously customized information (5494CONF.DAT and DUL5494.PCS)?

YES—Go to “Updating an Existing Version.”

NO—Continue with step 7.

7 If you are installing for:

- **Stand-alone operation**, go to “Installing the Utility Program on a Stand-Alone PC or PS/2 Computer” on page 4-6.
- **DOS PWS attached with a 5250 (twinaxial) connection**, go to “Installing the Utility Program on a DOS PWS Connected to a Twinaxial Port” on page 4-6.
- **DOS PWS attached with a LAN connection**, go to “Installing the Utility Program on a DOS PWS with a LAN Connection” on page 4-7.
- **OS/2 PWS**, go to “Installing the Utility Program on an OS/2 PWS” on page 4-8.

Updating an Existing Version

To install the Utility Program over an existing 5494 Utility Program and retain the previously customized information (5494CONF.DAT and DUL5494.PCS), complete the following steps:

1 At the A: prompt, type **INSTALL C:** and press **Enter**,

where **C** is the fixed disk where the Utility Program will be installed.

2 Did you receive a return code of 0000?

YES—Continue with step 3.

NO—An error has occurred. Go to Chapter 10, “Utility Program Reference Codes and Messages” for the correct error recovery action. Correct the error and repeat from step 1 in this section.

3 Are you using OS/2 EE 1.3?

YES—The mode name **MODE5494** must be renamed to **#INTER**. See your OS/2 EE 1.3 Communications Manager documentation for information about performing this action. Once the mode name has been renamed, the installation is complete. Go to step 4.

NO—The installation is complete. Go to step 4.

4 If you plan on using the remote access function and you are using:

DOS—Go to “Configuring the Remote Access Function for DOS” on page 4-9.

OS/2—Go to “Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function” on page 4-16.

Beginning Installation of the Utility Program

Installing the Utility Program on a Stand-Alone PC or PS/2 Computer

To install the Utility Program on a stand-alone PC, complete the following steps:

- 1** At the A: prompt, type **INSTALL C 0** and press **Enter**, where
 - C** is the fixed disk where the Utility Program will be installed.
 - 0** (zero) indicates the Utility Program will run in stand-alone mode.
- 2** Did you receive a return code of 0000?
 - YES**—The installation is complete. Go to Chapter 5, “Configuring Your System.”
 - NO**—An error has occurred. Go to Chapter 10, “Utility Program Reference Codes and Messages,” for the correct error recovery action. Correct the error and repeat step 1 and step 2 in this section.

Installing the Utility Program on a DOS PWS Connected to a Twinaxial Port

The Utility Program must be installed on the same fixed disk that contains the Client Access/400 (formerly PC Support/400) files. The Utility Program assumes Client Access/400 is installed in its default directory, \PCS. If it is not in that directory, after installation, you must modify the 5494UP.BAT file to point to the directory where Client Access/400 is installed.

To install the Utility Program on a DOS PWS connected to a twinaxial port, complete the following steps:

- 1** At the A: prompt, type **INSTALL C 1 station_address local_lu_name** and press **Enter**, where
 - C** is the fixed disk where the 5494 Utility Program will be installed.
 - 1** indicates the Utility Program can run in interactive mode on a PWS connected to a twinaxial port. (The Utility Program can also be run in stand-alone mode with this installation.)
 - station_address** is the optional address of the workstation connected to the twinaxial port. The default for this field is 5. Valid values are 0 through 6.
 - local_lu_name** is the optional LU name of your PWS. The default is DUL5494.

For example, **INSTALL C 1 0 PS2ACCTG** installs the Utility Program on drive C. The PWS station address is 0. The PWS LU name is PS2ACCTG.

- 2** Are you using the extended storage management function?

YES—The PCSXI.EXE program must be started prior to running 5494UP. Use a PC text editor to modify the \5494UP\5494UP.BAT file to include a call to the PCSXI program. In the 5494UP.BAT file, replace the REM PCSXI line with PCSXI. Continue with step 3 on page 4-7.

NO—Continue with step 3 on page 4-7.

3 Did you receive a return code of 0000?

YES—The installation is complete. Go to “Configuring the Remote Access Function for DOS” on page 4-9.

NO—An error has occurred. Go to Chapter 10, “Utility Program Reference Codes and Messages,” for the correct error recovery action. Correct the error and repeat these steps beginning at step 1 in this section.

Installing the Utility Program on a DOS PWS with a LAN Connection

The Utility Program must be installed on the same fixed disk that contains the Client Access/400 (formerly PC Support/400) files. The Utility Program assumes Client Access/400 is installed in its default directory—,\PCS. If it is not in that directory, after installation, you must modify the 5494UP.BAT file to point to the directory where Client Access/400 is installed.

To install the Utility Program on a DOS PWS with a LAN connection, complete the following steps:

- 1 At the A: prompt, type **INSTALL C 2 LAN_address LAN_sap local_lu_name** and press **Enter**, where

C is the fixed disk where the 5494 Utility Program will be installed.

2 indicates the Utility Program can run in interactive mode on a PWS using a LAN connection. (The Utility Program can also be run in stand-alone mode with this installation.)

LAN_address is the optional 5494 address. This field is used if your PWS is locally attached to the 5494. The default value for this field is 40005494E000. Valid characters are 0 to 9 and A to F. The LAN address must match the 5494 address that is set during 5494 configuration. For more information, see Appendix D, “Local Area Network Addressing Considerations” on page D-1.

Note: If you are using only the remote access function, use the default value for this field.

LAN_sap is the optional 5494 service access point (SAP). The default for this field is X'04'. Valid values are hexadecimal values 04 to FC in multiples of 4. The LAN SAP must match the 5494 SAP that is set during 5494 configuration,

Note: If you are using only the remote access function, use the default value for this field.

local_lu_name is the optional LU name of your PWS. The default is DUL5494.

Note: If you change the **local_lu_name**, you must also enter the **LAN_address** and **LAN_sap** fields even if you are using the default address and SAP.

Examples:

Beginning Installation of the Utility Program

- a. **INSTALL C 2** installs the Utility Program with the defaults. This should be used if the 5494 has never been configured.
- b. **INSTALL C 2 400012341022 04 PS2ACCTG** installs the Utility Program on drive C. The target LAN address is 400012341022, the target LAN SAP is 04, and the PWS or LU name is PS2ACCTG.

2 Are you using the extended storage management function?

YES—The PCSXI EXE program must be started prior to running 5494UP. Use a PC text editor to modify the \5494UP\5494UP.BAT file to include a call to the PCSXI program. In the 5494UP.BAT file, replace the REM PCSXI line with PCSXI. Continue with step 3.

NO—Continue with step 3.

3 Did you receive a return code of 0000?

YES—The installation is complete. Go to “Configuring the Remote Access Function for DOS.”

NO—An error has occurred. Go to Chapter 10, “Utility Program Reference Codes and Messages,” for the correct error recovery action. Correct the error and repeat from step 1.

Installing the Utility Program on an OS/2 PWS

To install the Utility Program on an OS/2 PWS, complete the following steps:

1 At the A: prompt, type **INSTALL C** and press **Enter**.

where *C* is the fixed disk where the 5494 Utility Program will be installed.

2 Did you receive a return code of 0000?

YES—The installation is complete. Go to step 3.

NO—An error has occurred. Go to Chapter 10, “Utility Program Reference Codes and Messages,” for the correct error recovery action. Correct the error and repeat step 1 and step 2 in this section.

3 If the Utility Program is installed on a PC or PS/2 that is directly attached to the 5494 either through a twinaxial port or a 5494 LAN Gateway, the PC or PS/2 is locally attached. If the PC or PS/2 is communicating with the 5494 through a network, it is remotely attached.

Is your PC or PS/2 locally attached?

YES—Go to “Configuring Communications Manager/2 1.1 for Utility Program Local Access” on page 4-12.

NO—Go to “Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function” on page 4-16.

Configuring the Remote Access Function for DOS

The Utility Program remote access function may be used to access one or more 5494s from a PC or PS/2 computer in a central location.

To use the DOS remote access function of the PWS, you must be running either Client Access/400 or PC Support/400 Version 2 Release 3. This allows you to specify fully qualified LU names. For each 5494 you want to access, you must create a unique .PCS file, and put the .PCS file in the 5494UP directory.

If you do not plan to use the remote access function, go to Chapter 5, "Configuring Your System."

If you want to use the remote access function:

If your PWS is attached to the APPN network through a token-ring or Ethernet network, go to "Configuring a LAN-Attached PWS."

If your PWS is attached to the APPN network through a twinaxial connection, go to "Configuring a Twinaxial-Attached PWS" on page 4-10.

Configuring a LAN-Attached PWS

To configure a DOS PWS with a LAN connection for use with the 5494 Utility Program remote access function, complete the following steps:

- 1** Change the directory to the 5494UP sub-directory.
- 2** Copy the DUL5494.PCS file to *newfile.PCS*, where *newfile* is a name you select for the new .PCS file. **Suggestion:** Select a name that identifies this file as working with the target 5494.
- 3** With a text editor, edit the *newfile.PCS* and change the following fields:

Contents of *newfile.PCS*:

```
RTLN APPN.DUL5494
RTYP ITRN
TRLI LOCL5494,40005494E000,04,DUL5494
```

a On the line "RTLN APPN.DUL5494", replace "APPN.DUL5494" with the network name and LU name of your PWS in the form *network_name.LU_name*.

b On the line "TRLI LOCL5494,40005494E000,04,DUL5494", replace LOCL5494 with the LU name of the target 5494. If you need to use a fully-qualified LU name for your target 5494, you need to use the alias support of Client Access/400.

Replace 40005494E000 with the LAN address of the ALS through which the PC or PS/2 is communicating.

Replace 04 with the SAP of the ALS through which the PC or PS/2 is communicating.

Replace DUL5494 with the LU name of the PWS.

Beginning Installation of the Utility Program

For example, you have a PWS that is attached using a token-ring network to an AS/400 system and the 5494 you want to access is attached using SDLC to that same AS/400 system. The PWS network name is APPN and its LU name is PWS01. The 5494 network name is RTPNET and its LU name is RTP5494. The PWS accesses the AS/400 using token-ring address 40002689F001 and SAP 04 on the AS/400. Your .PCS file for this 5494 might be named RTP5494.PCS and will look like this:

Example of modified *newfile.PCS*

```
RTLN APPN.PWS01  
RTYP ITRN  
TRLI RAL5494=RTPNET.RTP5494,40002689F001,04,PWS01
```

Note: "RAL5494=RTPNET.RTP5494" defines RAL5494 as the alias for RTPNET.RTP5494.

- 4 Save your changes.
- 5 Repeat these steps beginning at step 2 on page 4-9 for any additional 5494s that you want to access using the remote access function.

The remote access function configuration is complete.

To continue with 5494 configuration, go to Chapter 5, "Configuring Your System" on page 5-1.

To use the 5494 Utility Program remote access function, go to "Starting the Utility Program Using the Remote Access Function for DOS" on page 4-11.

Note: The 5494 Utility Program for DOS uses the mode QPCSUPP. This mode definition is predefined on the AS/400 system. However, if you are going through an APPN or an SNA Subarea Network to access a remote 5494, the mode QPCSUPP must be configured on all intermediate nodes.

Configuring a Twinaxial-Attached PWS

To configure a DOS PWS with a twinaxial connection to use the 5494 Utility Program remote access function, complete the following steps:

- 1 Change the directory to the 5494UP sub-directory.
- 2 Copy the DUL5494.PCS file to *newfile.PCS*, where *newfile* is a name you select for the new .PCS file. **Suggestion:** Select a name that identifies this file as working with the target 5494.
- 3 With a text editor, edit the *newfile.PCS* file and change the following fields:

Contents of *newfile.PCS*

```
RTLN APPN.DUL5494  
RTYP 5250  
EMLI LOCL5494,5,DUL5494
```

- a On the line "RTLN APPN.DUL5494", replace APPN.DUL5494 with the fully qualified LU name of your PWS in the form *network.LU_name*.

b On the line “EMLI LOCL5494,5,DUL5494”, replace LOCL5494 with the LU name of the target 5494. If you need to use a fully qualified LU name for the target 5494, use the alias support of Client Access/400.

Replace the 5 with the appropriate station address for your PWS.

Replace DUL5494 with the LU name of your PWS.

For example, you have a PWS that is attached using a twinaxial connection to an AS/400 system. The 5494 that you want to access is communicating through an Ethernet network to that same AS/400 system. Your PWS has a twinax station address of 02. Your PWS has a network name of APPN and an LU name of PWS02. Your 5494 has a network name of ATLNET and an LU name of ATLRWS1. Your .PCS file might be named ATLRWS1.PCS and will look like this:

Example of modified *newfile.PCS*

```
RTLN APPN.PWS02  
RTYP 5250  
EMLI ATL5494=ATLNET.ATLRWS1,2,PWS02
```

Note: “ATL5494=ATLNET.ATLRWS1.” defines ATL5494 as the alias for ATLNET.ATLRWS1.

4 Save your changes.

5 Repeat these steps beginning at step 2 on page 4-10 for any additional 5494s.

The remote access function configuration is complete.

To continue with 5494 configuration, go to Chapter 5, “Configuring Your System” on page 5-1.

To use the 5494 Utility Program remote access function, go to “Starting the Utility Program Using the Remote Access Function for DOS.”

Starting the Utility Program Using the Remote Access Function for DOS

To start the Utility Program to access a remote 5494 from a PWS, follow these steps:

1 Change the directory to the 5494UP directory.

2 Type **5494UP *newfile.PCS*** and press **Enter**. The *newfile.PCS* file is the .PCS file you created while configuring the Utility Program for the remote access function sections of this chapter.

Note: If you type 5494UP without a .PCS file name, the default file DUL5494.PCS is used.

Configuring Communications Manager/2 1.1 for Utility Program Local Access

The following instructions explain how to configure IBM Communications Manager/2 1.1 (CM/2 1.1) to run the 5494 Utility Program. These instructions assume you have a working knowledge of the OS/2 operating system and CM/2 1.1; if not, refer to your OS/2 documentation.

Your PWS may already contain an OS/2 Communications Manager configuration file for communicating with the AS/400 system. If so, you may want to modify this configuration file to run the Utility Program. This allows running concurrent sessions for AS/400 communication and Utility Program communication. If your PWS does not already have a configuration file, you must create one.

The following procedure contains alternative actions for creating a new configuration file or changing an existing one.

Notes:

1. All LU names must be typed as capital letters.
2. OS/2 is case-sensitive.
3. Fields that are not mentioned can use the default values.
4. Figure 4-1 shows an overview of what parameters need to be configured in CM/2 1.1 and how the parameters in the 5494 relate to parameters in the PWS when configuring CM/2 1.1 for local attachment. To start the 5494 Utility Program in this environment, type **5494UP**.

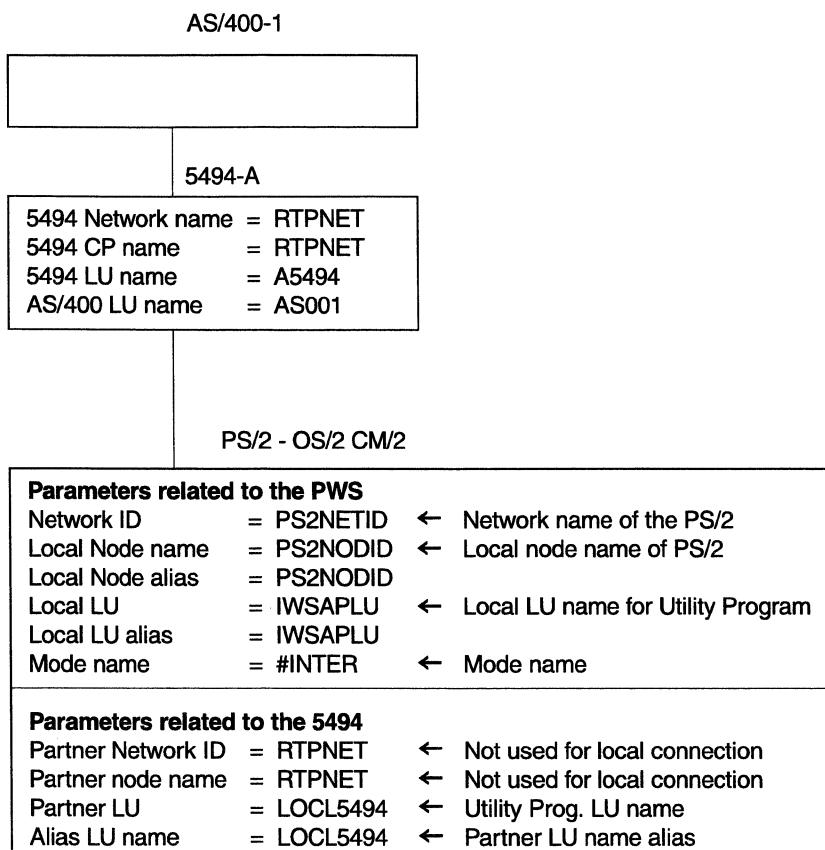


Figure 4-1. CM/2 1.1 Overview - Local Access

To create a new configuration file or change an existing configuration file for a PWS attached to the 5494 using either a 5250 or a LAN connection, complete the following steps:

- 1** Select **Communications Manager/2**, which is one of the folders on your OS/2 Desktop.
- 2** Select **Communications Manager Setup** from the Communications Manager/2-Icon View.
- 3** Select **OK** on the Communications Manager/2 Installation and Setup window, if necessary.
- 4** Select **Setup** on the Communications Manager Setup window.
- 5** Complete the following steps if you are creating a new configuration file in the Open Configuration window:
 - a** Type a filename.
 - b** Type a brief description for your configuration file.
 - c** Select **OK**.
 - d** Select **YES** to create the configuration file.
 - e** Go to step 7.
- 6** Complete the following steps if you are modifying an existing configuration file.
 - a** Select the file you want to modify from the Configuration list.
 - b** Select **OK**.
 - c** Continue with step 7
- 7** Select **YES** to confirm this configuration will be used on this workstation.
- 8** Select the **Options** action bar item from the pull-down window.
- 9** Select **Configure any profile or feature...**
- 10** Are you creating a new configuration file or changing an existing file?
 - Creating a new configuration file: Continue with step 11.
 - Changing an existing configuration file: Go to step 17 on page 4-14.
- 11** Complete one of the following steps on the Communications Manager Configuration List window.
 - If token-ring connection, select **DLC–Token-Ring or other LAN types**.
 - If Ethernet connection, select **DLC–Ethernet (ETHERNET) network**.
 - If twinaxial connection, select **DLC–Twinaxial**.

Beginning Installation of the Utility Program

12 Select Configure...

If LAN configuration, continue with 13.

If twinxial connection, go to 14.

13 Complete the following steps on the Token-Ring or other LAN Types DLC Adapter Parameters window or the Ethernet (ETHERAND) Network DLC Adapter Parameters window.

a Select the adapter number.

b Type the LAN ID for the LAN to which your PWS is attached for C&SM LAN ID.

c Select OK.

d Go to 15.

14 Complete the following steps on the Twinaxial DLC Adapter Parameters window:

a Select the adapter type.

b Type the station address for your PWS in the Controller Address field.

c Select OK.

d Continue with step 15

15 Select SNA Local Node Characteristics in the Communications Manager Configuration List window and select Configure....

16 Complete the following steps in the Local Node Characteristics window:

a Type the Network ID.

b Type the Local Node Name.

c Select OK.

17 Select SNA Connections in the Communications Manager Configuration List window.

18 Select Configure....

19 Select To peer node under Partner Type in the Connections List window.

a If you are creating a new configuration file: Select Create.

b If you are changing an existing configuration file: Select the link you want to use to access the 5494 from the Link Name – Adapter – Adapter Number list. Select Change....

Continue with step 20 on page 4-15.

20 Select the Adapter type and Adapter number (if token-ring or Ethernet connected) on the Adapter List window.

Note: For LAN connection, the Adapter number must match what was configured in step 13a on page 4-14.

21 Select **Continue....**

22 Complete the following steps in the Connection to a Peer Node window:

If changing an existing configuration, go to step 25.

If creating a new LAN (token ring or Ethernet) configuration, continue with step 23.

If creating a new twinaxial configuration, go to step 24.

23 Type:

- LAN destination address.
- Address Format

If you previously configured the 5494 and changed its LAN address, type the 5494's LAN address and format. Otherwise, use the following default LAN addresses:

The 5494's default value for the token-ring address is 40005494E000 and the default address format is in token-ring format.

The 5494's default value for the Ethernet address is 02005494E000 and the default address format is Ethernet canonical format.

Note: For more information on LAN address formats, see Appendix D, "Local Area Network Addressing Considerations" on page D-1.

- Partner network ID
- Partner node

Go to step 25.

24 Type:

a Partner network ID

b Partner node name

25 Select **Define Partner LUs....**

26 Complete the following steps in the Partner LUs window.

Note: Some fields in this window are case-sensitive.

a Type the Network ID of the target 5494.

b Type **LOCL5494** for the LU Name.

c Type **LOCL5494** for the Alias.

d Select **Add**. The fully-qualified LU name and its alias should appear in the list.

Beginning Installation of the Utility Program

- 27** Select **OK**.
- 28** Select **OK** in the Connection to a Peer Node window.
- 29** Select **Close** in the Connections List dialog box.
- 30** Select **SNA Features** in the Communications Manager Configuration List window, and then select **Configure....**
- 31** Select **Local LUs** in the SNA Features List; then select **Create**.
- 32** Complete the following steps in the Local LU window:
 - a** Type **IWSAPLU** for LU Name.
 - b** Type **IWSAPLU** for Alias.
Note: This field is case-sensitive.
 - c** Select **OK**.
- 33** On the SNA Features List window, select **Close...** and press **Enter**.
- 34** On the Communications Manager Configuration List window, select **Close...** and press **Enter**.
- 35** On the Communications Manager Configuration Definition window, select **Close** and press **Enter**.
- 36** **The Communications Manager configuration for local access is complete.** Continue to exit from the Communications Manager setup and save your configuration.
- 37** Would you like to configure CM/2 for the 5494 Utility Program remote access function?
YES—Go to “Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function.”
NO—Go to Chapter 5, “Configuring Your System.”

Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function

The Utility Program remote access function may be used to access one or more 5494s from a PC or PS/2 computer in a central location.

For each 5494 you want to access, you must add a partner LU definition to CM/2.

Figure 4-2 on page 4-17 shows an overview of what parameters need to be configured in CM/2 1.1 and how the parameters relate between the 5494 and CM/2 1.1 when configuring CM/2 1.1 for the remote access function. To start the 5494 Utility Program in this environment, type **5494UP B5494**.

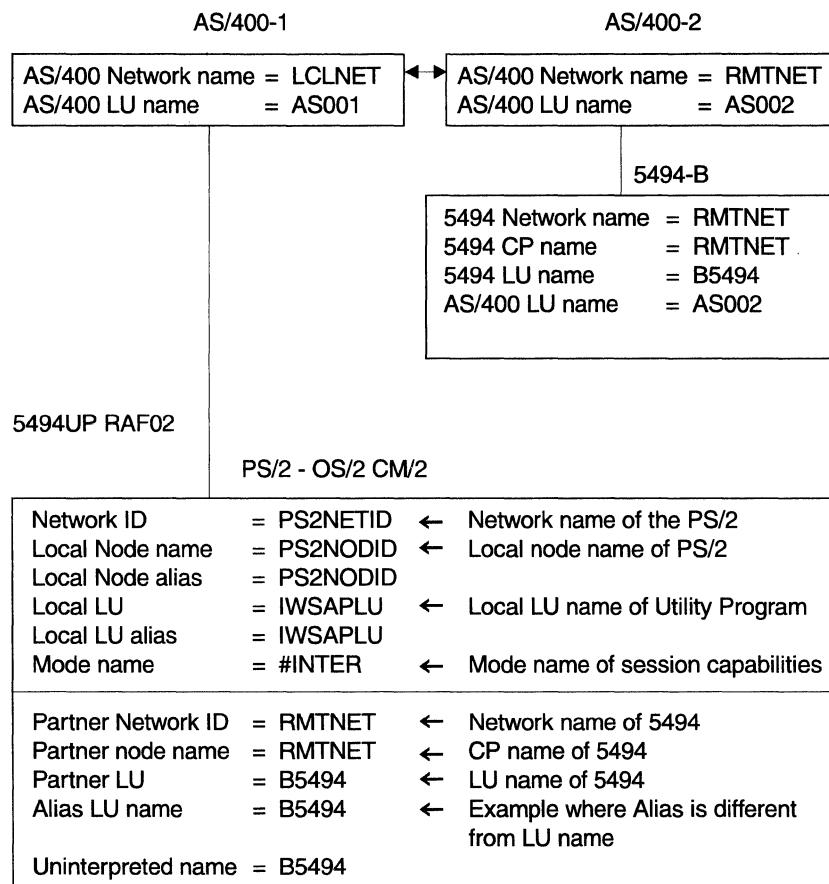


Figure 4-2. CM/2 1.1 Overview - Remote Access

The following instructions assume you have an existing configuration for communicating with an AS/400 system in an APPN network:

- 1 Select the **Communications Manager/2** icon on the OS/2 desktop.
- 2 Select **Communications Manager Setup** in the Communications Manager/2-ICON View folder.
- 3 Select **OK** in the Communications Manager Installation and Setup Window.
This may not be necessary.
- 4 Select **Setup** in the Communications Manager/2 Setup Window.
- 5 Select your configuration file and select **OK** in the Open Configuration window.
- 6 Select **YES** to confirm this configuration will be used on this workstation.
- 7 Select **Options** on the action bar.
- 8 Select **Configure any profile or feature....**
- 9 Select **SNA Features** in the Communications Manager Configuration List window and then select **Configure**.

Beginning Installation of the Utility Program

- 10** Select Local LUs in the SNA Features List window; then select **Create**.
- 11** Complete the following steps in the Local LU window:
 - a** Type **IWSAPLU** for LU Name.
 - b** Type **IWSAPLU** for Alias.

Note: This field is case-sensitive.
 - C** Select **OK**.
- 12** Select **Close** to return to the Communications Manager Configuration List window.
- 13** Select **SNA connections** in the Communications Manager Configuration List window.
- 14** Select **Configure....**
- 15** Select **to peer node** under Partner Type in the List window.
- 16** Select the **Link** in the Adapter List window that you want to use to access the 5494.
- 17** Select **change**.
- 18** Select **Continue...** in the Adapter List window.
- 19** Select **Define Partner LUs...** in the Connection to a Peer Node window.
- 20** Complete the following in the Partner LU window for each 5494 to which you intend to connect with the Utility Program.
 - a** Type in the network ID of the target 5494.
 - b** Type in the LU_name of the target 5494.
 - C** Type in the alias of the target 5494.

Note: The alias name is used when you start the Utility Program
Remember this is a case-sensitive value.
 - d** Select **Add**.
 - e** Select **OK** if you have completed adding partner LUs for target 5494s.
Otherwise, return to 20a.
 - f** Follow the online instructions to save, verify, and exit from the Communications Manager setup.
- 21** The CM/2 1.1 configuration for the remote access function is complete.

To use the 5494 Utility Program remote access function, go to "Starting the Utility Program Remote Access Function on a Communications Manager/2 1.1 System" on page 4-19.

To continue with 5494 configuration, go to Chapter 5, "Configuring Your System."

Starting the Utility Program Remote Access Function on a Communications Manager/2 1.1 System

To start the 5494 Utility Program to communicate with a remote 5494, you must first configure a partner LU for the 5494 (see "Configuring CM/2 1.1 for 5494 Utility Program Remote Access Function" on page 4-16 for instructions).

Complete the following steps to start the Utility Program:

- 1** Start the Communications Manager.
- 2** Go to an OS/2 Full Screen.
- 3** Change your current directory to the **5494UP** directory.
- 4** Type **5494UP alias_name** and press **Enter**.

where *alias_name* is the alias name you configured for the target 5494. Remember that the alias name is a case-sensitive value and must be typed with the same capitalization you configured.

Chapter 5. Configuring Your System

Introduction	5-4
If You Have Worksheets	5-4
If You Do Not Have Worksheets	5-4
Selecting a Configuration Workstation	5-4
Configuring the 5494 from a PWS	5-5
For an interactive mode configuration:	5-5
For stand-alone mode configuration:	5-5
Entering Configuration Mode Using a PWS	5-5
Using the Utility Program	5-6
Transferring Configuration Data to the 5494	5-9
Configuring the 5494 from an NWS	5-11
Entering Information on NWS Configuration Screens	5-11
Entering Configuration Mode Using an NWS	5-12
Beginning Configuration	5-13
Field AA (Communication Mode)	5-14
Field DD (LAN Gateway Support)	5-14
Field 1 (5250 Keyboard Translation)	5-15
Completing Configuration for SDLC Communication	5-20
Field 2 (Station Address)	5-20
Field 3 (Communication)	5-21
Field 8 (V.25 bis Parameters)	5-23
Completing the SDLC Configuration Parameters	5-23
Completing Configuration for X.25 Communication	5-24
Field 2 (Station Address)	5-25
Field 4 (X.25 Subscription Data)	5-25
Field 5 (X.25 Configuration Data)	5-26
Field 6 (X.25 Software Data)	5-27
Field 7 (Retry Parameters)	5-29
Completing the X.25 Configuration Parameters	5-30
Completing Configuration for X.21 Switched Communication	5-31
Field 2 (Station Address)	5-32
Field B (X.21 SHM Retry Parameters)	5-32
Field C (SHM Access Code)	5-33
Field D (SHM Dial Digit Format)	5-33
Field E (Optional Call Progress Signals)	5-33
Completing X.21 Switched Configuration Parameters	5-34
Completing Configuration for X.21 Leased Communication	5-35
Field 2 (Station Address)	5-35
Field 3 (Communication)	5-36
Field 8 (Reserved)	5-37
Completing X.21 Leased Configuration Parameters	5-37
Completing Configuration for Token-Ring AS/400 Attachment	5-38
Field F (5494 Token-Ring SAP)	5-38
Field G (Token-Ring Response timer [T1])	5-39
Field H (Token-Ring Inactivity timer [Ti])	5-39
Field I (Token-Ring Receiver Acknowledgment Timer [T2])	5-39
Field J (Token-Ring Retry Count [N2])	5-40
Completing Token-Ring AS/400 Attachment Configuration Parameters	5-40
Completing Configuration for Ethernet AS/400 Attachment	5-41
Field E (Ethernet Frame Format)	5-41

Field F (Local Ethernet SAP)	5-42
Field G (Ethernet Response Timer [T1])	5-42
Field H (Ethernet Inactivity Timer [Ti])	5-42
Field I (Ethernet Receiver Acknowledgment Timer [T2])	5-42
Field J (Ethernet Retry Count [N2])	5-43
Completing Ethernet AS/400 Attachment Configuration Parameters	5-43
Completing Configuration for Token-Ring Gateway	5-44
Field K (Token-Ring Address)	5-44
Field L (Token-Ring SAP)	5-45
Field M (Token-Ring Response Timer [T1])	5-45
Field N (Token-Ring Inactivity Timer [Ti])	5-45
Field O (Token-Ring Receiver Acknowledgment Timer [T2])	5-46
Field Q (Token-Ring Retry Count [N2])	5-46
Field R (Token-Ring Maximum Out [TW])	5-46
Field S (Token-Ring Maximum In [N3])	5-46
Completing Token-Ring Gateway Configuration Parameters	5-47
Completing Configuration for Ethernet Gateway	5-48
Field K (5494 Address Format and 5494 Address)	5-48
Field L (Ethernet SAP)	5-49
Field M (Ethernet Response Timer [T1])	5-49
Field N (Ethernet Inactivity Timer [Ti])	5-49
Field O (Ethernet Receiver Acknowledgment Timer [T2])	5-49
Field Q (Ethernet Retry Count [N2])	5-50
Field R (Ethernet Maximum Out [TW])	5-50
Field S (Ethernet Maximum In [N3])	5-50
Completing Ethernet Gateway Configuration Parameters	5-50
Completing Screen 1	5-51
Field P (Printer Port and Station)	5-51
Verifying Screen 1 Configuration Data	5-51
Printing Screen 1 Configuration Data	5-51
Configuring Network Information	5-52
Field 11 (Default Network Name)	5-55
Field 12 (5494 LU Name)	5-55
Field 13 (5494 CP Name)	5-55
Field 14 (Default Mode Name)	5-55
Field 15 (5494 Connection Number)	5-56
Field 16 (Logical Connection Retry Parameters)	5-57
Field 17 (5494 Serial Number)	5-58
Field 18 (5494 System Password)	5-58
Field 19 (5494 ID Number)	5-58
Configuring for Primary and Alternate AS/400 Systems	5-59
Field H1:1 (AS/400 System 1 LU Name)	5-59
Field H1:2 (AS/400 System 1 Network Name)	5-59
Field H1:3 (AS/400 System 1 5494 Network Name)	5-59
Field H1:4 (AS/400 System 1 Mode Name)	5-60
Field H1:5 (AS/400 System 1 Connection Number)	5-60
Field H1:6 (AS/400 System 1 Logical Channel)	5-61
Field H1:7 (AS/400 System 1 LAN SAP)	5-61
Field H1:8 (AS/400 System 1 LAN Maximum Out [TW])	5-62
Field H1:9 (AS/400 System 1 LAN Maximum In [N3])	5-62
Field H1:10 (AS/400 System 1 SHM Retries Direct Call Support)	5-62
Completing Screen 2	5-63
Verifying Screen 2 Configuration Data	5-63
Printing Screen 2 Configuration Data	5-63

Saving NWS Configuration Data 5-63

Introduction

This chapter explains how to configure your 5494 using a programmable workstation (PWS) or nonprogrammable workstation (NWS).

Note: See Appendix C, "System Configuration Examples," for examples of 5494 system configurations.

If You Have Worksheets

Your system planner may have provided you with the following worksheets from the *IBM 5494 Remote Control Unit Planning Guide*:

- Network Information Worksheet
- AS/400 Communication Worksheet
- Token-Ring Gateway Worksheet (if you are using a Token-Ring network to attach workstations to the 5494)
- Ethernet Gateway Worksheet (if you are using an Ethernet network to attach workstations to the 5494)
- Keyboard Translation Worksheet (if you are using 5250 workstations with the 5494).

If you have the worksheets listed above, this chapter will direct you to the appropriate worksheet fields to help you complete the configuration.

If You Do Not Have Worksheets

If you do not have the worksheets listed above, but you do have knowledge about the configuration of AS/400 communication devices, this chapter provides information so that you can configure your 5494 without the worksheets.

Selecting a Configuration Workstation

You can configure the 5494 using one of the following methods:

If you are using:	See:
A preconfigured diskette which contains a completed 5494 configuration	"Transferring Configuration Data to the 5494" on page 5-9.
The Utility Program from a stand-alone PWS not attached to the 5494.	"Configuring the 5494 from a PWS" on page 5-5.
An attached 5250 workstation using the NWS configuration screens (the workstation can be either a 5250 NWS or a PWS running a 5250 workstation emulation program)	"Configuring the 5494 from an NWS" on page 5-11.
The Utility Program to interactively configure the 5494 from a PWS	"Configuring the 5494 from a PWS" on page 5-5.

Configuring the 5494 from a PWS

For an interactive mode configuration:

- The Utility Program must be installed (see Chapter 4, "Installing and Using the 5494 Utility Program").
- The PWS must be attached to the 5494 through a twinaxial port or through a local area network.

If your 5494 is attached to a LAN, you can use a LAN-attached PWS for initial 5494 configuration, even if you are going to configure the 5494 for LAN AS/400 Attachment. When the 5494 is powered-on in configuration mode, the 5494 comes up in a LAN Gateway mode, and PWSs on the LAN can access the 5494 as devices.

If the 5494 is already configured and online with the AS/400 system, you can modify the 5494 configuration using the remote access function of the PWS. The PWS running the 5494 Utility Program can be anywhere in the network, as long as a logical connection exists to the 5494.

For stand-alone mode configuration:

- The Utility Program must be installed (see Chapter 4, "Installing and Using the 5494 Utility Program") or you must have the 5494 utility diskette.
- For each 5494 you plan to configure, you must have a blank, formatted 3.5-inch diskette (720KB, 1.44MB, or 2.88MB) if you do not want to store the configuration data on the utility diskette.

To configure the 5494 using the Utility Program in interactive or stand-alone mode, continue with "Entering Configuration Mode Using a PWS."

Entering Configuration Mode Using a PWS

1 Are you configuring in stand-alone mode?

YES—Go to step 5 on page 5-6.

NO—Continue with step 2.

2 Make sure the 5494 power push button is set to **OFF** and the Power-On indicator is not on. Remove the 5494 System Diskette from the diskette drive.

3 Press the 5494 power push button to set the power to **ON**. The Power-On indicator comes on. The message 001-01 is displayed to indicate that the 5494 is running tests, then the following panel appears:

003-02	1
--------	---

Note: If at any time the message code that is displayed on your 5494 does not match the message code in this book, write down the numbers displayed on the panel. Refer to the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* for information about the message code and Customer Action.

Configuring the 5494 from a PWS

4 Insert the 5494 System Diskette into the 5494 diskette drive, press **2** on the 5494 keypad, then press **Enter** to begin 5494 operation in configuration mode.

5 Set your PWS to **ON** and select one of the following choices:

If your PWS is running the OS/2 operating system:

- If you plan to run the Utility Program in stand-alone mode, go to step 7.
- If you plan to run the Utility Program in interactive mode, continue with step 6.

If your PWS is running DOS: Go to step 8.

6 Start the Communications Manager using the configuration file you created or changed in Chapter 4, "Installing and Using the 5494 Utility Program" as the default configuration file.

7 Go to an OS/2 Full Screen.

8 Is the Utility Program installed on a fixed disk drive?

YES—Complete the following steps:

a Type **C:** (where **C:** represents the PWS fixed disk where you installed the Utility Program), then press **Enter**.

b Type **CD\5494UP**, then press **Enter**.

NO—Insert the 5494 Utility Diskette into the PWS diskette drive. Type **A:** (where **A:** represents the diskette drive where you inserted the diskette), then press **Enter**.

9 Continue with "Using the Utility Program."

Using the Utility Program

1 Start the Utility Program as follows:

Are you configuring in interactive mode or stand-alone mode?

Interactive:

If the PWS is directly attached to the 5494:

- Type **5494UP** and press **Enter**.

If you are using the remote access function on a DOS PWS:

- Type **5494UP filename.PCS** and press **Enter**.

where *filename* is the name of the .PCS file you created for this 5494 when you installed the Utility Program.

If you are using the remote access function on an OS/2 PWS:

- Type **5494UP alias** and press **Enter**.

where *alias* is the partner LU alias of a specific 5494 you configured when you installed the Utility Program.

Stand-alone: Type **5494UP /S** and press **Enter**.

Note: When you use the Utility Program in stand-alone mode to change the 5494 configuration, the Utility Program loads the previous configuration from one of the following:

- The configuration file 5494CONF.DAT stored in the root directory of the 5494 utility diskette
- The configuration file 5494CONF.DAT in the \5494UP directory, if the Utility Program is installed on the fixed drive.

If you want to change a configuration that you have saved under a different file name on a separate diskette or in another directory, you must rename the file as 5494CONF.DAT and copy it to the 5494 Utility Diskette or the \5494UP directory on the fixed drive.

2 Press **Enter** to clear the IBM logo panel.

The Utility Program contains menus, instructions, and help panels for configuration.

3 On the Utility Program main menu, select Configuration. If prompted for a password, enter the 5494 System Password for this 5494. The Configuration menu is displayed.

4 Enter the following configuration parameters:

Note: If you do not have worksheets, follow the instructions on the screen, and press **Help** as needed for more information.

- Select AS/400 Connection on the configuration menu, then select your communication protocol. The protocol is shown in the title of your AS/400 Communication Worksheet. Enter the information recorded on your AS/400 Communication Worksheet.
- Select Network Information, then enter the information recorded on your Network Information Worksheet.
- If you have Token-Ring workstations, select Token-Ring Gateway, then enter the values recorded on your Token-Ring Gateway Worksheet.
- If you have Ethernet workstations, select Ethernet Gateway, then enter the values recorded on your Ethernet Worksheet.
- If you have 5250 workstations, select Keyboard Translation, then enter the information from your Keyboard Translation Worksheet.
- When you have entered all configuration parameters, select Save Configuration to save the configuration data.

The configuration data is stored on the 5494 Utility Diskette or in the default directory on the fixed disk. If you are configuring in interactive mode, the data is also stored in the 5494 permanent storage and the 5494 System Diskette.

Note: If you obtain a new 5494 System Diskette at some time, you do not have to copy the configuration data. The 5494 copies the configuration file

Configuring the 5494 from a PWS

from storage to a 5494 System Diskette the first time a system diskette is used.

5 Do you want to save the configuration data to another diskette?

YES—Continue with step 6.

NO—Go to step 10.

6 Remove the 5494 Utility Diskette from the PWS diskette drive (if present) and insert a formatted diskette (720KB, 1.44MB, or 2.88MB).

7 The configuration file name appears on the screen. In the configuration file name field, change the drive designation to indicate the diskette drive containing the blank diskette. Remove the subdirectory designation. Do not change the file name.

8 Select Save Configuration. The configuration data is stored on the formatted diskette.

9 If you have changed your configuration interactively, you must restart the 5494 in order to use the new configuration. Make sure all users have logged off the AS/400 system so you do not interrupt their work. Use the 5494 Utility Program to restart the 5494 with the following steps:

- a. Use the **Esc** key to return to the 5494 Utility Program Main Menu.
- b. Select "System Reset".
- c. Select "Reset the 5494 in Normal Mode", type in the 5494 System Password, and press **Enter**.

10 Exit the Utility Program.

If you configured in interactive mode, configuration is complete. If you have not reset the 5494 using the Utility Program, press the 5494 power push button to set the power to **OFF**.

If you configured in stand-alone mode at a central site, send the configuration data diskette to the 5494 location.

If you configured in stand-alone mode at the 5494 location, transfer the configuration data from the diskette to the 5494. See "Transferring Configuration Data to the 5494" on page 5-9.

Transferring Configuration Data to the 5494

To transfer the configuration data to the 5494, complete the following steps:

- 1** Make sure the 5494 power push button is set to **OFF** and the Power-On indicator is not on. Remove the 5494 System Diskette from the diskette drive.
- 2** Press the 5494 power push button to set the power to **ON**. The Power-On indicator comes on. The message 001-01 is displayed to indicate the 5494 is running tests, then the following panel appears:

003-02	1
--------	---

Note: If at any time the message code that is displayed on your 5494 does not match the message code in this book, write down the numbers displayed on the panel. Refer to the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* for information about the message code and Customer Action.

- 3** Make sure the 5494 System Diskette is write-enabled. Insert the 5494 System Diskette into the 5494 diskette drive, press **2** on the 5494 keypad, then press **Enter** to begin 5494 operation in configuration mode. Wait for the Ready indicator and the Test Mode indicator to come on.
- 4** On the 5494 keypad, Press **Req**, type **300**, then press **Enter** to select Copy Configuration.

The following panel is displayed, indicating that the 5494 is ready for the diskette that contains the configuration data:

301 *****

Note: If the panel does not display this code, an error has occurred. See the table on page 5-11 to identify the error and take corrective action.

Transferring Configuration Data to the 5494

- 5** Remove the 5494 System Diskette. Insert the diskette containing your saved configuration data into the diskette drive, then press **Enter**.

The following panel is briefly displayed, indicating that the diskette is being read and that the configuration data is being stored in the 5494:

```
*****301*****
```

Then, the following panel is displayed, indicating that the 5494 is ready to place a backup copy of the configuration data on the 5494 System Diskette:

```
302||*****
```

Note: If the panel does not display this code, an error has occurred. See the table on page 5-11 to identify the error and take corrective action.

- 6** Remove the diskette from the diskette drive. Insert the 5494 System Diskette into the 5494 diskette drive, then press **Enter**.

The following panel is briefly displayed, indicating that the configuration data is being copied to the 5494 System Diskette:

```
*****302*****
```

- 7** The following panel is displayed, indicating that the transfer of the configuration data to the 5494 is complete:

```
303||*****
```

Note: If the panel does not display this code, an error has occurred. See the table on page 5-11 to identify the error and take corrective action.

- 8** Press the 5494 power push button to set the power **OFF**.

- 9** Go to Chapter 7, "Communicating with Your AS/400 System."

Note: If you obtain a new 5494 System Diskette at some time, you do not have to copy the configuration data. The 5494 copies the configuration file from storage to a 5494 System Diskette the first time a system diskette is used.

The following table lists the error codes that may appear on the operator panel LCD during the transfer of configuration data to the 5494.

Request Code	Error and Corrective Action
304	This code, appearing in the left position, indicates that an interactive configuration is in progress. Copying configuration data is not allowed at this time. Press Esc to clear the screen and end the operation.
305	This code, accompanied by a beep, indicates that the configuration file, 5494CONF.DAT, is not on the diskette. Press Clear . The 301 code is redisplayed. Return to step 5 on page 5-10, then insert the diskette containing your configuration file into the diskette drive.
306	This code indicates that the 5494 is not in configuration mode. You must place the 5494 in configuration mode before you can copy configuration data. Turn OFF the 5494. Return to step 1 on page 5-9.
307	<p>A 6-digit system reference code (SRC) appears at the right side of the LCD to identify a diskette problem.</p> <p>If the SRC is 500005, your diskette is write-protected. Remove the diskette and close the adjustable slot in the corner of the diskette. Now, the diskette is write-enabled. Press Clear, then return to step 3 on page 5-9.</p> <p>If you have another SRC, look up the SRC in Chapter 9, "Message Codes and System Reference Codes (SRCs)," and follow the instructions. Press Esc to clear the screen and end the operation.</p>
308	This code, appearing in the left position and accompanied by a beep, indicates that the diskette inserted is not the 5494 System Diskette. Press Clear . The 302 code is redisplayed. Return to step 6 on page 5-10.

Configuring the 5494 from an NWS

This section explains how to configure your 5494 from an NWS or a PWS running a 5250 workstation emulation program that is attached to the 5494.

Entering Information on NWS Configuration Screens

The configuration information for the 5494 is on two screens:

- Screen 1 includes AS/400 communication data, LAN gateway data, and keyboard translation data. It contains fields that require data to be entered using the cursor movement keys. The Tab key and Shift-Tab key allow additional cursor movement. Use the left and right cursor keys or the tab keys to move from field to field. Use the up or down arrow keys to change the value of a field.
- Screen 2 includes network information. It contains fields that require data to be entered using the keyboard. The Tab key and Shift-Tab key allow additional cursor movement. Use the left and right cursor keys to move from field to field.

Note: The keyboard backspace, insert, and delete functions are not supported on the configuration screens.

Entering Configuration Mode Using an NWS

SRCs may appear on the screen during the configuration procedure. If a blinking 1- to 6-character SRC appears, see Chapter 9, "Message Codes and System Reference Codes (SRCs)," for instructions to correct the error. To begin configuration, complete the following steps:

- 1** Make sure that the 5494 power push button is set to **OFF**, and the Power-On indicator is not on. If the 5494 System Diskette is in the diskette drive, remove the 5494 System Diskette.
- 2** Press the 5494 power push button to set the power **ON**, and the Power-On indicator comes on. The message 001-01 is displayed, indicating that the 5494 is running tests, then the following message is displayed:

003-02	1
--------	---

Note: If at any time the message code that is displayed on your 5494 does not match the message code in this book, write down the numbers displayed on the panel. Refer to the *IBM 5494 Remote Control Unit Problem Determination Guide Quick Reference* for information about the message code and Customer Action.

- 3** Make sure that the diskette is write-enabled. Perform the following steps:
 - a** Insert the 5494 System Diskette into the 5494 diskette drive.
 - b** Press **2** on the 5494 keypad, then press **Enter** to begin 5494 operation in configuration mode.
 - c** Wait for the Ready indicator to come on.
- 4** Go to the workstation that you are using to configure the 5494. Set the workstation power to **ON**. When the cursor appears at the top left corner of the screen, press the **Test Request** key sequence to display the configuration screen. See Appendix E, "Key Sequences," for the correct key sequence for your keyboard.

Note: If you are running a 5250 emulation program, the cursor appears on the AS/400 session screen, not on the PC session screen.

If an SRC appears on the workstation screen after you press these keys, press **Error Reset** and repeat this step.
- 5** Does the configuration screen appear? (A sample configuration screen is shown in Figure 5-1 on page 5-13. Your screen may not look exactly like this one.)

Note: The configuration screen appears only on the workstation you are using.

YES—Go to "Beginning Configuration" on page 5-13.

NO—Complete the following steps:

- a** Press the 5494 power push button to set the power **OFF**, and repeat steps 1 through 4 on page 5-12.
- b** If the configuration screen still does not appear, see Chapter 8, "Using Problem Determination Procedures."

Beginning Configuration

The configuration screen for SDLC is shown in Figure 5-1. X.25, X.21 switched, X.21 leased, Token-Ring, and Ethernet communication modes use the same procedures, but have different entry fields and values.

Notes:

1. Your screen may display a copyright statement in English. The first valid keystroke removes this statement.
2. If this is your initial configuration, your screen contains the default values shown in this chapter. If you are reconfiguring, your screen contains the values you set the last time you configured the 5494.

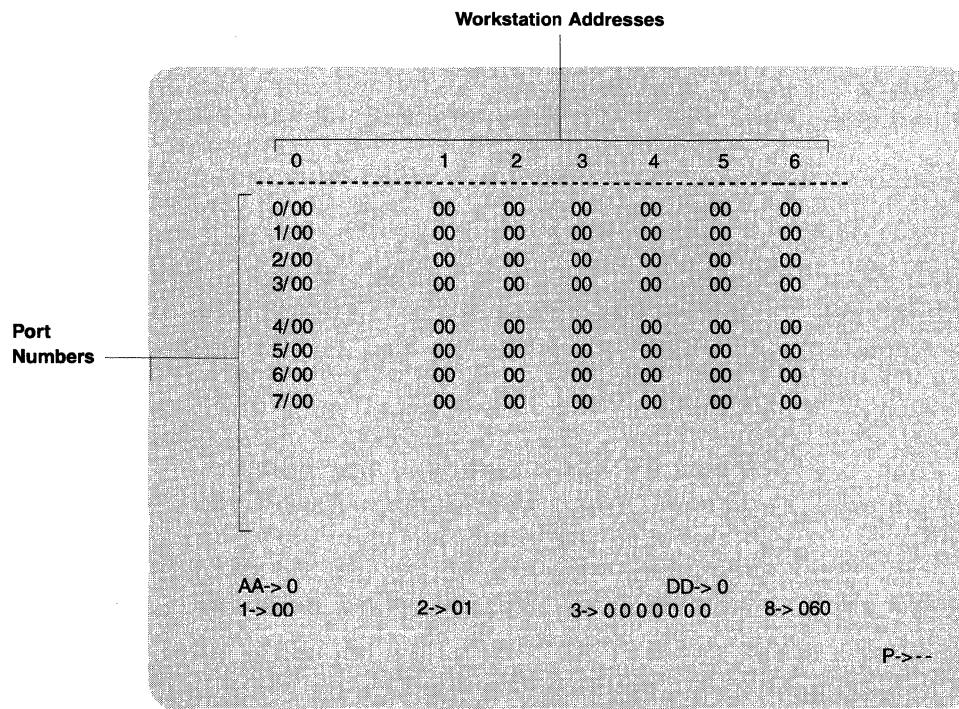


Figure 5-1. Configuration Screen for Initial SDLC Configuration

The upper and lower portions of the screen are described as follows:

- The upper portion of the screen shows the keyboard language codes for each possible address on each port. If an address contains no workstation, or if a printer is at that address, the keyboard language code is ignored by the 5494. You cannot enter any information on this portion of the screen.

Configuring the 5494 from an NWS

Note: If you have used a 5394, you may have used this configuration panel on the 5394 to verify workstation connection. To verify workstation connection on a 5494, see "Verifying Workstation Connection" on page 8-13.

- The lower portion of the screen contains the operator input fields. Use the cursor movement keys and the Tab key to access fields and select values. This example is for SDLC. When field AA is changed, the other fields change.

Locate the cursor on your SDLC configuration screen as shown in Figure 5-2. It is under the 0 in field AA.

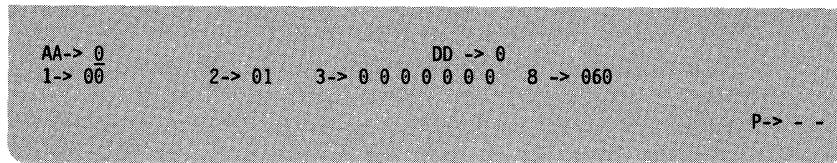


Figure 5-2. Partial Configuration Screen for SDLC, Cursor Location

Field AA (Communication Mode)

Field AA designates the communication mode your 5494 uses to communicate with the AS/400 system and is shown on the title of the AS/400 Communication Worksheet.

Select the appropriate value in this field from the following table. (Use the up arrow key or the down arrow key to select the value.)

Communication Mode	Field AA Value
SDLC	0
X.25	1
X.21 switched	2
X.21 leased	3
Token-Ring	4
Ethernet	5

Field DD (LAN Gateway Support)

The LAN Gateway Configuration allows PWSs that are connected using Token-Ring or Ethernet to attach to the AS/400 system through the 5494. Select the appropriate value from the following table based on your configuration. This information also can be found near the bottom of some of your AS/400 Communication Worksheets.

The following table shows the values for LAN Gateway support. (Use the up arrow key or the down arrow key to select the value.)

LAN Gateway Support	Field DD Value
None	0
Token-Ring	1
Ethernet IEEE 802.3	2
Ethernet DIX Version 2.0	3

Notes:

1. If you set field DD to 1, 2 or, 3, additional fields appear on your screen. These fields will be completed later.
2. Field DD does not show up if you selected token-ring or Ethernet for field AA.

Field 1 (5250 Keyboard Translation)

Do you have NWS (5250) displays or PCs operating as NWS displays attached to any of your twinaxial ports?

- YES**—Continue with step 1 on page 5-16.
NO—Go to step 6 on page 5-19.

Configuring the 5494 from an NWS

1 The default keyboard language code is 00, which corresponds to the United States. Do you want to use the default value?

YES—Go to step 6 on page 5-19.

NO—Continue with step 2 on page 5-17.

| *Table 5-1. Keyboard Codes*

Country Character Set	Keyboard Code	Country Character Set	Keyboard Code
Albania	3E	Japanese multinational	03
Arabic	30	Korea	38
Austria/Germany	20	Latin America	0E
Austria/Germany multinational	21	Latin America multinational	0F
Belgium multinational	07	Latin 2	34
Brazil	3C	Macedonia (Cyrillic)	42
Bulgaria (Cyrillic)	3F	Netherlands	2D
Canada	00	Netherlands multinational	2E
Canada multinational	22	Norway	16
Canadian French	08	Norway multinational	17
Canadian French multinational	09	Poland	43
Cyrillic	31	Portugal	18
Czech	40	Portugal multinational	19
Denmark	0A	Romania	44
Denmark multinational	0B	Russia (Cyrillic)	45
Farsi (Iran)	3D	Serbia (Cyrillic)	48
Finland	0C	Simplified Chinese (People's Republic of China)	3A
Finland multinational	0D	Slovakia	46
France (AZERTY)	04	Spain	1C
France (AZERTY) multinational	05	Spain multinational	1D
France (QWERTY)	1A	Sweden	1E
France (QWERTY) multinational	1B	Sweden multinational	1F
Greek	32	Swiss French multinational	28
Greek 2	3B	Swiss German multinational	2A
Hebrew	33	Thai	35
Hungary	41	Traditional Chinese (Taiwan)	39
Icelandic	2B	Turkish	36
Icelandic multinational	2C	Turkish 2	47
International	14	United Kingdom	12
International multinational	15	United Kingdom multinational	13
Italy	10	United States	00
Italy multinational	11	United States multinational	22
Japanese/English multinational	02	Yugoslav multinational	2F
Japanese/Kanji multinational	37		
Japanese/Katakana multinational	01		

Notes:

1. Make sure that all keyboard codes used in your configuration are supported by your AS/400 system.
2. If the workstations in your configuration have different keyboard codes, you must select only multinational keyboard codes.
3. You can select a maximum of four multinational keyboard codes for any configuration.

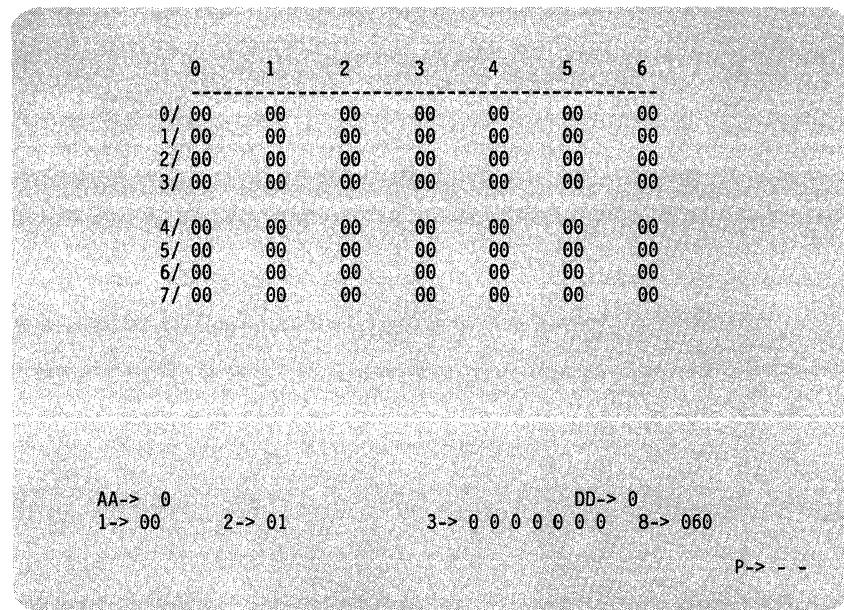


Figure 5-3. NWS Setup Screen

- 2** Select the correct default keyboard code from Table 5-1 on page 5-16 or obtain the value from the Keyboard Translation Worksheet field **A** (default keyboard translation).

When you select a multinational keyboard code, two dashed lines appear. You can now select other keyboard codes for specific displays.

Note: If you plan to use more than one keyboard code for this configuration, all codes must be multinational. Up to 4 different codes may be used.

To change the default keyboard code, complete the following steps:

- Use the Tab key to move the cursor to field 1.
- Use the up or down cursor keys to set field 1 to the default keyboard code.
- Press **Enter** to have the keyboard code appear in all 56 positions on the screen. Figure 5-4 shows keyboard code 22 selected.
- Press **Error Reset**.

- 3** Do you want to enter alternate keyboard language codes for specific displays?

YES—Continue with step 4 on page 5-18.

NO—Go to step 6 on page 5-19.

Configuring the 5494 from an NWS

	0	1	2	3	4	5	6
0/ 22	22	22	22	22	22	22	22
1/ 22	22	22	22	22	22	22	22
2/ 22	22	22	22	22	22	22	22
3/ 22	22	22	22	22	22	22	22
4/ 22	22	22	22	22	22	22	22
5/ 22	22	22	22	22	22	22	22
6/ 22	22	22	22	22	22	22	22
7/ 22	22	22	22	22	22	22	22

Figure 5-4. NWS Screen Example

- 4** To select alternate keyboard codes for specific port and workstation addresses, complete the following steps:

 - a** Use the up or down arrow keys to change the number in field 1 to the first alternate code.
 - b** Move the cursor to the first dashed line in field 1.

Note: The dashed-line fields in field 1 appear only if a multinational code has been selected.
 - c** Use the up or down cursor keys to select the port number.
 - d** Move the cursor to the second dashed line in field 1.
 - e** Use the up or down cursor keys to select the workstation address. Figure 5-5 shows keyboard code 1F, selected for port 3 workstation 4.

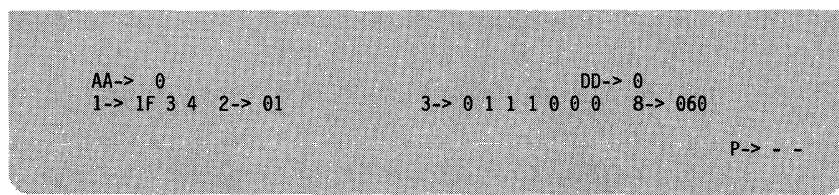


Figure 5-5. NWS Customized Screen

f Press **Enter**. The keyboard code for the port and workstation address selected changes in the top part of the screen. Figure 5-6 shows port 3, station address 4 set to the keyboard code 1F.

g Press **Error Reset**.

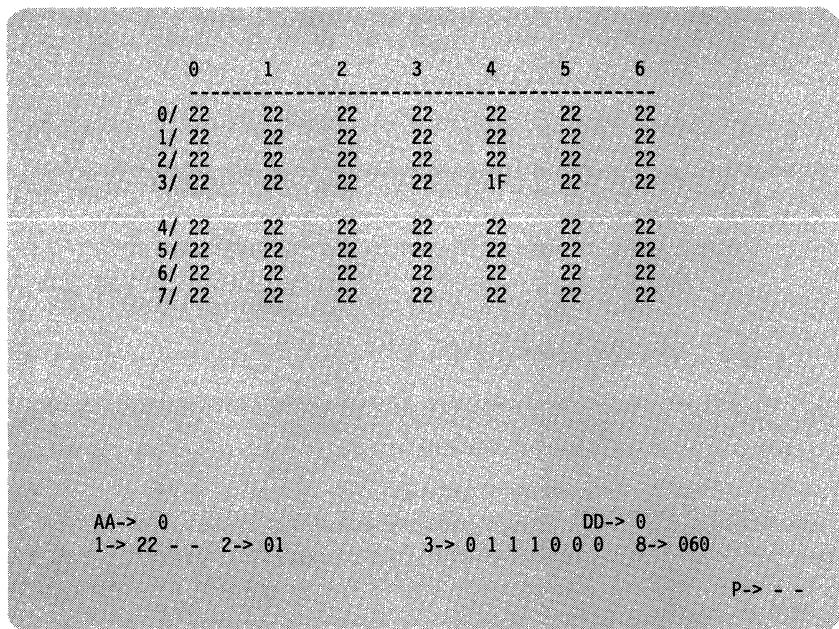


Figure 5-6. Customized Screen Display Example

5 Repeat step 4 on page 5-18 for all alternate keyboard codes. A total of four different multinational codes may be used for any number of port and station addresses.

6 To complete configuration for SDLC mode, go to “Completing Configuration for SDLC Communication” on page 5-20.

To complete configuration for X.25 mode, go to “Completing Configuration for X.25 Communication” on page 5-24.

To complete configuration for X.21 switched mode, go to “Completing Configuration for X.21 Switched Communication” on page 5-31.

To complete configuration for X.21 leased mode, go to “Completing Configuration for X.21 Leased Communication” on page 5-35.

To complete configuration for Token-Ring mode, go to “Completing Configuration for Token-Ring AS/400 Attachment” on page 5-38.

To complete configuration for Ethernet mode, go to “Completing Configuration for Ethernet AS/400 Attachment” on page 5-41.

Completing Configuration for SDLC Communication

If you are using SDLC communication mode and you entered 0 in field AA (shown in Figure 5-7), you must complete fields 2, 3, and 8. Figure 5-8 provides a summary of these fields for the experienced user.

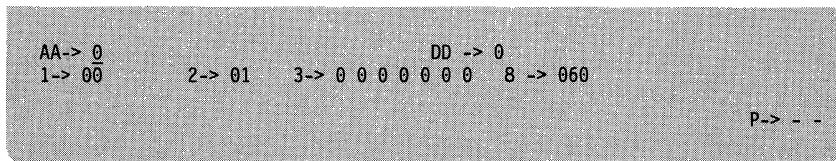


Figure 5-7. Partial Configuration Screen 1 for SDLC, Field AA = 0

If your system planner has provided you with worksheets, use the information from your AS/400 Communication Worksheet—SDLC to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

- | | |
|---------|--|
| Field 2 | Station Address |
| Field 3 | Communication—7 subfields configured as: <ul style="list-style-type: none">• Line Type: 0 = leased, 1 = switched, 2 = switched/V.25 bis• Line Facility: 0 = half-duplex, 1 = full-duplex• Connection Type: 0 = multipoint, 1 = point-to-point• Data Encoding:<ul style="list-style-type: none">0 = Nonreturn-to-zero inverted (NRZI)1 = Nonreturn-to-zero (NRZ)• Connection Method:<ul style="list-style-type: none">0 = Data terminal ready (DTR)1 = Connect data set to line (CDSTL)• Send Leading Pad: 0 = No, 1 = Yes• Local Loopback Support: 0 = No, 1 = Yes |
| Field 8 | V.25 bis Parameters (timeout for switched/V.25 bis). |

After you complete these fields, go to “Completing the SDLC Configuration Parameters” on page 5-23.

Figure 5-8. Summary of SDLC Configuration Parameters

Field 2 (Station Address)

The SDLC station address must be the same as the address used by the adjacent link station (ALS) to identify the 5494. The ALS is the AS/400 system or the adjacent node with which you are directly communicating. Select the appropriate value from the following table in field 2. This information also can be found in field A of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for the station address.

Station Address	Field 2 Value
Valid range in hexadecimal	01-FE
Default	01

Field 3 (Communication)

Field 3 contains several subfields. Scroll the options in each subfield using the up or down cursor keys. After you enter information, move the cursor to the next subfield.

In order to communicate with the ALS, several communication parameters must be configured in the 5494. These parameters describe the line and the modem. Refer to your modem documentation, contact your modem supplier, or contact your network supplier for assistance in answering the following questions:

- 1** Is your line leased, switched, or switched with a V.25 bis auto-dial modem? Select the appropriate value from the following table in subfield 1 of field 3. This information also can be found in field **B1** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for each line type.

Line Type	Subfield 1 Value
Leased (default)	0
Switched	1
Switched/V.25 bis	2

- 2** Is your modem set to half-duplex or full-duplex? Select the appropriate value from the following table in subfield 2 of field 3. This information also can be found in field **B2** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for each line facility.

Line Facility	Subfield 2 Value
Half-duplex (default)	0
Full-duplex	1

- 3** Is your communication line multipoint or point-to-point? Select the appropriate value from the following table in subfield 3 of field 3. This information also can be found in field **B3** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for each connection type.

Connection Type	Subfield 3 Value
Multipoint (default)	0
Point-to-point	1

Configuring the 5494 from an NWS

- 4** Does your modem documentation recommend nonreturn-to-zero inverted (NRZI) or nonreturn-to-zero (NRZ) data encoding? This field must match the configuration information for NRZI or NRZ at the ALS. Select the appropriate value from the following table in subfield 4 of field 3. This information also can be found in field **B4** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for data encoding.

Data Encoding	Subfield 4 Value
Nonreturn-to-zero inverted (NRZI) (default)	0
Nonreturn-to-zero (NRZ)	1

- 5** For switched lines, does your modem use interface pin 20 (signal 108) for data terminal ready (DTR) (signal 108.2) or connect data set to line (CDSTL) (signal 108.1)?

Notes:

- If you selected leased or V.25 bis auto-dial switched for line type (subfield 1, field **B1** from the worksheet), select DTR for connection method (subfield 5, field **B5** from the worksheet).
- In the U.S.A. and Canada, select DTR for connection method.

Select the appropriate value from the following table in subfield 5 of field 3. This information also can be found in field **B5** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for each connection method.

Connection Method	Subfield 5 Value
Data terminal ready (DTR) (default)	0
Connect data set to line (CDSTL)	1

- 6** Does your modem require a leading pad prior to the SDLC flag? This field must match the configuration of the ALS.

Note: For modems or DCEs that require a leading pad character for synchronization, leading pad transmitted should be used with NRZI data encoding.

Select the appropriate value from the following table in subfield 6 of field 3. This information also can be found in field **B6** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for send leading pad.

Send Leading Pad	Subfield 6 Value
No (default)	0
Yes	1

- 7** Does your modem support local loopback initiated by interface pin 18?
 Select the appropriate value from the following table in subfield 7 of field 3.
 This information also can be found in field **B7** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for local loopback support.

Local Loopback Support	Subfield 7 Value
No (default)	0
Yes	1

Field 8 (V.25 bis Parameters)

Field 8 contains the settings for your V.25 bis auto-dial information. If you selected V.25 bis auto-dial switched for line type (field 3 subfield 1, field **B1** on the worksheet), enter the maximum number of seconds allowed to establish a call connection when using V.25 bis. To complete field 8, answer the following questions:

- 1** Are you configuring for a V.25 bis auto-dial switched line (you entered **2** in field 3 subfield 1)?

YES—Move the cursor to field 8. Continue with step 2.

NO—Go to “Completing the SDLC Configuration Parameters.”

- 2** Select the appropriate value from the following table in field 8. This information also can be found in field **C** of the AS/400 Communication Worksheet—SDLC.

The following table shows the values for the V.25 bis timeout.

V.25 bis Timeout	Field 8 Value
Valid range (seconds)	001-255
Default	060

Completing the SDLC Configuration Parameters

Are you using a LAN configuration to attach workstations to the 5494 (you entered **1**, **2**, or **3** in field **DD**)?

YES—For Token-Ring Gateway, go to “Completing Configuration for Token-Ring Gateway” on page 5-44. For Ethernet Gateway, go to “Completing Configuration for Ethernet Gateway” on page 5-48.

NO—Go to “Completing Screen 1” on page 5-51.

Completing Configuration for X.25 Communication

If you are using X.25 communication mode and you entered 1 in field AA (shown in Figure 5-9), you must complete fields 2, 4, 5, 6, and 7. Figure 5-10 provides a summary of these fields for the experienced user.

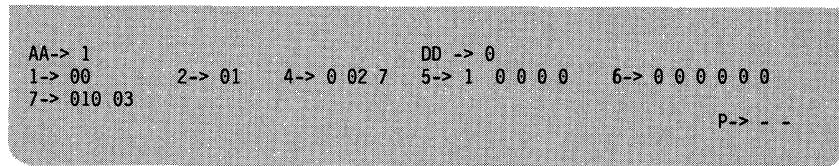


Figure 5-9. Partial Configuration Screen 1 for X.25, Field AA = 1

Some fields contain several subfields. Scroll the options in each subfield. After you enter information, move the cursor to the next subfield.

If your system planner has provided you with worksheets, use the information from your AS/400 Communication Worksheet—X.25 to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

- Field 2 Station Address
- Field 4 X.25 Subscription Data—3 subfields configured as:
 - Packet Level Sequence Numbering: 0 = modulo 8, 1 = modulo 128
 - Packet Window Size: 02-07 (modulo 8), 02-15 (modulo 128)
 - Link Window Size: 1-7=valid range
- Field 5 X.25 Configuration Data—4 subfields configured as:
 - Packet Size: 0 = 64, 1 = 128, 2 = 256, 3 = 512, 4 = 1024
 - Circuit Type: 0 = all others, 1 = PVC only, 2 = SVC answer only
 - Flow Control Negotiation Allowed: 0 = No, 1 = Yes
 - Manual Options Allowed: 0 = No, 1 = Yes
 - Local Loopback Support: 0 = No, 1 = Yes
- Field 6 X.25 Software Data—6 subfields configured as:
 - Reverse Charging Accepted: 0 = No, 1 = Yes
 - Logical Link Control: 0 = QLLC, 1 = ELLC
 - Telenet Type Network: 0 = No, 1 = Yes
 - Link Initiation: 0 = network or 5494, 1 = network only
 - Network CCITT Subscription: 0 = 1988, 1 = 1984, 2 = 1980
 - Diagnostic Codes:
 - 0 = 1984/1988 SNA Ext. format
 - 1 = 1984/1988 ISO format
 - 2 = 1980 SNA format
- Field 7 Retry Parameters—2 subfields configured as:
 - Number of Retries: 0-255 = valid range
 - Seconds between Retries: 1-60 = valid range

After you complete these fields, go to "Completing the X.25 Configuration Parameters" on page 5-30.

Figure 5-10. Summary of X.25 Configuration Parameters

Field 2 (Station Address)

The logical link control (LLC) station address must be the same as the address used by the adjacent link station (ALS) to identify this 5494. The ALS is the system with which you are directly communicating. Select the appropriate value from the following table in field 2. This information also can be found in field **A** of the AS/400 Communication Worksheet—X.25.

The following table shows the values for the station address.

Station Address	Field 2 Value
Valid range in hexadecimal	01-FE
Default	01

Field 4 (X.25 Subscription Data)

Field 4 contains several subfields. Scroll the options in each subfield. After you enter information, move the cursor to the next subfield.

In order to communicate with the 5494, certain communication parameters must be specified. These parameters define the packet level sequence numbering, the packet window size, and the link window size. Contact your network supplier for assistance in completing the following information:

- 1** Select the packet sequence numbering scheme your network subscription specifies. Select the appropriate value from the following table in subfield 1 of field 4. This information can also be found in field **B** of the AS/400 Communication Worksheet—X.25.

The following table shows the values for packet level sequence numbering.

Packet Level Sequence Numbering	Subfield 1 Value
Modulo 8 (default)	0
Modulo 128	1

- 2** Select the packet window size. Select the appropriate value from the following table in subfield 2 of field 4. If you selected modulo 8 in subfield 1 of field 4, valid entries are 2 to 7. If you selected modulo 128, valid entries are 2 to 15. This information can also be found in field **C** (packet window size) of the AS/400 Communication Worksheet—X.25.

Note: If you subscribe to the flow control negotiation facility, this value could be changed during individual circuit initiation procedures. In this case, enter the packet window size most often used.

The following table shows the values for packet window size.

Packet Window Size	Subfield 2 Value
Modulo 8	02-07
Modulo 128	02-15
Default	02

- 3** Select the link window size. Select the appropriate value from the following table in subfield 3 of field 4. This information can also be found in field **D** (link window size) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for link window size.

Link Window Size	Subfield 3 Value
Valid range	1-7
Default	7

Field 5 (X.25 Configuration Data)

Field 5 contains several subfields. Scroll the options in each subfield. After you enter information, move the cursor to the next subfield.

Several configuration parameters must be specified for the 5494. Contact your network supplier for assistance in completing the following information:

- 1** Select the appropriate packet size. Enter this information in subfield 1 of field 5. This information can also be found in field **E** (packet size) of the AS/400 Communication Worksheet—X.25.

Note: If you subscribe to the flow control negotiation facility, this value could be changed using individual circuit initiation procedures. In this case, select the packet size most often used.

The following table shows the values for each packet size.

Packet Size	Subfield 1 Value
64 bytes	0
128 bytes (default)	1
256 bytes	2
512 bytes	3
1024 bytes	4

- 2** Select the correct circuit type. Select the appropriate value from the following table in subfield 2 of field 5. This information can also be found in field **F** (circuit type) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for each circuit type.

Circuit Type	Subfield 2 Value
All others (default)	0
PVC only	1
SVC answer only	2

Notes:

- a. Choose permanent virtual circuits (PVC) only if you use only permanent virtual circuits. If you choose PVC only and you set subfield 4 of field 5 for no manual options, link initiation occurs automatically following power-on, with no operator action needed. Following any link failure, link recovery also occurs without any operator action. The 5494 uses configured parameters for circuit establishment.
- b. Choose switched virtual circuit (SVC) answer only if you use only switched virtual circuits and you do not intend to place any calls (answer

only). If you choose this circuit type and you set subfield 4 of field 5 for no manual options, link initiation occurs automatically following power-on, with no operator action needed. Following any link failure, link recovery also occurs without any operator action. The 5494 uses configured parameters for circuit establishment and does not check the password in the incoming call packet.

- c. Choose all others if you use both PVC and SVC connections or if you intend to place SVC calls.

- 3** Select the appropriate value from the following table in subfield 3 of field 5. This information can also be found in field **G** (flow control negotiation allowed) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for flow control negotiation allowed.

Flow Control Negotiation Allowed	Subfield 3 Value
No (default)	0
Yes	1

- 4** Select the appropriate value from the following table in subfield 4 of field 5. This information can also be found in field **H** (manual options allowed) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for manual options.

Manual Options Allowed	Subfield 4 Value
No (default)	0
Yes	1

- 5** Does your data circuit-terminating equipment (DCE) support local loopback initiated by interface pin 18? Select the appropriate value from the following table in subfield 5 of field 5. This information can also be found in field **I** (local loopback supported) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for local loopback support.

Local Loopback Support	Subfield 5 Value
No (default)	0
Yes	1

Field 6 (X.25 Software Data)

Field 6 contains several subfields. Scroll the options in each subfield. After you enter information, move the cursor to the next subfield.

Several software parameters must be specified for the 5494. These parameters include the reverse charging accepted values, the logical link control values, Telenet**-type network attachment values, link initiation values, the network subscription values, and the diagnostic code format values. Contact your network supplier for information needed to complete this information:

- 1** Do you subscribe to the reverse charging facility and want to accept reverse-charged calls? Select the appropriate value from the following table

Configuring the 5494 from an NWS

in subfield 1 of field 6. This information can also be found in field **J** (reverse charging accepted) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for reverse charging accepted.

Reverse Charging Accepted	Subfield 1 Value
No (default)	0
Yes	1

- 2** Which logical link control (LLC) facility will you be using? Select the appropriate value from the following table in subfield 2 of field 6.

Note: This value must be the same as the LLC used by your ALS. This value can be changed during individual circuit initiation procedures. In this case, enter here the LLC most often used.

This information can also be found in field **K** (logical link control) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for logical link control.

Logical Link Control	Subfield 2 Value
Qualified logical link control (QLLC) (default)	0
Enhanced logical link control (ELLC)	1

- 3** Does the 5494 attach to a Telenet-type network? Enter the appropriate value from the following table in subfield 3 of field 6.

Note: Telenet-type networks expect the 5494 to respond with UNNUMBERED ACKNOWLEDGMENT (UA) when polled with the DISCONNECT (DISC) command after sending SET ASYNCHRONOUS BALANCED MODE (SABM). If the 5494 will not be attached to a Telenet-type network, it responds with DISCONNECT MODE (DM) to a DISC received after sending SABM.

This information can also be found in field **L** (telenet-type network attachment) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for Telenet-type network attachment.

Telenet-Type Network Attachment	Subfield 3 Value
No (default)	0
Yes	1

- 4** Does the 5494 attach to a network that allows link initiation by either the network or the 5494, or does it require that link initiation be done only by the network? Enter the appropriate value from the following table in subfield 4 of field 6. This information can also be found in field **M** (link initiation) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for link initiation.

Link Initiation	Subfield 4 Value
Network or 5494 (default)	0
Network only	1

- 5** Which level of the CCITT X.25 Recommendation does your network subscription support? Enter the value from the following table in subfield 5 of field 6. This information can also be found in field **N** (network subscription) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for each network subscription.

Network Subscription	Subfield 5 Value
CCITT 1988 (default)	0
CCITT 1984	1
CCITT 1980	2

- 6** Which format of diagnostic codes will be used by the 5494? Enter the appropriate value from the following table in subfield 6 of field 6. The diagnostic code format of the 5494 must match that of the ALS.

Note: If subfield 5 of field 6 is set for CCITT 1980, this subfield must be set for 1980 SNA format diagnostic codes.

This information can also be found in field **O** (diagnostic code format) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for each diagnostic code format.

Diagnostic Code	Subfield 6 Value
1984/1988 SNA Ext. format (default)	0
1984/1988 ISO format	1
1980 SNA format	2

Field 7 (Retry Parameters)

Field 7 contains several subfields. Scroll the options in each subfield. After you enter information, move the cursor to the next subfield.

These parameters describe the number of retries and the seconds between retries. Contact your network supplier for information needed to complete this information:

- 1** How many attempts will the 5494 make to solicit a response from the network to a transmitted frame (CCITT N2 parameter)? Enter the appropriate value from the following table in subfield 1 of field 7. Your network supplier may impose restrictions on this value to limit network congestion. This information can also be found in field **P1** (number of retries) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for the number of retries.

Number of Retries	Subfield 1 Value
Valid range	000-255
Default	010

- 2** How many seconds will the 5494 wait before timing out on a response to a transmitted frame (CCITT T1 parameter)? Enter the value from the following table in subfield 2 of field 7. This is also the time used by the 5494 to wait for a network link initiation request before attempting to send its own link initiation request. Your network supplier may impose restrictions on this

Configuring the 5494 from an NWS

value. This information can also be found in field **P2** (seconds between retries) of the AS/400 Communication Worksheet—X.25.

The following table shows the values for the seconds between retries.

Seconds between Retries	Subfield 2 Value
Valid range	01-60
Default	03

Completing the X.25 Configuration Parameters

Are you using a LAN configuration to attach workstations to the 5494 (you entered 1, 2, or 3 in field DD)?

YES—For Token-Ring Gateway, go to “Completing Configuration for Token-Ring Gateway” on page 5-44. For Ethernet Gateway, go to “Completing Configuration for Ethernet Gateway” on page 5-48.

NO—Go to “Completing Screen 1” on page 5-51.

Completing Configuration for X.21 Switched Communication

If you are using X.21 switched communication mode, and you entered 2 in field AA (shown in Figure 5-11), you must complete fields 2, B, C, D, and E. Figure 5-12 provides a summary of these fields for the experienced user.

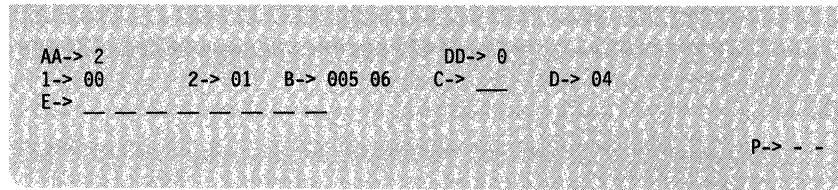


Figure 5-11. Partial Configuration Screen 1 for X.21 Switched, Field AA = 2

Some fields contain several subfields. Scroll the options in each field. After you enter information, move the cursor to the next subfield.

If your system planner has provided you with worksheets, use the information from your AS/400 Communication Worksheet—X.21 Switched to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

- Field 2 Station Address
- Field B X.21 Short Hold Mode (SHM) Retry Parameters—2 subfields configured as:
 - Number: 000-255 = valid range
 - Seconds between Retries: 01-15 = valid range
- Field C X.21 SHM Access Code (optional): 0-999 = valid range
- Field D X.21 SHM Dial Digit Format—area code length: 00 to 15 valid range, 3 = DCC, 4 = DNIC
- Field E Optional Call Progress Signals.

After you complete these fields, go to “Completing X.21 Switched Configuration Parameters” on page 5-34.

Figure 5-12. Summary of X.21 Switched Configuration Parameters

Configuring the 5494 from an NWS

Field 2 (Station Address)

Enter the SDLC station address of your 5494. This must be the same as the address used by the adjacent link station (ALS) to identify this 5494. The ALS is the system with which you are directly communicating.

Enter the value from the following table in field 2. This information can also be found in field A (5494 SDLC station address) of the AS/400 Communication Worksheet—X.21 Switched.

The following table shows the values for the station address.

Station Address	Field 2 Value
Valid range in hexadecimal	01-FE
Default	01

Field B (X.21 SHM Retry Parameters)

Field B contains several subfields. Scroll the options in each field. After you enter information, move the cursor to the next subfield. Field B contains information for automatic call retry in SHM. Several parameters must be specified. These parameters describe the number of retries and the seconds between retries.

- 1 Enter the appropriate value from the following table in subfield 1 of field B. This information can also be found in field D1 (number of retries) of the AS/400 Communication Worksheet—X.21 Switched.

The following table shows the values for the number of retries.

Number of Retries	Subfield 1 Value
Valid range	000-255
Default	005

- 2 Enter the number of seconds that the 5494 waits between retry attempts during SHM. This value may also be restricted by your network supplier to limit network congestion. To limit call collisions and provide faster reconnections, make sure that the time between retries on your 5494 is not the same as the time between retries on your ALS. Enter the appropriate value from the following table in subfield 2 of field B. This information can also be found in field D2 (seconds between retries) on the AS/400 Communication Worksheet—X.21 Switched.

The following table shows the values for seconds between retries.

Seconds between Retries	Subfield 2 Value
Valid range	01-15
Default	06

Field C (SHM Access Code)

Enter your international access code. This access code is used to prefix the connection number when making a call. This field can be left blank if an access code is not required.

Enter the appropriate value from the following table in field C. This information can also be found in field **B** (access code) of the AS/400 Communication Worksheet—X.21 Switched.

The following table shows the values for the SHM access code.

SHM Access Code (Optional)	Field C Value
Valid range	0-999
Default	No entry

Field D (SHM Dial Digit Format)

Field D selects whether the connection number(s) entered on the Network Information Worksheet are in data network identification code (DNIC) format or data country code (DCC) format.

The dial digit format is used to determine if the call is local. This field is the number of digits that the 5494 considers to be the area code or country code portion of the connection number. If a call is placed to an AS/400 system with the same area code or country code as the 5494, a local call is assumed and the 5494 discards the area code or country code digits.

Specify the length, in decimal, of the area code or country code. If using DNIC, enter a 04. If using DCC, enter a 03. DNIC format consists of a four-digit network ID, followed by a network terminal number. DCC format consists of a three-digit country code, followed by a national number. The default value is 04.

Enter the appropriate value from the following table in field D. This information can also be found in field **C** (dial digit format) of the AS/400 Communication Worksheet—X.21 Switched.

The following table shows the settings for the SHM dial digit format.

SHM Dial Digit Format	Field D Value
Valid range	00 - 15
Default	04

Field E (Optional Call Progress Signals)

During SHM link reestablishment, the 5494 automatically retries all 2x and 6x call progress signals (CPSs) received from the network using the parameters specified in subfields 1 and 2 of field B. The 5494 can retry other CPSs. You may enter up to eight optional CPSs in field E or leave this field blank. This information can also be found in field **D3** (retry of optional call progress signals) of the AS/400 Communication Worksheet—X.21 Switched.

Completing X.21 Switched Configuration Parameters

Are you using a LAN configuration to attach workstations to the 5494 (you entered 1, 2, or 3 in field DD)?

YES—For Token-Ring Gateway, go to “Completing Configuration for Token-Ring Gateway” on page 5-44. For Ethernet Gateway, go to “Completing Configuration for Ethernet Gateway” on page 5-48.

NO—Go to “Completing Screen 1” on page 5-51.

Completing Configuration for X.21 Leased Communication

If you are using X.21 leased communication mode and you entered 3 in field AA (shown in Figure 5-13), you must complete fields 2 and 3. Figure 5-14 provides a summary of these fields for the experienced user.

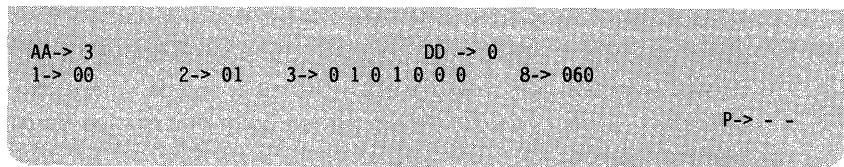


Figure 5-13. Partial Configuration Screen 1 for X.21 Leased, Field AA = 3

One field contains several subfields. Scroll the options in each field. After you enter information, move the cursor to the next field.

If your system planner has provided you with worksheets, use the information from your AS/400 Communication Worksheet—X.21 Leased to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

Field 2 Station Address

Field 3 Communication

Line Type : 0 = leased¹

Line Facility : 1 = full-duplex¹

Connection Type: 0 = multipoint, 1 = point-to-point

Data Encoding: 1 = NRZ (NRZI = no)¹

Connection Method: 0 = DTR¹

Send Leading Pad: 0 = No leading pad¹

Local Loopback Support: 0 = No local loopback.¹

Field 8 Reserved

¹This field cannot be changed.

After you complete these fields, go to "Completing X.21 Leased Configuration Parameters" on page 5-37.

Figure 5-14. Summary of X.21 Leased Configuration Parameters

Field 2 (Station Address)

Enter the SDLC station address of your 5494. This must be the same as the address used by the adjacent link station (ALS) to identify this 5494. The ALS is the system with which you are directly communicating. Enter the appropriate value from the following table in field 2. This information can also be found in field A (5494 SDLC station address) of the AS/400 Communication Worksheet—X.21 Leased.

The following table shows the values for the station address.

Configuring the 5494 from an NWS

Station Address	Field 2 Value
Valid range in hexadecimal	01-FE
Default	01

Field 3 (Communication)

Field 3 contains several subfields. Scroll the options in each subfield. After you enter information, move the cursor to the next subfield. X.21 leased communication allows selection in subfield 3 only. All other subfields are fixed and cannot be changed. Most of the following entries have one choice for X.21 leased communication:

- 1 The following tables show field 3 subfields that cannot be changed. This information can also be found in field **B2** (name of field) of the AS/400 Communication Worksheet—X.21 Leased.

Line Type	Subfield 1 Value
Leased	0
Line Facility	Subfield 2 Value
Full-duplex	1

- 2 Is the communication line multipoint or point-to-point? Enter the appropriate value from the following table in subfield 3 of field 3. This information can also be found in field **B3** (connection type) of the AS/400 Communication Worksheet—X.21 Leased.

The following table shows the values for each connection type.

Connection Type	Subfield 3 Value
Multipoint (default)	0
Point-to-point	1

- 3 The following tables show field 3 subfields that cannot be changed. This information can also be found in subfields **B4**, **B5**, **B6**, and **B7** of field B on the AS/400 Communication Worksheet—X.21 Leased.

Data Encoding	Subfield 4 Value
NRZ	1
Connection Method	Subfield 5 Value
DTR	0
Send Leading Pad	Subfield 6 Value
No	0
Local Loopback Support	Subfield 7 Value
No	0

Field 8 (Reserved)

Although field 8 appears on your configuration screen, you do not need to enter a value for this field.

Completing X.21 Leased Configuration Parameters

Are you using a LAN configuration to attach workstations to the 5494 (you entered 1, 2, or 3 in field DD)?

YES—For Token-Ring Gateway, go to “Completing Configuration for Token-Ring Gateway” on page 5-44. For Ethernet Gateway, go to “Completing Configuration for Ethernet Gateway” on page 5-48.

NO—Go to “Completing Screen 1” on page 5-51.

Completing Configuration for Token-Ring AS/400 Attachment

If you are using a Token-Ring AS/400 attachment configuration and you entered 4 in field AA (shown in Figure 5-15), you must complete fields F, G, H, I, and J. Figure 5-16 provides a summary of these fields for the experienced user.

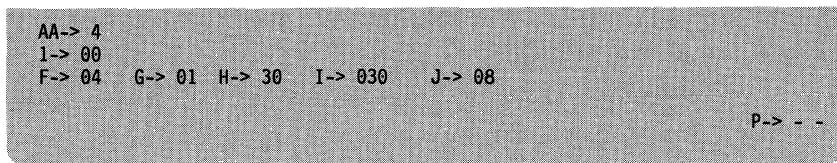


Figure 5-15. Partial Configuration Screen 1 for Token-Ring, Field AA = 4

Scroll the options in each field. After you enter information, move the cursor to the next field.

If your system planner has provided you with worksheets, use the information from your AS/400 Communication Worksheet—Token-Ring to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

- | | |
|---------|--|
| Field F | 5494 Token-Ring SAP: 04-FC in multiples of 04 = valid range |
| Field G | Token-Ring Response timer (T1) in seconds: 01-20 = valid range, * = calculate |
| Field H | Token-Ring Inactivity timer (Ti) in seconds: 01-99 = valid range |
| Field I | Token-Ring Receiver Acknowledgment timer (T2) in milliseconds: 001-225 = valid range |
| Field J | Token-Ring Retry Count (N2): 01-99 = valid range |

After you complete these fields, go to "Completing Screen 1" on page 5-51.

Figure 5-16. Summary of Token-Ring AS/400 Attachment Configuration Parameters

Field F (5494 Token-Ring SAP)

Enter the SAP value for the 5494. Enter the appropriate value from the following table in field F. This information can also be found in field A1 (5494 SAP) of the AS/400 Communication Worksheet—Token-Ring.

The following table shows the values for the 5494 Token-Ring SAP.

5494 SAP	Field F Value
Valid values in hexadecimal	04-FC in multiples of 04
Default	04

Field G (Token-Ring Response timer [T1])

Enter the Response timer (T1) value for the 5494. This value is the maximum number of seconds allowed to detect a failure to receive a required acknowledgment or response from the AS/400 system. This value must be greater than the total delay that a frame might receive in the network. Enter the appropriate value from the following table in field G. This information can also be found in field A2 (Response timer [T1]) on the AS/400 Communication Worksheet—Token-Ring.

The following table shows the values for the Token-Ring Response timer (T1).

Token-Ring Response Timer (T1)	Field G Value
Valid range (seconds)	01-20
Default	01
Automatic Calculation of Response Timer	*

Note: If an * is entered, the token-ring Response timer is calculated based on the number of bridges in the token-ring network.

Field H (Token-Ring Inactivity timer [Ti])

Enter the Inactivity timer (Ti) value for the 5494. This value is the maximum number of seconds allowed to detect an inoperative condition in the AS/400 system or the token-ring network. This value should be at least 5 to 10 times greater than the Response timer (T1) value. Enter the appropriate value from the following table in field H. This information can also be found in field A3 (Inactivity timer [Ti]) on the AS/400 Communication Worksheet—Token-Ring.

The following table shows the values for the token-ring Inactivity timer (Ti).

Token-Ring Inactivity Timer (Ti)	Field H Value
Valid range (seconds)	01-99
Default	30

Note: If an * is entered as the value for the token-ring Response timer, the default value (30) is an adequate entry for this parameter.

Field I (Token-Ring Receiver Acknowledgment Timer [T2])

Enter the Receiver Acknowledgment timer (T2) for the 5494. This value is the maximum number of milliseconds allowed before acknowledgments are sent to the AS/400 system. Enter the appropriate value from the following table in field I. This information can also be found in field A4 (Receiver Acknowledgment timer [T2]) of the AS/400 Communication Worksheet—Token-Ring.

The following table shows the values for the Token-Ring Receiver Acknowledgment timer (T2).

Token-Ring Receiver Acknowledgment Timer (T2)	Field I Value
Valid range (milliseconds)	001-255
Default	030

Field J (Token-Ring Retry Count [N2])

Enter the Retry Count (N2) for the 5494. This value is the maximum number of attempts to obtain a response, including retransmission, following the expiration of T1. The combination of the T1 value and the Retry Count (N2) value must be large enough to allow for error detection and recovery on the network. Enter the appropriate value from the following table in field J. This information can also be found in field A5 (Retry Count [N2]) on the AS/400 Communication Worksheet—Token-Ring.

The following table shows the values for the token-ring Retry Count (N2).

Token-Ring Retry Count (N2)	Field J Value
Valid range (milliseconds)	01-99
Default	08

Completing Token-Ring AS/400 Attachment Configuration Parameters

Go to "Completing Screen 1" on page 5-51.

Completing Configuration for Ethernet AS/400 Attachment

If you are using an Ethernet AS/400 Attachment configuration and you entered 5 in field AA (shown in Figure 5-17), you must complete fields E, F, G, H, I, and J. Figure 5-18 provides a summary of these fields for the experienced user.

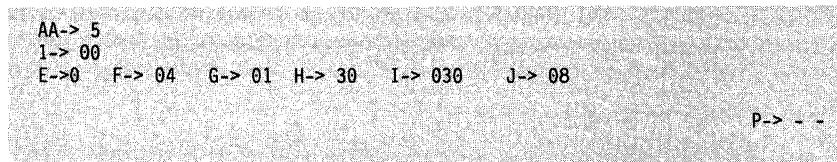


Figure 5-17. Partial Configuration Screen 1 for Ethernet, Field AA = 5

Scroll the options in each field. After you enter information, move the cursor to the next field.

If your system planner has provided you with worksheets, use the information from your AS/400 Communication Worksheet—Ethernet to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

Field E	Ethernet Frame Format: 0=IEEE 802.3, 1=DIX Version 2.0
Field F	5494 Ethernet SAP: 04-FC in multiples of 04 = valid range
Field G	Ethernet Response Timer (T1) in seconds: 01-20 = valid range
Field H	Ethernet Inactivity Timer (Ti) in seconds: 01-99 = valid range
Field I	Ethernet Receiver Acknowledgment Timer (T2) in milliseconds: 001-255 = valid range
Field J	Ethernet Retry Count (N2): 01-99 = valid range

After you complete these fields, go to “Completing Screen 1” on page 5-51.

Figure 5-18. Summary of Ethernet AS/400 Attachment Configuration Parameters

Field E (Ethernet Frame Format)

Enter the Ethernet frame format for the 5494. Enter the appropriate value from the following table in field E. This information can also be found at the top of the AS/400 Communication Worksheet—Ethernet.

The following table shows the values for the Ethernet Frame Format.

Ethernet Frame Format	Field E Value
IEEE 802.3 (default)	0
DIX Version 2.0	1

Configuring the 5494 from an NWS

Field F (Local Ethernet SAP)

Enter the SAP value for the 5494. Enter the appropriate value from the following table in field F. This information can also be found in field **A1** (5494 SAP) of the AS/400 Communication Worksheet—Ethernet.

The following table shows the values for the local Ethernet SAP.

5494 SAP	Field F Value
Valid values in hexadecimal	04-FC in multiples of 04
Default	04

Field G (Ethernet Response Timer [T1])

Enter the response timer (T1) value for the 5494. This value is the maximum number of seconds allowed to detect a failure to receive a required acknowledgment or response from the AS/400 system. This value must be greater than the total delay that a frame might receive in the network. Enter the appropriate value from the following table in field G. This information can also be found in field **A2** (Response Timer [T1]) on the AS/400 Communication Worksheet—Ethernet.

The following table shows the values for the Ethernet Response timer (T1).

Ethernet Response Timer (T1)	Field G Value
Valid range (seconds)	01-20
Default	01

Field H (Ethernet Inactivity Timer [Ti])

Enter the Inactivity timer (Ti) value for the 5494. This value is the maximum number of seconds allowed to detect an inoperative condition in the AS/400 system or the Ethernet network. This value should be at least 5 to 10 times greater than the Response timer (T1) value. Enter the appropriate value from the following table in field H. This information can also be found in field **A3** (Inactivity timer [Ti]) on the AS/400 Communication Worksheet—Ethernet.

The following table shows the values for the Ethernet Inactivity timer (Ti).

Ethernet Inactivity Timer (Ti)	Field H Value
Valid range (seconds)	01-99
Default	30

Field I (Ethernet Receiver Acknowledgment Timer [T2])

Enter the Receiver Acknowledgment timer (T2) for the 5494. This value is the maximum number of milliseconds allowed before acknowledgments are sent to the AS/400 system. Select the appropriate value from the following table in field I. This information can also be found in field **A4** (Receiver Acknowledgment timer [T2]) of the AS/400 Communication Worksheet—Ethernet.

The following table shows the values for the Ethernet Receiver Acknowledgment timer (T2).

Ethernet Receiver Acknowledgment Timer (T2)	Field I Value
Valid range (milliseconds)	001-255
Default	030

Field J (Ethernet Retry Count [N2])

Enter the Retry count (N2) for the 5494. This value is the maximum number of attempts to obtain a response, including retransmission, following the expiration of T1. The combination of the T1 value and the Retry count (N2) value must be large enough to allow for error detection and recovery on the network. Select the appropriate value from the following table in field J. This information can also be found in field **A5** (Retry count [N2]) on the AS/400 Communication Worksheet—Ethernet.

The following table shows the values for the Ethernet retry count (N2).

Ethernet Retry Count (N2)	Field J Value
Valid range (milliseconds)	01-99
Default	08

Completing Ethernet AS/400 Attachment Configuration Parameters

Go to “Completing Screen 1” on page 5-51.

Completing Configuration for Token-Ring Gateway

If you are configuring for Token-Ring Gateway communications (field DD set to 1), you must complete fields K, L, M, N, O, Q, R, and S. Figure 5-20 provides a summary of these fields for the experienced user.

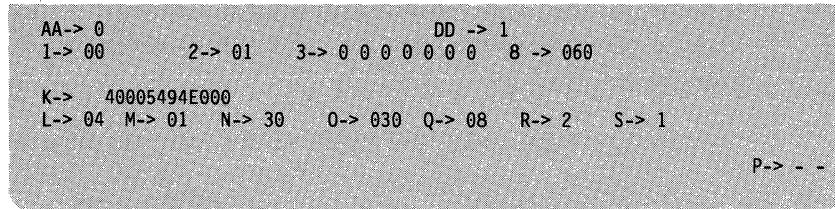


Figure 5-19. Partial Configuration Screen 1 for SDLC with Token-Ring Gateway

The Token-Ring fields with SDLC communication mode are shown in Figure 5-19.

Scroll the options in each field. After you enter information, move the cursor to the next field.

If your system planner has provided you with worksheets, use the information from your Token-Ring Gateway Worksheet to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

- Field K 5494 Token-Ring Address: valid values in hexadecimal, must begin with 4000
- Field L 5494 Token-Ring SAP: 04-FC in multiples of 04
- Field M Token-Ring Response Timer (T1) in seconds: 01-20 = valid range, * = calculated
- Field N Token-Ring Inactivity Timer (Ti) in seconds: 01-99 = valid range
- Field O Token-Ring Receiver Acknowledgment Timer (T2) in milliseconds: 001-255 = valid range
- Field Q Token-Ring Retry Count (N2): 01-99 = valid range
- Field R Token-Ring Maximum Out (TW) frame count: 2-8 = valid range
- Field S Token-Ring Maximum In (N3) frame count: 1-4 = valid range

After you complete these fields, go to "Completing Screen 1" on page 5-51.

Figure 5-20. Summary of Token-Ring Gateway Configuration Parameters

Field K (Token-Ring Address)

Enter the Token-Ring address of your 5494. The first four positions must contain X'4000'. This is a locally administered address. The 5494 does not support universal addresses. Select the appropriate value from the following table in field K. This information can also be found in field A (5494 Token-Ring address) on the Token-Ring Gateway Worksheet.

The following table shows the values for the 5494 Token-Ring address.

5494 Token-Ring Address	Field K Value
Valid values in hexadecimal	Must begin with 4000
Default	40005494E000

Field L (Token-Ring SAP)

Enter the SAP value for the 5494. Select the appropriate value from the following table in field L. This information can also be found in field **B** (5494 SAP) on the Token-Ring Gateway Worksheet.

The following table shows the values for the 5494 SAP.

5494 SAP	Field L Value
Valid values in hexadecimal	04-FC in multiples of 04
Default	04

Field M (Token-Ring Response Timer [T1])

Enter the Response timer (T1) value for the 5494. This value is the maximum number of seconds allowed to detect a failure to receive a required acknowledgment or response from the workstation. This value must be greater than the total delay that a frame might receive in the network. Select the appropriate value from the following table in field M. This information can also be found in field **C** (Response timer [T1]) on the Token-Ring Gateway Worksheet.

The following table shows the values for the token-ring Response timer (T1).

Token-Ring Response Timer (T1)	Field M Value
Valid range (seconds)	01-20
Default	01
Automatic Calculation of Response Timer	*

Note: If an * is entered, the token-ring Response timer is calculated based on the number of bridges in the token-ring network.

Field N (Token-Ring Inactivity Timer [Ti])

Enter the Inactivity timer (Ti) value for the 5494. This value is the maximum number of seconds allowed to detect an inoperative condition in a workstation or the token-ring network. This value should be at least 5 to 10 times greater than the response timer (T1) value. Select the appropriate value from the following table in field N. This information can also be found in field **D** (Inactivity timer [Ti]) on the Token-Ring Gateway Worksheet.

The following table shows the values for the Token-Ring Inactivity timer (Ti).

Token-Ring Inactive Timer (Ti)	Field N Value
Valid range (seconds)	01-99
Default	30

Note: If an * is entered as the value for the token-ring Response timer, the default value (30) is an adequate entry for this parameter.

Configuring the 5494 from an NWS

Field O (Token-Ring Receiver Acknowledgment Timer [T2])

Enter the Receiver Acknowledgement time (T2) for the 5494. This value is the maximum number of milliseconds allowed before acknowledgments are sent to the workstation. Select the appropriate value from the following table in field O. This information can also be found in field E (receiver acknowledgment timer [T2]) on the Token-Ring Gateway Worksheet.

The following table shows the values for the token-ring Receiver Acknowledgment timer (T2).

Token-Ring Receiver Acknowledgment Timer (T2)	Field O Value
Valid range (milliseconds)	001-255
Default	030

Field Q (Token-Ring Retry Count [N2])

Enter the Retry count (N2) for the 5494. This value is the maximum number of attempts allowed to obtain a response including retransmission following in the expiration of T1. The combination of the T1 value and the retry count value must be large enough to allow for error detection and recovery on the network. Typical values are less than 10. Select the appropriate value from the following table in field Q. This information can also be found in field F (retry count [N2]) on the Token-Ring Gateway Worksheet.

The following table shows the values for the token-ring Retry count (N2).

Token-Ring Retry Count (N2)	Field Q Value
Valid range	01-99
Default	08

Field R (Token-Ring Maximum Out [TW])

Enter the Maximum Out (TW) count. This count is the maximum number of sequentially numbered frames the 5494 can send before waiting for an acknowledgment. This value must be twice the value of the Maximum In (N3) count. Select the appropriate value from the following table in field R. This information can also be found in field G (Maximum Out [TW]) of the Token-Ring Gateway Worksheet.

The following table shows the values for the Token-Ring Maximum Out (TW).

Token-Ring Maximum Out (TW)	Field R Value
Valid range	2-8
Default	2

Field S (Token-Ring Maximum In [N3])

Enter the Maximum In (N3) count. This count is the maximum number of I-format frames received by the 5494 from the workstation before sending an acknowledgment. Select the appropriate value from the following table in field S. This information can also be found in field H (Maximum In [N3]) on the Token-Ring Gateway Worksheet.

The following table shows the values for the Token-Ring Maximum In (N3).

Token-Ring Maximum In (N3)	Field S Value
Valid range	1-4
Default	1

Completing Token-Ring Gateway Configuration Parameters

Continue with "Completing Screen 1" on page 5-51.

Completing Configuration for Ethernet Gateway

If you are configuring for Ethernet Gateway communications (field DD set to 2 or 3), you must complete fields K, L, M, N, O, Q, R, and S. Figure 5-22 provides a summary of these fields for the experienced user.

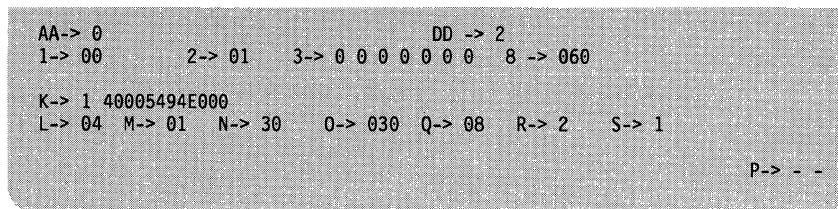


Figure 5-21. Partial Configuration Screen 1 for SDLC with Ethernet Gateway

The Ethernet fields with SDLC communication mode are shown in Figure 5-21.

Scroll the options in each field. After you enter information, move the cursor to the next field.

If your system planner has provided you with worksheets, use the information from your Ethernet Gateway Worksheet to complete these fields.

For the Experienced User

The following information includes a brief description of the fields, with information on completing them:

- | | |
|---------|---|
| Field K | 5494 Address–2 subfields configured as:
Address Format: 0 = Ethernet, 1 = Token-Ring
5494 Address |
| Field L | 5494 Ethernet SAP: 04-FC in multiples of 04 = valid range |
| Field M | Ethernet Response Timer (T1) in seconds: 01-20 = valid range |
| Field N | Ethernet Inactivity Timer (Ti) in seconds: 01-99 = valid range |
| Field O | Ethernet Receiver Acknowledgment Timer (T2) in milliseconds:
001-255 = valid range |
| Field Q | Ethernet Retry Count (N2): 01-99 = valid range |
| Field R | Ethernet Maximum Out (TW) frame count: 2-8 = valid range |
| Field S | Ethernet Maximum In (N3) frame count: 1-4 = valid range |

After you complete these fields, go to "Completing Screen 1" on page 5-51.

Figure 5-22. Summary of Ethernet Gateway Configuration Parameters

Field K (5494 Address Format and 5494 Address)

Enter the address format of your 5494. If the address format is Ethernet, the first four positions must contain X'0200'. If the address format is token-ring, the first four positions must contain X'4000'. The last eight characters are entered by the user. For more information about address formats see Appendix D, "Local Area Network Addressing Considerations." Select the appropriate value from the following table in field K. This information can also be found in field A (5494 Address Format) on the Ethernet Worksheet.

The following table shows the values for the 5494 address format.

5494 Address Format	Field K Value
Ethernet	0 (begins with 0200)
Token-Ring (default)	1 (begins with 4000)

Field L (Ethernet SAP)

Enter the SAP value for the 5494. Select the appropriate value from the following table in field L. This information can also be found in field **B** (5494 SAP) on the Ethernet Gateway Worksheet.

The following table shows the values for the 5494 SAP.

5494 SAP	Field L Value
Valid values in hexadecimal	04-FC in multiples of 04
Default	04

Field M (Ethernet Response Timer [T1])

Enter the response timer (T1) value for the 5494. This value is the maximum number of seconds allowed to detect a failure to receive a required acknowledgment or response from the workstation. This value must be greater than the total delay that a frame might receive in the network. Select the appropriate value from the following table in field M. This information can also be found in field **C** (response timer [T1]) on the Ethernet Gateway Worksheet.

The following table shows the values for the Ethernet response timer (T1).

Ethernet Response Timer (T1)	Field M Value
Valid range (seconds)	01-20
Default	01

Field N (Ethernet Inactivity Timer [Ti])

Enter the inactivity timer (Ti) value for the 5494. This value is the maximum number of seconds allowed to detect an inoperative condition in a workstation or the Ethernet network. This value should be at least 5 to 10 times greater than the response timer (T1) value. Select the appropriate value from the following table in field N. This information can also be found in field **D** (inactivity timer [Ti]) on the Ethernet Gateway Worksheet.

The following table shows the values for the Ethernet inactivity timer (Ti).

Ethernet Inactivity Timer (Ti)	Field N Value
Valid range (seconds)	01-99
Default	30

Field O (Ethernet Receiver Acknowledgment Timer [T2])

Enter the receiver acknowledgement time (T2) for the 5494. This value is the maximum number of milliseconds allowed before acknowledgments are sent to the workstation. Select the appropriate value from the following table in field O. This information can also be found in field **E** (receiver acknowledgment timer [T2]) on the Ethernet Gateway Worksheet.

The following table shows the values for the Ethernet receiver acknowledgment timer (T2).

Configuring the 5494 from an NWS

Ethernet Receiver Acknowledgment Timer (T2)	Field O Value
Valid range (milliseconds)	001-255
Default	030

Field Q (Ethernet Retry Count [N2])

Enter the retry count (N2) for the 5494. This value is the maximum number of attempts allowed to obtain a response including retransmission following in the expiration of T1. The combination of the T1 value and the retry count value must be large enough to allow for error detection and recovery on the network. Typical values are less than 10. Select the appropriate value from the following table in field Q. This information can also be found in field F (retry count [N2]) on the Ethernet Gateway Worksheet.

The following table shows the values for the Ethernet retry count (N2).

Ethernet Retry Count (N2)	Field Q Value
Valid range	01-99
Default	08

Field R (Ethernet Maximum Out [TW])

Enter the Maximum Out (TW) count. This count is the maximum number of sequentially numbered frames the 5494 can send before waiting for an acknowledgment. This value must be twice the value of the Maximum In (N3) count. Select the appropriate value from the following table in field R. This information can also be found in field G (Maximum Out [TW]) of the Ethernet Gateway Worksheet.

The following table shows the values for the Ethernet Maximum Out (TW).

Ethernet Maximum Out (TW)	Field R Value
Valid range	2-8
Default	2

Field S (Ethernet Maximum In [N3])

Enter the Maximum In (N3) count. This count is the maximum number of I-format frames received by the 5494 from the workstation before sending an acknowledgment. Select the appropriate value from the following table in field S. This information can also be found in field H (Maximum In [N3]) on the Ethernet Gateway Worksheet.

The following table shows the values for the Ethernet Maximum In (N3).

Ethernet Maximum In (N3)	Field S Value
Valid range	1-4
Default	1

Completing Ethernet Gateway Configuration Parameters

Continue with "Completing Screen 1" on page 5-51.

Completing Screen 1

After completing all fields associated with the selected communication mode, use this section to print and verify screen 1.

Field P (Printer Port and Station)

This optional field allows you to select a printer to print your configuration screens. If you do not select a printer, the 5494 sends the print job to the first available printer.

Note: Information for selecting a printer is not included on any worksheet.

- 1** Do you want to select a printer?

YES—Continue with step 2.

NO—Go to “Verifying Screen 1 Configuration Data.”

- 2** Set the first dash to the value of the port address where the printer is located.

- 3** Set the second dash to the value of the workstation address where the printer is located.

Verifying Screen 1 Configuration Data

To verify the configuration data, do the following steps:

- 1** Press **Enter** to start screen 1 error checking. If an error occurs, a blinking SRC is displayed at the lower left of the screen.

- 2** If an SRC is displayed, see Chapter 9, “Message Codes and System Reference Codes (SRCs),” for the correct error recovery action. Correct the error and repeat steps 1 and 2 in this section.

- 3** Do you want to print a copy of your configuration screen from a printer attached to your 5494?

YES—Press **Error Reset** once and continue with “Printing Screen 1 Configuration Data.”

NO—Press **Enter** a second time and go to configuration screen 2. Go to “Configuring Network Information” on page 5-52.

Printing Screen 1 Configuration Data

If you have a printer attached to the 5494, you can print a copy of your configuration data. To print the screen 1 configuration data, complete the following steps:

- 1** Press the **Local Copy** key sequence. For the key sequence, see Appendix E, “Key Sequences.”

- 2** After printing is complete, press **Enter** twice to proceed to configuration screen 2.

- 3** Continue with “Configuring Network Information” on page 5-52.

Configuring Network Information

Configuration screen 2 is used to enter network information. You can type information on this screen using the keyboard, rather than selecting a value using the cursor movement keys. Figure 5-23 shows configuration screen 2.

11-> _____	12-> _____	13-> _____	14-> QRMTWSC
15-> _____	16-> 010 06 0	17-> 00-00000	18-> _____
19-> * _____			
H1:1-> _____	H1:2-> _____	H1:3-> _____	H1:4-> _____
H1:5-> _____			
H1:6-> _____	H1:7-> 04	H1:8-> 2	H1:9-> 1
H1:10-> 0			
H2:1-> _____	H2:2-> _____	H2:3-> _____	H2:4-> _____
H2:5-> _____			
H2:6-> _____	H2:7-> 04	H2:8-> 2	H2:9-> 1
H2:10-> 0			
H3:1-> _____	H3:2-> _____	H3:3-> _____	H3:4-> _____
H3:5-> _____			
H3:6-> _____	H3:7-> 04	H3:8-> 2	H3:9-> 1
H3:10-> 0			
H4:1-> _____	H4:2-> _____	H4:3-> _____	H4:4-> _____
H4:5-> _____			
H4:6-> _____	H4:7-> 04	H4:8-> 2	H4:9-> 1
H4:10-> 0			
<ERROR CODE>			
P-> - -			

Figure 5-23. Configuration Screen 2

Table 5-2 summarizes the AS/400 configuration parameters for which matching values must be specified when you configure the 5494.

See Appendix B, "Configuring the AS/400 for Communication with the 5494" for additional information about configuring the AS/400 system.

Table 5-2. Matching Configuration Parameters

5494 Configuration Parameters	Field Number on NWS screen	AS/400 Configuration Parameters	Refer to the following commands to display or create the 5494 configuration parameters
5494 Logical unit (LU) name	Field 12	Remote location name ¹ (RMTLOCNAME) ⁴	DSPCTLD or CRTCTLRWS
5494 Control point (CP) name	Field 13	Remote control point ¹ (RMTCPNAME) ⁵	DSPCTLD or CRTCTLAPPC
AS/400 LU name	Field Hx:1 ²	Local location (LCLLOCNAME)	DSPCTLD or CRTCTLRWS ³
AS/400 network name	Field Hx:2 ²	Local network ID (LCLNETID)	DSPNETA
5494 network name	Field Hx:3 ²	Remote network ID (RMTNETID)	DSPCTLD or CRTCTLRWS ³
AS/400 mode name	Field Hx:4 ²	Mode Name (MODD)	DSPMODD

Notes:

1. The remote location name (RMTLOCNAME) and the remote control point (RMTCPNAME) should be the same. If they are not the same, you may need an entry in the Remote Configuration List. Refer to AS/400 documentation for details.
2. For alternate AS/400 systems, the Hx can be replaced with H1, H2, H3, or H4.
3. If the AS/400 controller description (RWS or APPC) LCLLOCNAME or RMTNETID value is *NETATTR, refer to **DSPNETA**.
4. When you are viewing AS/400 configuration screens, parameters which include the term *local* refer to the AS/400 system and parameters which include the term *remote* refer to the 5494.
5. The CP name should be defined on the ALS. If the 5494 is directly communicating with the target AS/400 system or the ALS is communicating through an AS/400 system, then the APPC controller description associated with the 5494 contains the parameter that has to match. If the ALS is not an AS/400 system, then refer to the ALS's documentation for possible matching parameter information.

Configuring the 5494 from an NWS

The network information fields contain names and values required for 5494 operation. Figure 5-24 provides a summary of these fields for the experienced user.

If your system planner has provided you with worksheets, use the information from your Network Information Worksheet.

For the Experienced User

The following fields on screen 2 are described in this section and "Configuring for Primary and Alternate AS/400 Systems" on page 5-59.

All name and ID fields accept 0-9, A-Z, \$, #, and @.

For alternate AS/400 systems, the Hx can be replaced with H1, H2, H3, or H4.

Field 11	Default network ID
Field 12	5494 logical unit name
Field 13	5494 control point name
Field 14	Default mode name
Field 15	5494 connection number
Field 16	Logical connection retry parameters: Number of retries (0-255), Interval between retries in 10-second increments Continuous retries (1=Yes)
Field 17	5494 serial number
Field 18	5494 password
Field 19	5494 ID Number
Hx:1	AS/400 LU name
Hx:2	AS/400 network ID
Hx:3	5494 network ID
Hx:4	Mode name for this AS/400 connection
Hx:5	AS/400 connection number
Hx:6	AS/400 logical channel (X.25 only) Default = No entry Valid range in hexadecimal = 001-FFF
Hx:7	AS/400 Token-Ring SAP (Token-Ring/Ethernet only) Default = 04 Valid range in hexadecimal = 04-FC in multiples of 4
Hx:8	AS/400 Token-Ring Maximum Out (Token-Ring or Ethernet only) Default = 2 Valid range in hexadecimal = 2-8
Hx:9	AS/400 Token-Ring Maximum In (Token-Ring or Ethernet only) Default = 1 Valid range in hexadecimal = 1-4
Hx:10	AS/400 SHM Retries Direct Call Support (X.21 switched only) No (default) = 0 Yes = 1

Figure 5-24. Summary of Network Configuration Parameters on NWS Screen 2

Field 11 (Default Network Name)

This is the network name used when the AS/400 network name (Hx:2) or 5494 network name (Hx:3) is left blank. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters.

This information also can be found in field **A** of the Network Information Worksheet. Enter the appropriate default network in field 11.

Field 12 (5494 LU Name)

The entry for this field must match the remote location name (RMTLOCNAME) defined in the AS/400 system. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters.

To display the remote location name (RMTLOCNAME) on the AS/400 system, type **DSPCTL**D on the command line, and enter the remote workstation (RWS) controller name.

This information also can be found in field **B** of the Network Information Worksheet. Enter the appropriate 5494 LU name in field 12.

Field 13 (5494 CP Name)

Enter the control point (CP) name of the 5494. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters. If the ALS is an AS/400 system, the entry for this field must match the remote control point name (RMTCPNAME) defined in the AS/400. If the 5494 LU name and the 5494 CP name are not the same, you may need an entry in the AS/400 Remote Configuration List. Refer to AS/400 documentation for details.

To display the remote control point (RMTCPNAME) on the AS/400 system, type **DSPCTL**D on the command line, and enter the APPC controller name.

Field 14 (Default Mode Name)

This is the mode name used when the AS/400 system mode name (Hx:4) is left blank. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters. The default value is QRMTWSC. The default mode, QRMTWSC, is an IBM-supplied mode on AS/400 Version 2 Release 2 and later releases. It allows a maximum of 28 nonprogrammable workstations in Version 2 Release 2, and 56 nonprogrammable workstations in later releases.

Note: If the mode QRMTWSC was configured on your system prior to installing the AS/400 Version 2 Release 3, then the maximum workstations supported by the mode will not change automatically to 56. You must use the CHGMODD command to change the mode.

To display the mode name (MODD) on the AS/400 system, type **DSPMODD** on the command line.

To change the mode (QRMTWSC) to support 56 devices, type the following command:

CHGMODD MODD(QRMTWSC) MAXSSN(57) MAXCNV(57) LCLCTLSSN(56)

This information also can be found in field **D** of the Network Information Worksheet. Enter the appropriate default mode name in field 14.

Field 15 (5494 Connection Number)

The acceptable values for the 5494 connection number are as follows:

- For **SDLC leased, SDLC switched (except V.25 bis), or X.21 leased**, no entry is required.
- For **SDLC switched using V.25 bis auto-dial**, enter the telephone number of the 5494. Valid characters are 0 to 9. The entry is limited to 14 characters.
- For **X.25**, enter the network address of the 5494. Valid characters are 0 to 9. The entry is limited to 15 characters.

Note: No entry is needed if you do not want your 5494 network address included in an outgoing call request and your network does not require it.

- For **X.21 switched**, enter the telephone number of the 5494. Valid characters are 0 to 9. This entry can be limited from 4 to 14 characters. This number must be the full international number including the network ID or the country code, but not including any additional access codes. These access codes are entered on the AS/400 Communication Worksheet—X.21 Switched. The 5494 connection number is required for all X.21 switched connections.
- For **Token-Ring AS/400 system attachment**, enter the Token-Ring address of the 5494. Valid characters are 0 to 9 and uppercase A to F. The entry is limited to 12 characters. The first four character positions must contain X'4000'. The default value is 40005494E000.
- For **Ethernet AS/400 system attachment**, enter the Ethernet address format and the Ethernet address of the 5494. Valid characters are 0 to 9 and uppercase A to F. The Ethernet address may be entered in two formats:

Ethernet canonical format The first four character positions must contain X'0200'.

Token-Ring format The first four character positions must contain X'4000'.

The 5494 supports both address formats to ease the task of configuring the 5494. For Ethernet AS/400 attachment, the remote Ethernet adapter address in the AS/400 APPC controller is entered in Ethernet canonical format. The 5494's address may be entered in canonical format to match the AS/400.

Alternatively, when configuring a PWS to communicate through the 5494 in an Ethernet Gateway configuration, some PWSs require the address of the 5494 be entered in token-ring format. The address may be entered in the 5494 in token-ring format to match the PWS.

The 5494 uses a locally administered address as the default value rather than the universally administered address encoded on the 5494 Ethernet Adapter. This default value is 02005494E000. If you select the token-ring format, the default address is 40005494E000.

This information can also be found in field E of the Network Information Worksheet. Enter the appropriate connection number in field 15.

Field 16 (Logical Connection Retry Parameters)

Field 16 contains the settings of the retry count, the retry interval, and continuous retry used by the 5494. The 5494 attempts to establish an APPC connection with the AS/400 system. If the connection is unsuccessful, either a timeout, a retryable error, or a non-retryable error occurred. If either a timeout or a retryable error occurred, the 5494 uses these settings to determine how often to attempt the connection and how long to wait between attempts. To complete the subfields of field 16, do the following steps:

- 1** Enter the appropriate number of retries in subfield 1 of field 16. This is the number of times the 5494 attempts to establish the logical connection unless Continuous Logical Connection Retries is specified as YES. If Continuous Logical Connection Retries is specified as NO, and the 5494 is unsuccessful after this number of attempts, the 5494 stops its attempts to connect. The 5494 attempts to reconnect if:
 - A link establishment request is performed
 - An attached NWS is reinitialized
 - The 5494 link to its ALS is varied off and varied on
 - The 5494 is reinitialized.

This information can also be found in field **F1** of the Network Information Worksheet.

The following table shows the values for the retry counter.

Retry Counter	Subfield 1 Value
Valid range	000-255
Default	010

- 2** Enter the appropriate interval between retries in subfield 2 of field 16. This information also can be found in field **F2** of the Network Information Worksheet.

The following table shows the values for the retry interval.

Retry Interval	Subfield 2 Value
Valid range (in 10-second intervals)	01-60
Default	06 (1 minute)

- 3** Enter the appropriate value (Yes or No) for continuous logical connection retries. After the controller attempts the number of retries configured in subfield 1, for the interval specified in subfield 2, the controller continues retrying every 10 minutes. These continuous retries will stop only when a Link Establishment request is issued to disconnect the link.

Valid characters are 1 and 0 on the NWS screen, and YES and NO on the PWS screen. The default value is NO (0).

Recommendation: If you use PWRDWNSYS or ENDSYS on your AS/400 such that your AS/400 is unavailable for extended periods of time, in most instances, continuous retries allow your AS/400 communications to be reestablished automatically without operator intervention.

Configuring the 5494 from an NWS

This information can also be found in field **F3** of the Network Information Worksheet.

The following table shows the values for the continuous retry interval.

Continuous Retry	Subfield 3 Value
No (default)	0
Yes	1

Field 17 (5494 Serial Number)

The number is located on the front of your 5494. Valid characters are 0 to 9 and A to Z. This number is sent to the AS/400 when establishing sessions. The number identifies the 5494 to the AS/400. If no serial number is provided, zeros are used.

This information can also be found in field **G1** of the Network Information Worksheet. Enter the appropriate 5494 serial number in field 17.

Field 18 (5494 System Password)

Enter the system password. Providing this password allows a PWS using the 5494 Utility Program to take the following actions:

- Reset (restart) the 5494 without accessing the power switch.
- Reconfigure the 5494 while the 5494 is online.
- Access diagnostic information without entering a request code (REQ290) on the 5494 keyboard.

The password can be configured using an NWS or PWS. The entry is limited to between 1 and 8 characters. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. If you enter lowercase characters, they are converted to uppercase. The default value is blanks, indicating that the system reset function is not permitted. Although the system reset is not permitted, both the reconfiguration and getting access to the diagnostic information can be done by entering a request code (REQ290) at the 5494 keyboard.

This information can also be found in field **G2** of the Network Information Worksheet. Enter the appropriate 5494 system password in field 18.

Note: Embedded blanks are not allowed. A blank in the field after other valid characters will terminate the field. A blank in the first position causes the entire field to be set to blanks, disabling the system reset function.

Field 19 (5494 ID Number)

Enter the 5494 ID number. This ID number is sent in the block ID field of the exchange identifier (XID) when the host link is established. The entry is limited to five characters. Valid characters are 0 to 9, uppercase A to F, and *. The default value is *. When an * is entered, the ID number for token-ring and Ethernet is 00000; for other protocols, the 5494 uses 000xx where xx is the 5494s station address.

Configuring for Primary and Alternate AS/400 Systems

The 5494 supports configuration for as many as four AS/400 systems. The following fields must be completed for the primary AS/400 system and for each alternate AS/400 system with which you want to communicate. For example, the information for field H2:1 is the same as the information for field H1:1, except that the information is applicable to the second AS/400 system.

Note: If you want to accept the default values for the AS/400 system, enter a value in field H1:1 and press **Enter**. The default values for fields H1:2, H1:3, and H1:4 will be added automatically. Press **Error Reset** to complete additional fields.

Field H1:1 (AS/400 System 1 LU Name)

This field defines the LU name of the AS/400 system. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters. **This field must match the local location name (LCLLOCNAME) defined in the AS/400 system.**

To display the local location name (LCLLOCNAME) on the AS/400 system, type **DSPCTLQ** on the command line and enter the RWS controller name. If the value for the local location name is *NETATR, then the value you need is located in the network attributes. Type **DSPNETA** on the command line to display the network attributes.

This information also can be found in field **H1:1** of the Network Information Worksheet. Enter the appropriate AS/400 system 1 LU name in field H1:1.

Field H1:2 (AS/400 System 1 Network Name)

This field defines the network name. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters. This is an optional field. If this field is left blank, the 5494 uses the default network name listed in field **A**. **This field must match the local network ID (LCLNETID) defined in the AS/400 system.**

To display the local network ID (LCLNETID) on the AS/400 system, type **DSPNETA** on the command line.

This information also can be found in field **H1:2** of the Network Information Worksheet. Enter the appropriate AS/400 system 1 network name in field H1:2.

Field H1:3 (AS/400 System 1 5494 Network Name)

This field defines the 5494 network name. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters. This is an optional field. If this field is left blank, the 5494 uses the default network name listed in field **A**. **This field must match the remote network ID (RMTNETID) assigned to the 5494 in the AS/400 system.**

To display the remote network ID (RMTNETID) on the AS/400 system, type **DSPCTLQ** on the command line and enter the RWS controller name. If the value for the remote network ID is *NETATR, then the value you need is located in the network attributes. Type **DSPNETA** on the command line to display the network attributes.

This information also can be found in field **H1:3** of the Network Information Worksheet. Enter the appropriate 5494 network name in field H1:3.

Field H1:4 (AS/400 System 1 Mode Name)

This field defines the mode name. Valid characters are 0 to 9, uppercase A to Z, \$, #, and @. The entry is limited to 8 characters. This is an optional field. If this field is left blank, the 5494 uses the default mode name listed in field D when it communicates with this AS/400 system. **This field must match a mode name (MODD) defined in the AS/400 system.**

To display all mode names (MODD) defined on the AS/400 system, type **WRKMODD** on the command line.

This information also can be found in field H1:4 of the Network Information Worksheet. Enter the appropriate mode name in field H1:4.

Field H1:5 (AS/400 System 1 Connection Number)

Enter one of the following values for the AS/400 connection number:

Note: If you are using Advanced Peer-to-Peer Networking* (APPN*), the AS/400 connection number is the number of the node through which you access the APPN network.

- For **SDLC leased, SDLC switched (except V.25 bis), or X.21 leased**, no entry is required.
- For **SDLC switched using V.25 bis auto-dial**, enter the telephone number of the AS/400 system. Include any additional characters necessary for establishing the call, such as wait tone (:), pause (<), separators (= and >), pulse mode (P), tone mode (T), and flash (&). Refer to your V.25 bis modem documentation for details on the use of these characters. Valid characters are 0 to 9, :, <, =, >, P, T, and &. The entry is limited to 64 characters.

Note: If you intend to initiate calls from the 5494, an entry is required here.

- For **X.25**, enter the network address of the AS/400 system. Valid characters are 0 to 9. The entry is limited to 15 characters.

Note: If you intend to initiate SVC calls from the 5494 or want to verify incoming SVC calls using the network address, an entry is required here.

- For **X.21 switched**, valid entries are:
 - For **address call**, enter the AS/400 telephone number. This number must be the full international number including the network ID or the country code, but not including any additional access codes. These access codes are entered on the AS/400 Communication Worksheet—X.21 Switched. Valid characters are 0 to 9. The entry is limited from 4 to 14 characters.
 - For **direct call**, enter **DC** in the first two field positions. The 5494 does not use dial digits in calling the AS/400 system. The network has a preconfigured number as part of a direct call facility subscription.

Note: If you intend to initiate calls from the 5494, an entry is required here.

- For **Token-Ring AS/400 system attachment**, enter the Token-Ring address of the AS/400 system. Valid characters are 0 to 9 and A to F. The entry is limited to 12 characters. **The Token-Ring address of the AS/400 system must match the adapter address (ADPTADR) in the line description defined in the AS/400 system.**

To display the adapter address (ADPTADR) on the AS/400 system, type **DSPLIND** on the command line, and enter the line name.

- For **Ethernet AS/400 system attachment**, enter the Ethernet address format and the Ethernet address of the 5494. Valid characters are 0 to 9 and uppercase A to F. The Ethernet address may be entered in two formats:

Ethernet canonical format The first four character positions must contain X'0200'.

Token-Ring format The first four character positions must contain X'4000'.

The 5494 supports both address formats to ease the task of configuring the 5494. For Ethernet AS/400 attachment, the remote Ethernet adapter address in the AS/400 APPC controller is entered in Ethernet canonical format. The 5494's address may be entered in canonical format to match the AS/400.

Alternatively, when configuring a PWS to communicate through the 5494 in an Ethernet Gateway configuration, some PWSs require the address of the 5494 be entered in token-ring format. The address may be entered in the 5494 in token-ring format to match the PWS.

The 5494 uses a locally administered address as the default value rather than the universally administered address encoded on the 5494 Ethernet Adapter. This default value is 02005494E000. If you select the token-ring format, the default address is 40005494E000.

This information also can be found in field **H1:5** of the Network Information Worksheet. Enter the appropriate connection number in field H1:5.

Field H1:6 (AS/400 System 1 Logical Channel)

This field is for X.25 communication only. All other communication modes do not display this field. This field is optional.

The following table shows the values for the logical channel.

Logical Channel (Optional)	Field H1:6 Value
Valid range in hexadecimal	001-FFF
Default	No entry

This information also can be found in field **Q** of the AS/400 Communication Worksheet—X.25. If you are using X.25 for the AS/400 communication mode, enter the appropriate logical channel in field H1:6.

Field H1:7 (AS/400 System 1 LAN SAP)

This field is for token-ring or Ethernet communication only. All other communication modes do not display this field.

The following table shows the values for the AS/400 SAP.

AS/400 System SAP	Field H1:7 Value
Valid range in hexadecimal	04-FC in multiples of 04
Default	04

This information also can be found in field **H1:1** of the AS/400 Communication Worksheet—Token-Ring. If you are using token-ring for the AS/400 communication mode, enter the appropriate AS/400 SAP in field H1:7.

Field H1:8 (AS/400 System 1 LAN Maximum Out [TW])

This field is for Token-Ring or Ethernet communication only. All other communication modes do not display this field.

The following table shows the values for the AS/400 Maximum Out (TW).

AS/400 Maximum Out (TW)	Field H1:8 Value
Valid range in hexadecimal	2-8
Default	2

If you are using Token-Ring for the AS/400 communication mode, enter the appropriate maximum out value in field H1:8. This information can also be found in field **H1:2 (AS/400 network name)** of the AS/400 Communication Worksheet—Token-Ring.

Field H1:9 (AS/400 System 1 LAN Maximum In [N3])

This field is for Token-Ring or Ethernet communication only. All other communication modes do not display this field.

The following table shows the values for the AS/400 Maximum In (N3).

AS/400 Maximum In (N3)	Field H1:9 Value
Valid range in hexadecimal	1-4
Default	1

This information also can be found in field **H1:3** of the AS/400 Communication Worksheet—Token-Ring. If you are using Token-Ring for the AS/400 communication mode, enter the appropriate 5494 network name in field H1:9.

Field H1:10 (AS/400 System 1 SHM Retries Direct Call Support)

This field is for X.21 switched communication only. All other communication modes do not display this field.

The following table shows the values for retries direct call support.

SHM Retries Direct Call Support	Field H1:10 Value
No (default)	0
Yes	1

This information also can be found in field **D4** of the AS/400 Communication Worksheet—X.21 Switched. If you are using X.21 switched for the AS/400 communication mode, enter the appropriate retries direct call support in field H1:10.

Are you configuring more than one AS/400 system (H2, H3, or H4)?

YES—Go to “Configuring for Primary and Alternate AS/400 Systems” on page 5-59. Use the instructions to fill in the fields for H2, H3, and H4 AS/400s until the configuration of all systems is complete.

NO—Continue with “Verifying Screen 2 Configuration Data” on page 5-63.

Completing Screen 2

After completing all fields associated with the network information, use this section to print and verify screen 2.

Verifying Screen 2 Configuration Data

To verify the configuration data, do the following steps:

- 1** Press **Enter** to start screen 2 error checking. Errors detected in these fields cause the cursor to appear in the field containing the error, and a blinking SRC is displayed at the lower left of the screen.
- 2** If an SRC is displayed, see Chapter 9, "Message Codes and System Reference Codes (SRCs)," for the correct error recovery action. Correct the error and repeat steps 1 and 2 in this section.
- 3** Do you want to print a copy of your configuration screen from a printer attached to the 5494?
YES—Press **Error Reset** once. Continue with "Printing Screen 2 Configuration Data."
NO—Go to "Saving NWS Configuration Data."

Printing Screen 2 Configuration Data

If you have a printer attached to the 5494, you can print a copy of your configuration data.

To print the screen 2 configuration data, do the following steps:

- 1** Press the **Local Copy** key sequence. For the key sequence, see Appendix E, "Key Sequences."
- 2** After printing is complete, press **Enter**.
Continue with "Saving NWS Configuration Data."

Saving NWS Configuration Data

Complete the following steps to save the configuration data:

- 1** Press **Enter** to store configuration data in the 5494 permanent storage. A backup copy of the data is stored on the 5494 System Diskette. Press **Error Reset** to exit the configuration.
- 2 Configuration is complete.** Store all worksheets in a safe place.
- 3** Go to Chapter 7, "Communicating with Your AS/400 System," to establish communication to the AS/400.

Note: If you obtain a new 5494 System Diskette at some time, you do not have to copy the configuration data or configure the new diskette. The 5494 automatically copies the configuration file from its permanent storage to a 5494 System Diskette the first time a system diskette is used.

Chapter 6. Configuring for Support of Host-Initiated PWS Sessions

PWS Configuration	6-2
AS/400 Configuration	6-2

PWS Configuration

If you plan to use an application that requires the AS/400 system to initiate an LU 6.2 session with a PWS attached to a 5494 (that is, the AS/400 sends the BIND request to the PWS), you must consider the information in this chapter when configuring your PWS and your AS/400 system.

The LU name and the CP name for each PWS that receives an LU 6.2 BIND from the AS/400 system must be configured according to one of the following options:

- The LU name of the PWS is equal to the CP name of the PWS
- The LU name of the PWS is equal to the CP name of the PWS, plus one additional character. This option allows support of host-initiated LU 6.2 PWS sessions on more than one LU within the same PWS.

For example, if the CP name of the PWS is PWSCPN, the LU name can also be PWSCPN. Alternatively, the LU name could be PWSCPNx, where x is any valid LU name character.

AS/400 Configuration

On your AS/400 system that initiates the LU 6.2 session with the PWS, you must create an entry in the AS/400 remote configuration list to correlate the remote location name and the remote control point.

To access the remote configuration list entry screen on the AS/400 system, complete the following steps:

- 1 Type WRKCFGL *APPNRMT on the command line.
- 2 Press Enter. The screen appears.
- 3 Type 2 next to the list called QAPPNRMT.
- 4 Press Enter. The Change Configuration List screen appears.

You must enter values for the following configuration parameters:

remote location	PWS LU name
remote network ID	PWS network ID
local location	AS/400 LU name
remote control point	5494 control point name
control point network ID	5494 network ID

Any application that uses host-initiated PWS sessions can now be started on this PWS.

Note: You must create an AS/400 remote configuration list entry for each PWS that runs applications that use host-initiated LU 6.2 sessions. You may also need remote configuration lists in intermediate AS/400s if you are connected to your AS/400 system through an APPN network. Refer to AS/400 documentation for details.

Part 2. Operating Your 5494



Chapter 7. Communicating with Your AS/400 System

Introduction	7-2
Before You Establish Communication	7-2
Establishing Communication by Manual Dialing	7-5
Establishing Communication by Auto-Dialing	7-6
Establishing Communication by Manual Answering	7-7
Establishing Communication from a PWS	7-8
Establishing Communication in X.25	7-9
Changing Your AS/400 System	7-13
Changing the AS/400 System with an NWS	7-14
Registering Online Facilities (X.21 Switched)	7-16
Registering Online Facilities with a PWS	7-16
Registering Online Facilities with an NWS	7-17
Ending a Communication Link	7-18
Ending Communication from a PWS	7-19
Ending Communication from an NWS	7-20
Reestablishing Communication after Logical Link Termination	7-21
Reestablishing Communication from a PWS	7-21
Reestablishing Communication from an NWS	7-22

Introduction

This chapter explains how to establish and end communication with an AS/400 system. It also tells you how to change X.21 subscription parameters.

Use the following table to find the appropriate section for what you want to do:

If you want to:	Go to:
Establish initial communication with the primary AS/400 system	"Before You Establish Communication"
End communication with one AS/400 system and begin communication with an alternate AS/400 system	"Changing Your AS/400 System" on page 7-13
Register online facilities for X.21 switched communication mode	"Registering Online Facilities (X.21 Switched)" on page 7-16
End a communication link between the 5494 and the AS/400 system when no active sessions are established	"Ending a Communication Link" on page 7-18
Reestablish communication with the AS/400 system	"Reestablishing Communication after Logical Link Termination" on page 7-21

Before You Establish Communication

Before you attempt to establish communication with the AS/400 system, do the following steps:

- 1 Contact your AS/400 system operator and make sure that the AS/400 system is configured to communicate with the 5494.

Note: If the AS/400 system value, QAUTORMT, is turned on and you are using OS/400 Version 3 Release 1, your AS/400 system will automatically configure the controller and device descriptions.

A sample AS/400 configuration is shown in Appendix B, "Configuring the AS/400 for Communication with the 5494."

- 2 Make sure that the 5494 is configured. For instructions on completing the 5494 configuration worksheets, refer to the *IBM 5494 Remote Control Unit Planning Guide*. For instructions on configuring the 5494, see Chapter 5, "Configuring Your System."

3 The 5494 automatically begins communication with the AS/400 system for certain configurations.

For other configurations or to change the AS/400 system with which you are communicating, you must do network link establishment.

This information can also be found in the title of the Network Link Establishment Worksheet. For instructions on completing this worksheet, refer to the *IBM 5494 Remote Control Unit Planning Guide*.

If you communicate with only one AS/400 system, and are using one of the following configurations, you are not required to do network link establishment:

- SDLC leased
- SDLC switched
- SDLC switched/V.25 bis when auto-answering a call
- X.21 leased
- X.21 switched when answering a call from the AS/400 system
- X.25 if your circuit type is PVC only or SVC answer-only and manual options are not allowed
- Token-Ring.
- Ethernet

4 Make sure that the 5494 power push button is set to **OFF** and that the system diskette is in the diskette drive.

5 Press the 5494 power push button to set the power **ON**. The Ready indicator should come on within 2 minutes.

6 Are you using one of the following communication modes?

- SDLC leased
- SDLC switched to auto-answer a call
- X.21 leased
- X.21 switched to answer a call
- X.25 and your circuit type is PVC only or SVC answer-only and manual options are not allowed
- Token-Ring
- Ethernet.

YES—Continue with step 7.

NO—Go to step 12 on page 7-5.

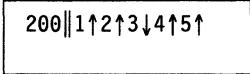
7 If you are using an auto-answer modem, make sure that the data switch is set to the answer position. Refer to your modem documentation for information about the answer position.

Communicating with Your AS/400 System

8 Make sure the network and AS/400 system are ready to communicate with the 5494.

9 Determine if your connection to the AS/400 system is successful. Do one of the following steps:

- Set an NWS to **ON**. If your connection to the AS/400 system is successful, the AS/400 logon screen is displayed within 2 minutes.
- Attempt to establish a session with the AS/400 system using a PWS running PC Support/400. If your connection to the AS/400 system is successful, the AS/400 logon information is displayed within 2 minutes.
- Press **Req**, type **200** on the 5494 keypad, then press **Enter**. A panel similar to the following panel is displayed:



200||1↑2↑3↓4↑5↑

where:

↑ indicates yes.

↓ indicates no.

The arrow following the 1 indicates the 5494 is communicating with the adjacent link station (ALS).

The arrow following the 2 indicates the 5494 is communicating with at least one 5250 workstation.

The arrow following the 3 indicates the 5494 is communicating with at least one LAN workstation.

The arrow following the 4 indicates the 5494 has contacted, or been contacted by, the target AS/400 system.

The arrow following the 5 indicates the 5494 has successfully established an APPC session with the target AS/400 system.

The information displayed on the panel is valid when the request is made. To display updated information, repeat the request.

10 When you are finished viewing the LCD panel, press **Esc** to clear the panel.

11 Have you successfully established a connection to the AS/400 system? (Use one of the methods in step 9.)

YES—The procedure is complete.

NO—See Chapter 8, "Using Problem Determination Procedures."

- 12** By selecting your communication mode in the left column of the following table, find the appropriate section for your next step.

This information can also be found on the Network Link Establishment Worksheet.

Note: If you need to use network link establishment procedures to establish the link, you must use a workstation attached to the 5494. You can use an attached PWS running the Utility Program, or you can use an NWS.

If your communication mode is:	And your workstation is:	Go to:
SDLC switched manual dial	Any	"Establishing Communication by Manual Dialing"
SDLC switched/V.25 bis with call initiated by 5494	PWS	"Establishing Communication from a PWS" on page 7-8
	NWS	"Establishing Communication by Auto-Dialing" on page 7-6
SDLC switched manual answer	Any	"Establishing Communication by Manual Answering" on page 7-7
X.25	PWS	"Establishing Communication from a PWS" on page 7-8
	NWS	"Establishing Communication in X.25" on page 7-9
X.21 switched with call initiated by 5494	PWS	"Establishing Communication from a PWS" on page 7-8
	NWS	"Establishing Communication by Auto-Dialing" on page 7-6

Establishing Communication by Manual Dialing

To dial the AS/400 system manually, do the following steps:

- 1** Make sure the network and the AS/400 system are ready to communicate with the 5494.
- 2** Set the Mode switch on the modem to the Talk position.
- 3** Lift the handset from the telephone and pull up the exclusion key (a key on the telephone located under the handset that is used to establish communication).
- 4** Dial the AS/400 site number.
- 5** When the AS/400 site is ready, you hear the answer tone.
Note: When the IBM 3872 is used, the location receiving the call must go to the Data position (by hanging up the handset) first.
- 6** Wait until the answer tone ends.

Establishing Communication by Auto-Dialing

- 7** Set the Mode switch on the modem to the Data position.
- 8** Hang up the handset.
- 9** Have you successfully established a connection to the AS/400 system? (Use one of the methods in step 9 on page 7-4.)
YES—The procedure is complete.
NO—See Chapter 8, “Using Problem Determination Procedures.”

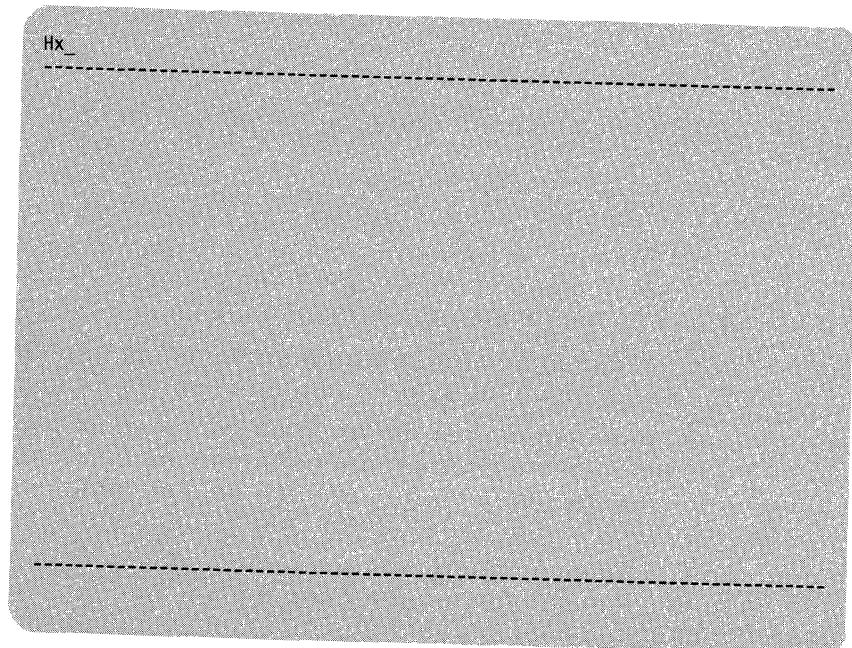
Establishing Communication by Auto-Dialing

The 5494 configuration contains all the information (telephone number and so on) required to place a call. However, you must initiate the call to the AS/400 system with which you want to communicate.

To dial the AS/400 system automatically, do the following steps:

- 1** Make sure the network and the AS/400 system are ready to communicate with the 5494.
- 2** Set your NWS to **ON**.
- 3** Press the **System Request** key sequence. See Appendix E, “Key Sequences,” for the correct sequence for your keyboard.

The System Request screen appears as follows:



On this screen, Hx represents the AS/400 (host) system with which you last established communication (H1, H2, H3, or H4).

- 4** If necessary, change the AS/400 system identifier (Hx) to specify the system with which you currently want to establish communication (H1, H2, H3, or H4). Type over the displayed identifier with the correct identifier.

If you do not know the correct identifier for this system, check the 5494 configuration to determine which AS/400 (host) system is defined.

This information can also be found in Section 2 of your Network Link Establishment Worksheet.

- 5** Type a comma (,) and **C** (Call). For example, **H1,C** places a call to the primary AS/400 system.

Press **Enter**.

- 6** Does the AS/400 logon screen appear within 2 minutes?

YES—The procedure is complete.

NO—If an SRC is displayed (blinking) on the screen, see Chapter 9, "Message Codes and System Reference Codes (SRCs)."

If an SRC is not displayed, call the AS/400 system operator and make sure that the 5494 is varied on. Go back to step 3 on page 7-6 and repeat this procedure.

If the AS/400 logon screen still does not appear, see Chapter 8, "Using Problem Determination Procedures."

Establishing Communication by Manual Answering

To answer a call from the AS/400 manually, do the following steps:

- 1** Make sure the network and the AS/400 system are ready to communicate with the 5494.

- 2** Set the Mode switch on the modem to the Talk position.

- 3** Wait for the call.

- 4** Answer the telephone when it rings.

- 5** Lift the handset from the telephone and pull up the exclusion key (a key on the telephone located under the handset that is used to establish communication).

- 6** When you and the AS/400 site are ready, set the Mode switch on the modem to the Data position and hang up the handset.

Note: When the IBM 3872 is used, the location receiving the call must go to the Data position (by hanging up the handset) first.

- 7** Have you successfully established a connection to the AS/400 system? (Use one of the methods in step 9 on page 7-4.)

YES—The procedure is complete.

NO—See Chapter 8, “Using Problem Determination Procedures.”

Establishing Communication from a PWS

This section describes how to use the Utility Program to establish communication with the AS/400 system using a PWS running the DOS or OS/2 operating system. The PWS may be attached to the 5494 through a 5250 connection or through a Token-Ring connection.

The Utility Program should have been installed in Chapter 4, “Installing and Using the 5494 Utility Program.”

To establish communication, do the following steps:

- 1** Set your PWS to **ON**. Select one of the following choices:
 - If your PWS is running the OS/2 operating system:** Continue with step 2.
 - If your PWS is running DOS:** Go to step 4.
- 2** Make sure that OS/2 Communications Manager is started using the configuration file that you created or changed in Chapter 4, “Installing and Using the 5494 Utility Program.”
- 3** Go to an OS/2 Full Screen.
- 4** Start the Utility Program, as follows:
 - a** Type **C:** (where **C:** represents the PWS fixed disk where you installed the Utility Program), then press **Enter**.
 - b** Type **CD\5494UP**, then press **Enter**.
 - c** Type **5494UP**, then press **Enter**.
- 5** Press **Enter** to clear the IBM logo panel.

The Utility Program contains menus, instructions, and Help panels for network link establishment.
- 6** On the Utility Program main menu, select Network Link Establishment, then press **Enter**.

The Utility Program checks your configuration and displays the correct network link establishment menu.
- 7** Are you going to **place** a call to an AS/400 system?

YES—Make sure the network and the AS/400 system are ready to communicate with the 5494.
Continue with step 8 on page 7-9.

NO—Continue with step 8 on page 7-9.

- 8 Use the Utility Program instructions to make the correct request and AS/400 system selections.

This information can also be found on your Network Link Establishment Worksheet.

- 9 Are you using X.25 communication with optional parameters?

YES—Press **Enter**, then continue with step 10.

NO—Press **PF6**, then go to step 11.

- 10 On the second panel, fill in the optional fields, then press **F6**.

This information can also be found on the Network Link Establishment Worksheet.

- 11 Are you going to **answer** a call from an AS/400 system?

YES—Make sure the network and the AS/400 system are ready to communicate with the 5494.

Continue with step 12.

NO—Continue with step 12.

- 12 A message appears at the bottom of the screen. Does the message indicate that link establishment is complete?

YES—Exit the Utility Program. The procedure is complete.

NO—See Chapter 9, “Message Codes and System Reference Codes (SRCs)” to look up the displayed SRC.

Establishing Communication in X.25

To establish communication in X.25, do the following steps:

- 1 Do you plan to open a PVC or initiate an SVC call?

This information can also be found in field **B** of your Network Link Establishment Worksheet.

YES—Make sure the network and the AS/400 system are ready to communicate with the 5494.

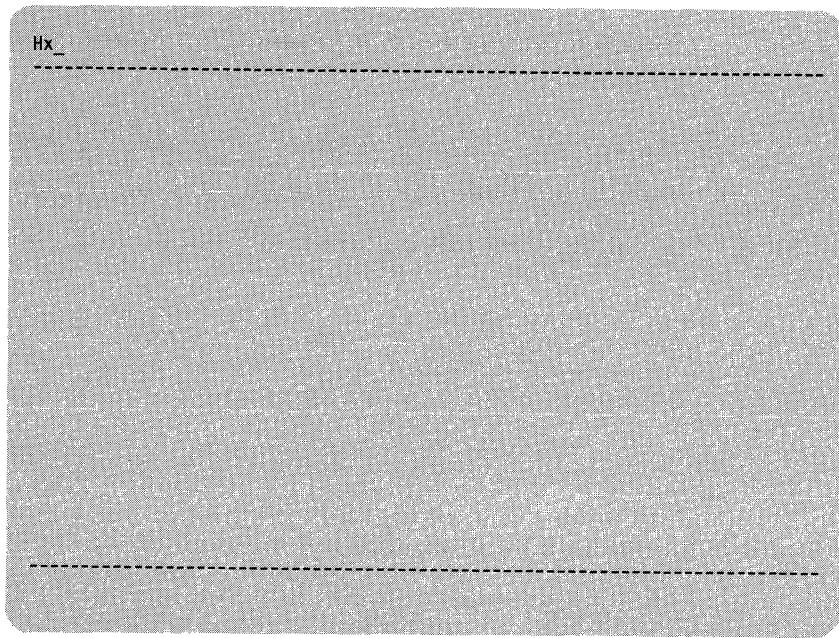
Continue with step 2.

NO—Continue with step 2.

- 2 Press the **System Request** key sequence. See Appendix E, “Key Sequences,” for the correct sequence for your keyboard.

Establishing Communication in X.25

The System Request screen appears as follows:



On this screen, Hx represents the AS/400 (host) system with which you last established communication (H1, H2, H3, or H4).

- 3 If necessary, change the AS/400 system identifier (Hx) to specify the system with which you currently want to establish communication (H1, H2, H3, or H4). Type over the displayed identifier with the correct identifier.

If you do not know the correct identifier for this system, check the 5494 configuration to determine which AS/400 (host) system is defined.

This information can also be found in Section 2 of your Network Link Establishment Worksheet.

- 4 Type a comma (,), then specify the link establishment command for the type of connection as follows:

- If **Initiate SVC Call:** Type **C** (Call).
- If **Answer SVC Call:** Type **A** (Answer).
- If **Open PVC:** Type **O** (Open).

For example, **H1,C** places an SVC call to the primary AS/400 system.

This information can also be found in field **B** of your Network Link Establishment Worksheet.

- 5 Do you want to add information for the optional parameters?

YES—Complete steps 6 through 17.

NO—Press **Enter**. Go to step 18 on page 7-13.

This information can also be found on the Network Link Establishment Worksheet in fields **C** through **L**.

6 If you want to specify an X.25 connection password, type a comma (,) and **X**, followed by the password.

This information can also be found in field **C** of your Network Link Establishment Worksheet,

7 If you want to specify a logical channel identifier, type a comma (,) and **L**, followed by the logical channel identifier.

This information can also be found in field **D** of your Network Link Establishment Worksheet,

8 If you want to specify a network user identification type a comma (,) and **I**, followed by the network user identification.

This information can also be found in field **E** of your Network Link Establishment Worksheet.

9 If you want to specify a user group identification, type a comma (,) and **U**, followed by the user group identification.

This information can also be found in field **F** of your Network Link Establishment Worksheet.

10 If you want to request reverse charging type a comma (,) and **R**.

This information can also be found in field **G** of your Network Link Establishment Worksheet. (Yes is circled.)

11 If you want to specify optional facilities, in field **H** of your Network Link Establishment Worksheet, type a comma (,) and **F**, followed by the facility code and parameter code.

This information can also be found in field **H** of your Network Link Establishment Worksheet.

12 If you want to specify a logical link control override, select one of the following choices:

If **QLLC**: Type a comma (,) and **Q**.

If **ELLC**: Type a comma (,) and **E**, followed by the ELLC recovery value.

This information can also be found in field **I** of your Network Link Establishment Worksheet.

13 If you want to specify extended addressing, type a comma (,) and **T**, followed by:

- The called address
- A dash (-)
- The calling address.

This information can also be found in field **J** of your Network Link Establishment Worksheet.

14 If you want to specify an override packet window size, type a comma (,) and **W**, followed by the packet window size.

Establishing Communication in X.25

This information can also be found in field **K** of your Network Link Establishment Worksheet.

- 15** If you want to specify an override packet size, type a comma (,) and **P**, followed by the packet size.

This information can also be found in field **L** of your Network Link Establishment Worksheet.

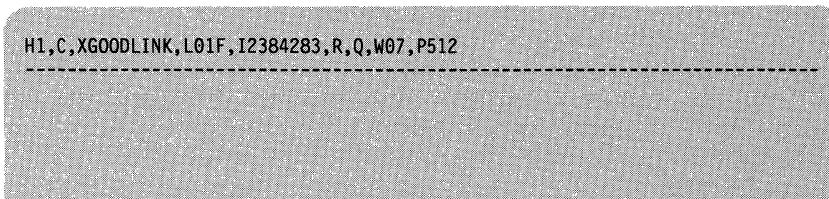
- 16** Check your link establishment command sequence to ensure that all parameters match.

If you used a worksheet, check your link establishment command sequenced to ensure that all parameters match those specified on your Network Link Establishment Worksheet.

Example Command Sequence: Assume that you defined the following parameters:

- A** System is H1 AS/400 System 1 (primary AS/400).
- B** Connection type is Initiate SVC Call.
- C** X.25 connection password is GOODLINK.
- D** Logical channel identifier is 01F.
- E** Network user identification is 2384283.
- F** No user group identification.
- G** Reverse charging is requested.
- H** No optional facilities.
- I** Logical link control override is QLLC.
- J** No extended addressing.
- K** Override packet window size is 07.
- L** Override packet size is 512.

Your link establishment command sequence would look like this:



- 17** When you are sure that your link establishment command sequence is correct, press **Enter**.

18 Are you answering an SVC call?

YES—Make sure the network and the AS/400 system are ready to communicate with the 5494.

Continue with step 19.

NO—Continue with step 19.

19 Does the AS/400 logon screen appear within 2 minutes?

YES—The procedure is complete.

NO—If an SRC is displayed (blinking) on the screen, see Chapter 9, "Message Codes and System Reference Codes (SRCs)."

If an SRC is not displayed, call the AS/400 system operator and make sure that the 5494 is varied on. Go back to step 2 under "Establishing Communication in X.25" on page 7-9 and repeat this procedure.

If the AS/400 logon screen still does not appear, see Chapter 8, "Using Problem Determination Procedures."

Changing Your AS/400 System

The 5494 can be configured for as many as four AS/400 systems.

To stop communication with one AS/400 system and establish communication with an alternate AS/400 system, do the following steps:

- 1** If your current link is not active, go to step 5.
- 2** End all workstation sessions with the current AS/400 system.
- 3** Have the AS/400 system operator vary off the 5494 at the AS/400 system.
- 4** Use the procedure in "Ending a Communication Link" on page 7-18 to disconnect from the AS/400 system.
- 5** Use the following table to find the appropriate section for what you want to do.

Note: You must have a workstation connected to the 5494 to establish a new link.

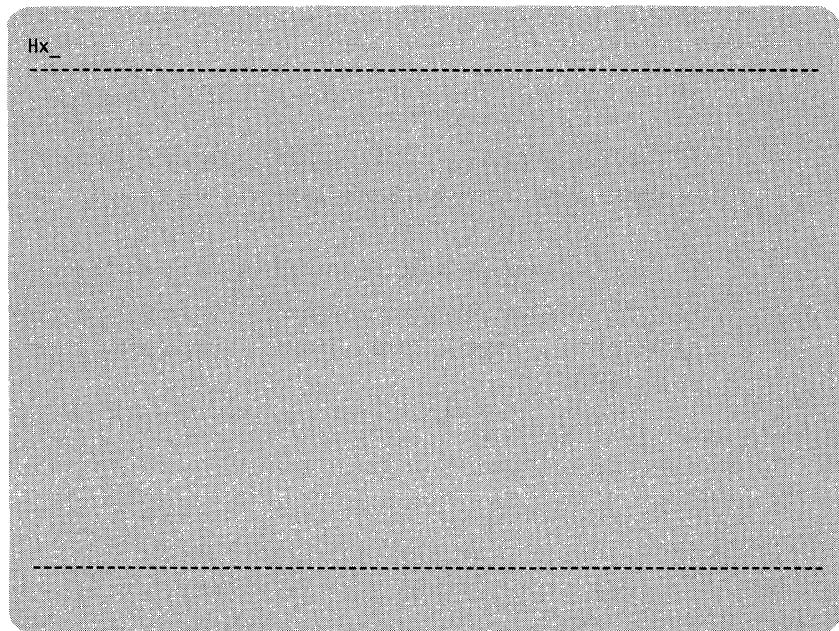
If your work-station is:	And your communication line is:	Go to:
PWS	Any	"Establishing Communication from a PWS" on page 7-8
NWS	SDLC switched/V.25 bis with call initiated by 5494	"Establishing Communication by Auto-Dialing" on page 7-6
	X.25	"Establishing Communication in X.25" on page 7-9
	X.21 switched with call initiated by 5494	"Establishing Communication by Auto-Dialing" on page 7-6
All others		"Changing the AS/400 System with an NWS" on page 7-14

Changing the AS/400 System with an NWS

To change the AS/400 system with a NWS, do the following steps:

- 1 Press the **System Request** key sequence. See Appendix E, "Key Sequences," for the correct sequence for your keyboard.

The System Request screen appears as follows:



On this screen, Hx represents the AS/400 (host) system with which you last established communication (H1, H2, H3, or H4).

2 If necessary, change the AS/400 system identifier (Hx) to specify the system with which you currently want to establish communication (H1, H2, H3, or H4). Type over the displayed identifier with the correct identifier.

For example, for token-ring, type ,c and press **Enter**.

If you do not know the correct identifier for this system, check the 5494 configuration to determine which AS/400 (host) system is defined.

This information can also be found in Section 2 of your Network Link Establishment Worksheet.

3 Use the following table to find the appropriate section for what you want to do:

If your communication mode is:	Go to:
SDLC leased	Step 4
SDLC switched auto-answer	
X.21 leased	
X.21 switched to answer a call	
Token-Ring	
Ethernet	
SDLC switched manual dial	"Establishing Communication by Manual Dialing" on page 7-5
SDLC switched manual answer	"Establishing Communication by Manual Answering" on page 7-7

4 Have the AS/400 system operator vary on the:

- Line
- APPC controller
- RWS controller.

5 Does the AS/400 logon screen appear within 2 minutes?

YES—The procedure is complete.

NO—If an SRC is displayed, see Chapter 9, "Message Codes and System Reference Codes (SRCs)."

If an SRC is not displayed, see Chapter 8, "Using Problem Determination Procedures."

Registering Online Facilities (X.21 Switched)

You can register online for facilities on X.21 switched networks.

Use the following table to find the appropriate section for what you want to do:

If your workstation is:	Go to:
PWS	"Registering Online Facilities with a PWS"
NWS	"Registering Online Facilities with an NWS" on page 7-17

Registering Online Facilities with a PWS

This section describes how to use the Utility Program to register online facilities using a PWS running the DOS or OS/2 operating system. If directly linked (not through the remote access function) the PWS may be attached to the 5494 through a 5250 workstation or through a LAN connection.

Your network planner may provide instructions in Section 3 of your X.21 Network Link Establishment Worksheet for registering online facilities.

To change these parameters, do the following steps:

- 1** Set your PWS to **ON**. Select one of the following choices:
 - If your PWS is running the OS/2 operating system:** Continue with step 2.
 - If your PWS is running DOS:** Go to step 4.
- 2** Make sure that OS/2 Communications Manager is started using the configuration file that you created in Chapter 4, "Installing and Using the 5494 Utility Program."
- 3** Go to an OS/2 Full Screen.
- 4** Start the Utility Program as follows:
 - a** Type **C:** (where **C:** represents the PWS fixed disk where you installed the Utility Program), then press **Enter**.
 - b** Type **CD\5494UP**, then press **Enter**.
 - c** Type **5494UP**, then press **Enter**.
- 5** Press **Enter** to clear the IBM logo panel.
The Utility Program contains menus, instructions, and help panels for changing your subscription parameters.
- 6** On the Utility Program main menu, select Network Link Establishment, then press **Enter**.
- 7** On the Network Establishment—X.21 panel, select Change Subscription Parameters and type the facility code and parameters.

This information can also be found on your Network Link Establishment Worksheet.

- 8** Press **F6**. When the subscription request completes, an SRC is displayed. See Chapter 9, "Message Codes and System Reference Codes (SRCs)" for information on the SRC.

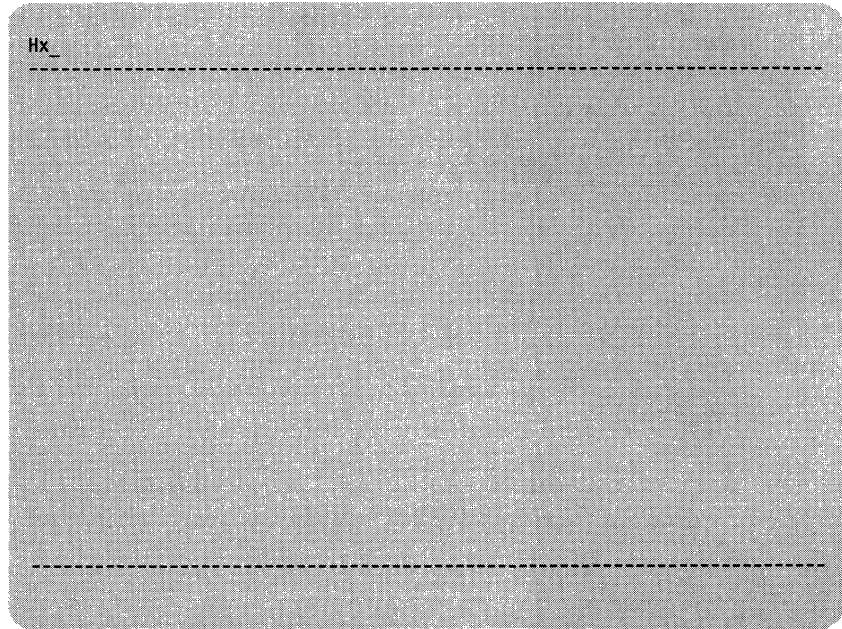
Registering Online Facilities with an NWS

Your network planner may provide instructions in Section 3 of your X.21 Network Link Establishment Worksheet for registering online facilities.

To register online facilities, do the following steps:

- 1** Have the AS/400 system operator vary off the 5494.
- 2** Press the **System Request** key sequence. See Appendix E, "Key Sequences," for the correct sequence for your keyboard.

The System Request screen appears as follows:



On this screen, Hx represents the AS/400 (host) system with which you last established communication (H1, H2, H3, or H4).

- 3** Type a comma (,) and **S** (Subscription) followed by the parameters listed in field **B** of Section 3 of your Network Link Establishment Worksheet.

Press **Enter**.

The network returns an acknowledgment of the subscription request. The acknowledgment is displayed on the screen as an SRC. See Chapter 9, "Message Codes and System Reference Codes (SRCs)" for information on the SRC.

Ending a Communication Link

This section provides instructions for ending communication with the AS/400 system using a disconnect procedure.

The disconnect procedure disconnects the communication link between the 5494 and the AS/400 system when no active sessions are established between them. If the data link has not been disconnected by the AS/400 system or network or as the result of an error, you must disconnect before you can establish another communication link.

You can also use the disconnect procedure to end logical connection retries if the 5494 is currently attempting to establish a logical connection.

You can use the disconnect procedure in X.25 communication mode to end an ANSWER command that has been presented to the network, but remains unanswered.

For X.21 switched and SDLC (using V.25 bis) communication mode, the disconnect procedure is used to recover from an error (even though no SRC may appear). Use the disconnect procedure if your attempt to establish communication and the AS/400 connection is not successfully established within 2 minutes.

Note: The disconnect procedure is *not* used to log off the AS/400 system.

For a LAN connection, the 5494 continually attempts to establish a communication link with the AS/400 system when no link is present. The disconnect procedure stops the 5494 from attempting to establish a communication link with the AS/400 system, allowing you to establish a link with an alternate AS/400 system.

Use the following table to find the appropriate section for what you want to do:

If your workstation is:	Go to:
PWS	"Ending Communication from a PWS" on page 7-19
NWS	"Ending Communication from an NWS" on page 7-20

Ending Communication from a PWS

To end communication with the AS/400 system from a PWS, do the following steps:

1 Set your PWS to **ON**. Select one of the following choices:

If your PWS is running the OS/2 operating system: Continue with step 2.

If your PWS is running DOS: Go to step 4.

2 Make sure that OS/2 Communications Manager is started using the configuration file that you created or changed in Chapter 4, "Installing and Using the 5494 Utility Program."

3 Go to an OS/2 Full Screen.

4 Start the Utility Program, as follows:

a Type **C:** (where **C:** represents the PWS fixed disk where you installed the Utility Program), then press **Enter**.

b Type **CD\5494UP**, then press **Enter**.

c Type **5494UP**, then press **Enter**.

5 Press **Enter** to clear the IBM logo panel.

The Utility Program contains menus, instructions, and help panels for disconnecting a communication link.

6 On the Utility Program main menu, select Network Link Establishment, then press **Enter**.

7 On the Network Establishment panel, select Disconnect. Press **F6**.

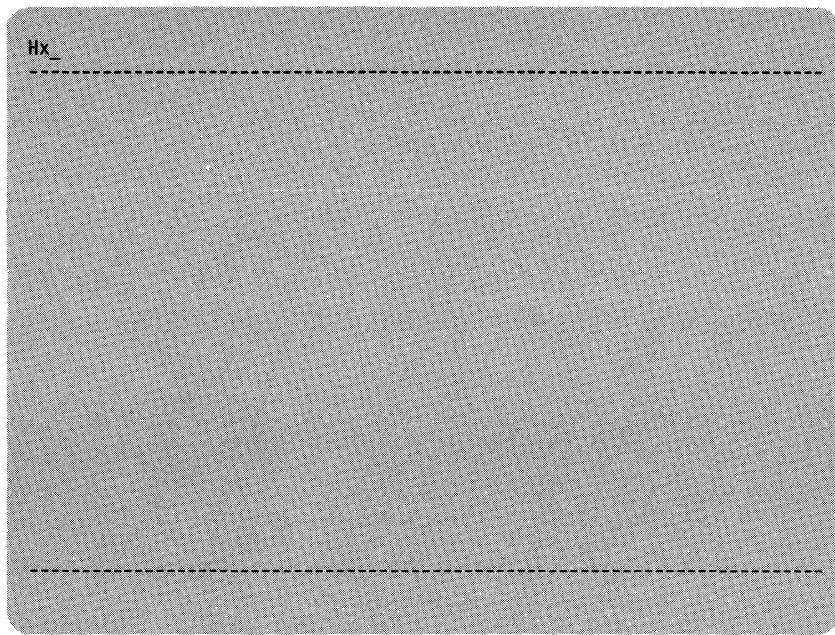
8 Exit the Utility Program.

Ending Communication from an NWS

To end communication with the AS/400 system from an NWS, do the following steps:

- 1 Press the **System Request** key sequence. See Appendix E, "Key Sequences," for the correct sequence for your keyboard.

The System Request screen appears as follows:



On this screen, Hx represents the AS/400 (host) system with which you have been communicating (H1, H2, H3, or H4).

- 2 Type a comma (,) and D. Press **Enter**.

The 5494 disconnects from the network.

Reestablishing Communication after Logical Link Termination

This section describes how to reestablish communication with the AS/400 system when an existing logical link is disconnected due to some AS/400 system action.

Note: Your physical link to the communication network may also have been disconnected. In this case, this procedure is not sufficient to reestablish communication. After completing this procedure, if your link is not successfully established, repeat the procedure for establishing an initial connection. See "Before You Establish Communication" on page 7-2.

If you want to:	Go to:
Reestablish communication with the AS/400 system from a PWS	"Reestablishing Communication from a PWS"
Reestablish communication with the AS/400 system from an NWS	"Reestablishing Communication from an NWS" on page 7-22

Reestablishing Communication from a PWS

To reestablish communication, do the following steps:

- 1** Set your PWS to ON. Select one of the following choices:
If your PWS is running the OS/2 operating system: Continue with step 2.
If your PWS is running DOS: Go to step 4.
- 2** Make sure that OS/2 Communications Manager is started using the configuration file that you created or changed in Chapter 4, "Installing and Using the 5494 Utility Program."
- 3** Go to an OS/2 Full Screen.
- 4** Start the Utility Program as follows:
 - a** Type **C:** (where **C:** represents the PWS fixed disk where you installed the Utility Program), then press **Enter**.
 - b** Type **CD\5494UP**, then press **Enter**.
 - c** Type **5494UP**, then press **Enter**.
- 5** Press **Enter** to clear the IBM logo panel.
The Utility Program contains menus, instructions, and help panels for reestablishing communication.
- 6** On the Utility Program main menu, select Network Link Establishment, then press **Enter**.

7 On the Network Establishment panel, select Reconnect Logical Link. Press **F6**.

8 Have you successfully established a link to your AS/400 system?

YES—The procedure is complete.

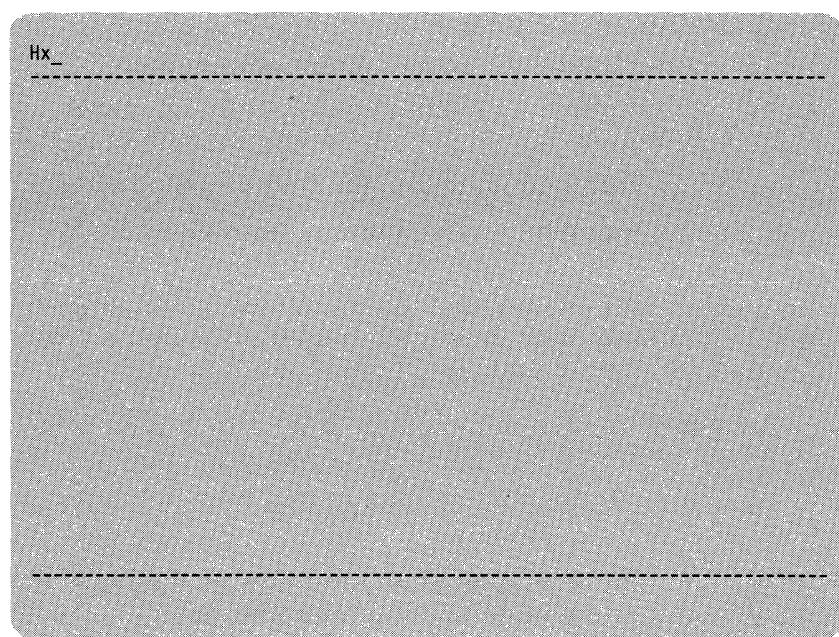
NO—Repeat the procedure for establishing an initial link. See “Before You Establish Communication” on page 7-2.

Reestablishing Communication from an NWS

To reestablish communication, do the following steps:

1 Press the **System Request** key sequence. See Appendix E, “Key Sequences,” for the correct sequence for your keyboard.

The System Request screen appears as follows:



On this screen, Hx represents the AS/400 (host) system with which you have been communicating (H1, H2, H3, or H4).

Press **Enter**.

2 Have you successfully established a link to your AS/400 system?

YES—The procedure is complete.

NO—Repeat the procedure for establishing an initial link. See “Before You Establish Communication” on page 7-2.

Chapter 8. Using Problem Determination Procedures

Introduction	8-2
Problem Determination Procedures	8-2
Power-On Options	8-7
Operator Panel Indicators	8-8
LCD Display Format and Operation	8-8
Message Format Before Normal Operation	8-9
Message Format During Normal Operation	8-10
5250 Workstation Format	8-11
Requesting 5494 Status Information	8-12
Verifying Workstation Connection	8-13
Before You Begin Verification	8-13
LAN Connection	8-13
5250 Connection	8-14
Setting the Date and Time	8-15
Viewing the Date and Time	8-15
Setting the Date	8-15
Setting the Time	8-16
Displaying the Latest Error Log Entries	8-17
Information for the Advanced User	8-19
LCD Display Diagnostics Information	8-19
NWS or PWS Diagnostics Information	8-20
Running Extended Diagnostics	8-20

Introduction

This chapter contains information that you need to diagnose problems and recover from errors. One section contains steps to diagnose a problem. Several other sections provide general information about the 5494 to make problem solving easier.

Use the following table to find the appropriate section for what you want to do:

If you want information on:	Go to:
Diagnosing problems	"Problem Determination Procedures"
Options when turning ON the 5494	"Power-On Options" on page 8-7
5494 operator panel indicators	"Operator Panel Indicators" on page 8-8
5494 LCD display format and operation	"LCD Display Format and Operation" on page 8-8
5250 workstation format	"5250 Workstation Format" on page 8-11
Basic 5494 status information	"Requesting 5494 Status Information" on page 8-12
Verifying workstation connection	"Verifying Workstation Connection" on page 8-13
Setting the date and time	"Setting the Date and Time" on page 8-15
Displaying latest error log entries	"Displaying the Latest Error Log Entries" on page 8-17
Advanced user information	"Information for the Advanced User" on page 8-19
Running 5494 extended diagnostics	"Running Extended Diagnostics" on page 8-20

Problem Determination Procedures

To isolate and solve problems that may occur while operating the 5494, do the following steps:

1 Is an SRC displayed on any workstation? (See "5250 Workstation Format" on page 8-11 for the location of SRCs.)

YES—Look up the SRC in Chapter 9, "Message Codes and System Reference Codes (SRCs)," then follow the directions under Customer Action.

NO—Continue with step 2 on page 8-3.

2 Is a message displayed on the 5494 LCD panel?

NNN

where:

NNN

is the 3-digit message code.

YES—Continue with step 3.

NO—Go to step 4.

3 Write down the numbers displayed on the panel. Is the message code on the left side of the panel a number between 001 and 099?

YES—Look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

NO—Look up the message code in Chapter 9, “Message Codes and System Reference Codes (SRCs),” then follow the directions under Customer Action.

4 Is the 5494 Ready indicator on?

YES—Continue with step 5.

NO—Go to step 11 on page 8-4.

5 Make sure that **all** workstations are communicating with the 5494 (see “Verifying Workstation Connection” on page 8-13).

Are any of the 5250 workstations not communicating?

YES—Continue with step 6.

NO—Go to step 17 on page 8-6.

6 Do **any** of the 5250 workstations show a connection?

YES—Continue with step 7.

NO—Go to step 10 on page 8-4.

7 Are **all** the failing 5250 workstations connected to the same port?

YES—Continue with step 8.

NO—Call IBM service and report SRC 108.

8 Do the following steps:

a Press the 5494 power push button to set the power to **OFF**.

b At the Twinaxial Workstation Attachment cable, replace the cable to a failing port with the cable from a nonfailing port.

c Insert the 5494 system diskette into the 5494 diskette drive.

Problem Determination Procedures

- d** Press the 5494 power push button to set the power to **ON**. Wait for the Ready indicator to come on.
- e** Determine which workstations are communicating with the 5494 (see "Verifying Workstation Connection" on page 8-13).
- f** Does the failing port change when the cable is changed?
YES—Continue with step 9.
NO—Call IBM service and report SRC 150.

9 You have a problem with the cabling to your 5250 workstations. Take the necessary steps to resolve your cabling problem. Use the steps in "Verifying Workstation Connection" on page 8-13 to determine when your problem has been solved. **The procedure is complete.**

10 Do the following steps:

- a** Make sure that:
 - The twinaxial workstation attachment cable is correctly connected to the 5494
 - All 5250 workstation cables are correctly connected to the twinaxial workstation attachment cable.

See Chapter 3, "Setting Up the 5494" on page 3-1 for information on connecting cables.
- b** Make sure that all cables to the 5250 workstations (including printers) are correctly connected.
- c** If you find a loose cable, connect it correctly. Make sure that **all** 5250 workstations are communicating with the 5494 (see "Verifying Workstation Connection" on page 8-13).
- d** Did you find and correct the problem?
YES—**The procedure is complete.**
NO—Call IBM service and report SRC 150.

11 Do the following steps:

- a** Press the 5494 power push button to set the power **OFF**.
- b** Remove the system diskette.
- c** Press the 5494 power push button to set the power **ON**. A message should display within 2 minutes.
- d** Does a message display?
YES—Continue with step 12 on page 8-5.
NO—Go to step 15 on page 8-5.

12 Is the message 003-02 displayed on the LCD panel?

YES—Continue with step 13.

NO—Look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

13 Type 0, then press **Enter** to run extended diagnostics.

Is the message 020-01 displayed on the LCD panel?

YES—Continue with step 14.

NO—Look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

14 Press the up arrow or down arrow key to select 2, then press **Enter**.

While extended diagnostics are running, you may receive messages. If a message appears, look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

When extended diagnostics complete successfully, the following panel is displayed:

022-02

Note: If 5494 extended diagnostics find a problem, a message code is displayed. Refer to the *IBM 5494 Remote Control Unit Problem Determination Quick Reference* for information about the message code and Customer Action.

The procedure is complete.

15 Is there any indication of power reaching the 5494 (for example, the Power-On indicator is on or the fan is running)?

YES—Call IBM service and report SRC 133.

NO—Continue with step 16.

16 Is the 5494 plugged into a power outlet?

YES—Make sure that power is available at the outlet by plugging in another electrical device, such as a lamp or radio. If power is available, call IBM service and report SRC 105.

NO—Press the 5494 power push button to set the power to **OFF**, then plug the 5494 into a power outlet. **The procedure is complete.**

Problem Determination Procedures

17 Do you have workstations attached to the 5494 using a Token-Ring or Ethernet LAN?

YES—Continue with step 18.

NO—Either the problem has been resolved or the procedure must be performed again. Reevaluate the problem. If necessary, start over with step 1 on page 8-2.

18 Are **all** LAN workstations communicating with the 5494 (see “Verifying Workstation Connection” on page 8-13)?

YES—Either the problem has been resolved or the procedure must be performed again. Reevaluate the problem. If necessary, start over with step 1 on page 8-2.

NO—Continue with step 19.

19 Are **any** of your active LAN workstations communicating with the 5494?

YES—Contact your LAN administrator and report a failing workstation.

NO—Continue with step 20.

20 Make sure that the token-ring or Ethernet cable is securely connected to both the:

- 5494
- Wall connector or multistation access unit.

See Chapter 3, “Setting Up the 5494” on page 3-1 for information on connecting the token-ring or Ethernet cable.

Is the token-ring or Ethernet cable connected securely?

YES—Call IBM service and report SRC 158.

NO—Reconnect the cable. Make sure that the LAN workstations are communicating with the 5494 (see “Verifying Workstation Connection” on page 8-13). **The procedure is complete.**

Power-On Options

You can start the 5494 either with or without the system diskette in the diskette drive.

To use the 5494 for normal operations, insert the system diskette into the diskette drive. When you press the 5494 power push button to set the power to **ON**, the following occurs:

- The power-on self-tests run.
- The diskette code is loaded.
- The Ready indicator comes on within 2 minutes.

To run extended diagnostics or place the 5494 in configuration mode, do the following steps:

- 1 Do not insert the system diskette into the diskette drive.
- 2 Press the 5494 power push button to set the power **ON**. The following panel is displayed:

003-02	1
--------	---

- 3 Insert the system diskette into the diskette drive, then type one of the following on the 5494 keypad:

- **0** to run extended diagnostics
- **1** to start the 5494 in normal operating mode
- **2** to start the 5494 in configuration mode.
- Press **Enter**.

While extended diagnostics are running, you may receive messages. If a message appears, look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

In configuration mode, the 5494 does not attempt to communicate with the AS/400 system. However, the 5494 with a LAN adapter installed always connects to either a Token-Ring or an Ethernet LAN. You can use a PWS attached to the LAN to configure the 5494.

Operator Panel Indicators

The 5494 operator panel has four indicators:

Ready

The green Ready indicator comes on when the power-on sequence completes successfully to indicate that the 5494 is ready for operation.

Call 5494 Service

The amber Call 5494 Service indicator comes on when a problem occurs that requires a 5494 service technician. Write down the numbers displayed on the panel, and give that information to the service personnel when calling for service.

Note: If the message code on the left side of the panel is a number between 200 and 299, press **Esc**, then write down the numbers displayed on the panel. Message codes between 200 and 299 are panels with requested status information, not error messages.

See PD Guide

The amber See PD Guide indicator comes on when a condition occurs that requires problem determination. Write down the numbers displayed on the panel. Look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference* or Chapter 9, "Message Codes and System Reference Codes (SRCs)," then follow the directions under Customer Action.

Test Mode

When the Test Mode indicator is on and the Ready indicator is:

- Off, the 5494 is running tests.
- On, the 5494 is in configuration mode or concurrent diagnostics information can be viewed. For more information on concurrent diagnostics information, see "Information for the Advanced User" on page 8-19.

LCD Display Format and Operation

The 5494 LCD display is used to provide status and error information. All messages have a 3-digit code located on the left side of the panel. The following table describes the message codes:

Messages displayed:	Are between:	And are described in:
During diagnostic testing	001 and 099	The <i>IBM 5494 Remote Control Unit Problem Determination Quick Reference</i>
After starting normal operation	000, 199 and 999	Chapter 9, "Message Codes and System Reference Codes (SRCs)"

The panel format differs depending on whether a message is generated before or after starting normal operation.

Message Format Before Normal Operation

There are several formats for messages displayed before normal operations or during diagnostic testing. On the left side of the panel, the message has:

- A 3-digit message code
- A dash (—)
- A 2-digit message extension.

On the right side of the panel, one of the following can occur:

- No number is displayed. An activity indicator, such as an asterisk (*), may be blinking on the right side of the panel, indicating that a test activity is in progress. The message code changes when the activity is complete.

001-01

- A single digit is displayed to indicate that the message code is a menu.

003-02 1

- A 3-digit SRC is displayed to indicate that an error has occurred. The SRC may be followed by numbers within parentheses.

002-01 100

002-02 109(1)

002-02 111(1,1)

When an SRC is displayed, either the Call 5494 Service indicator or the See PD Guide indicator comes on. Write down the numbers displayed on the panel, then do one of the following:

- **If the Call 5494 Service indicator is on:** Call IBM service and report the information displayed on the panel.
- **If the See PD Guide indicator is on:** Look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

Message Format During Normal Operation

There are several formats for messages displayed during normal operation. On the left side of the panel, each message has:

- A 3-digit message code
- A double-bar character (||).

After the double-bar character, one of the following can occur:

- The panel format is as follows:

199	108(1)
-----	--------

– A 3-digit SRC is displayed to indicate that an error has occurred. The SRC may be followed by numbers within parentheses. When an SRC is displayed, either the Call 5494 Service indicator or the See PD Guide indicator comes on. Write down the numbers displayed on the panel, then do one of the following:

- If the **Call 5494 Service indicator is on**: Call IBM service and report the information displayed on the panel.
- If the **See PD Guide indicator is on**: Look up the message code in Chapter 9, "Message Codes and System Reference Codes (SRCs)," then follow the directions under Customer Action.

- The panel format is as follows:

410 00 0040

- The 2-digit number after the double bar represents the Logical Session Identification (LSID) for 5250 workstation device errors. For controller errors, the number is 00, and it represents the 5494.
- The 4-digit number is an SRC. Look up the SRC in Chapter 9, "Message Codes and System Reference Codes (SRCs)," then follow the directions under Customer Action.

- The panel format is as follows:

410 00 43110F >

- The 2-digit number after the double bar represents the Logical Session ID (LSID) on which the error was detected. The value of 00 indicates the error is not associated with a specific LSID.
- The 6-digit number is an SRC. Look up the SRC in Chapter 9, “Message Codes and System Reference Codes (SRCs),” then follow the directions under Customer Action.
- The greater than symbol (>) indicates that there is additional sense data for this error. Press the right arrow key to view the additional sense data.

Note: If multiple different errors occur, each error message and its associated indicator is displayed for 3 seconds. When the error condition no longer exists (for example, a link is established after being inactive), the 5494 removes the error message from the LCD.

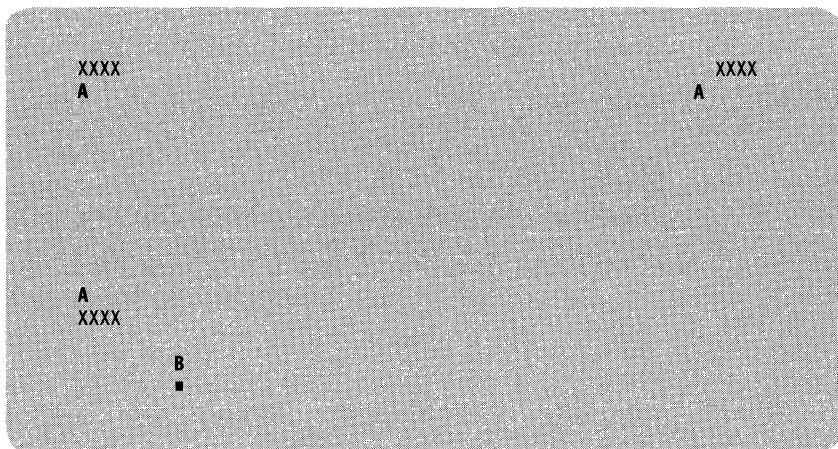
All panels with message codes between 200 and 299 contain requested information in various formats. These panels are not error messages. For more information on these panels, see “Information for the Advanced User” on page 8-19.

5250 Workstation Format

When the 5250 workstation is set to **ON**, the cursor displays in the upper-right corner of the workstation screen. When the connection between the 5494 and the 5250 workstation is complete, the cursor moves to the upper-left corner of the workstation screen and the **System Available** indicator comes on.

See the following figure for the location of SRCs and the **System Available** indicator.

Requesting 5494 Status Information



Legend:

- A** - System reference code
- B** - System Available indicator

Note: The System Available indicator on your workstation may be located in a different position. Refer to your workstation operator's guide for the exact location of this indicator.

Requesting 5494 Status Information

You can request status information at the 5494 keypad. To request status information, do the following steps:

- 1** Press **Req**, type **200** on the 5494 keypad, then press **Enter**. A panel similar to the following panel is displayed:

200|1↑2↑3↓4↑5↑

where:

↑ indicates yes.

↓ indicates no.

The arrow following the 1 indicates the 5494 is communicating with the adjacent link station (ALS).

The arrow following the 2 indicates the 5494 is communicating with at least one 5250 workstation.

The arrow following the 3 indicates the 5494 is not communicating with at least one LAN workstation.

The arrow following the 4 indicates the 5494 has contacted, or been contacted by, the target AS/400 system.

The arrow following the 5 indicates the 5494 has successfully established an APPC session with the target AS/400 system.

The information displayed on the panel is valid when the request is made. To display updated information, repeat the request.

- 2 When you are finished viewing the LCD panel, press **Esc** to clear the panel.

Error messages are not displayed while requested information is on the LCD panel. However, the Call 5494 Service indicator or See PD Guide indicator comes on.

Verifying Workstation Connection

This section describes how to determine if your workstation is connected correctly through a 5250 connection or a LAN connection.

Before You Begin Verification

Before you begin verification, do the following steps:

- 1 Make sure that the 5494 power push button is set to **ON** (the Power-On indicator is on) and that the Ready indicator is on.
- 2 Make sure that all workstations for which you want to verify the connection are on.
- 3 Do you want to verify one or more PWS?
YES—Continue with step 4.
NO—Go to “5250 Connection” on page 8-14.
- 4 Establish a link to your AS/400 system. For instructions on link establishment, see Chapter 7, “Communicating with Your AS/400 System.”
- 5 For PWSs that use PC Support/400, start PC Support/400. Wait for the following message to appear on the PWS screen:
WAITING FOR ADAPTER TO OPEN

LAN Connection

To verify a workstation connection using a LAN connection, do the following steps:

- 1 Press **Req**, type 211 on the 5494 keypad, then press **Enter**.

One LCD panel is displayed for each workstation that is communicating with the 5494 using the LAN connection. The LCD displays the LAN address of the workstation in the following format:

211||aaaaaaaaaaaa

where **aaaaaaaaaaaa** is the Token-Ring or Ethernet address.

Note: If 211||***** displays, you have reached the end of the list of LAN workstations. If this is the only panel, no LAN workstations are in contact with the 5494.

Verifying Workstation Connection

- 2** Use the down arrow key to scroll to a preceding entry and the up arrow key to scroll to a following entry.

To refresh the LCD display with current information, press **Req**, type **211**, then press **Enter**. When you finish viewing the LCD display, press **Esc** to clear the panel. Error messages are not displayed while requested information is on the LCD panel.

5250 Connection

To verify a workstation connection using the 5250 connection, do the following steps:

- 1** Press **Req**, type **210** on the 5494 keypad, then press **Enter**.

One LCD panel is displayed for each workstation that is communicating with the 5494 using the 5250 connection. The LCD displays the port and station address in the following format:

210-id||www mmm

where:

id is the port and station address.

www
is the device type.

mmm
is the model.

An example is:

210-23||3477 0FC

This panel shows that this workstation is on port 2, station address 3, and is a 3477 Model 0FC.

Note: If 210||||***** displays, you have reached the end of the list of 5250 workstations. If this is the only panel, no 5250 workstations are in contact with the 5494.

- 2** Use the down arrow key to scroll to a preceding entry and the up arrow key to scroll to a following entry.

To refresh the LCD display with current information, press **Req**, type **210**, then press **Enter**. When you finish viewing the LCD display, press **Esc** to clear the panel. Error messages are not displayed while requested information is on the LCD panel.

Setting the Date and Time

The date and time can be set while the 5494 is operational. You do not need to stop the 5494 and run extended diagnostics to set the date and time. The following sections explain the procedures for:

- Viewing the date and time
- Setting the date
- Setting the time.

Viewing the Date and Time

To view the date and time while the 5494 is operational, do the following steps:

- 1** Press **Req**, type **212** on the 5494 keypad, then press **Enter**. The following panel is displayed:

212-01|| yy-mm-dd

The date is displayed in year-month-day format.

- 2** Press the up arrow key. The following panel is displayed:

212-02|| hh:mm:ss

The time is displayed in hour-minute-second format.

Note: If you want to view the date panel, press the down arrow key.

When you are finished viewing the LCD display, press **Esc** to clear the panel. Error messages are not displayed while requested information is on the LCD display.

Setting the Date

To set the current date, do the following steps:

- 1** Press **Req**, type **213** on the 5494 keypad, then press **Enter**. The following panel is displayed:

213-01|| yy-mm-dd

- 2** Enter the current date. The date is displayed in year-month-day format. Move the cursor by using the right and left arrow keys. Valid entries for the date are numbers in the following ranges:

yy 91 through 50 for year (1991 through 2050)

mm 01 through 12 for month

dd 01 through 31 for day.

Type the date and press **Enter**.

Setting the Date and Time

Notes:

- a. If the date is valid, the panel is cleared. If the date is not valid, the cursor is positioned under the left digit of the value that is not valid, and a beep sounds.
- b. To quit an entry without making a change, press **Esc**.

Setting the Time

To set the current time, do the following steps:

- 1 Press **Req**, type **214** on the 5494 keypad, then press **Enter**. The following panel is displayed:

214-01|| hh:mm:ss

- 2 Enter the current time. The time is displayed in hour-minute-second format. Move the cursor by using the right and left arrow keys. Valid entries for the time are numbers in the following ranges:

hh 00 through 23 for hour

mm 00 through 59 for minute

ss 00 through 59 for second.

Type the current time and press **Enter**.

Notes:

- a. If the time is valid, the panel is cleared. If the time is not valid, the cursor is positioned under the left digit of the value that is not valid, and a beep sounds.
- b. To quit an entry without making a change, press **Esc**.

Displaying the Latest Error Log Entries

The error log entries can be displayed while the 5494 is operational. This section explains how to display the last thirteen error log entries on the 5494 LCD display.

Also, the 5494 error log can be viewed using concurrent diagnostics. For information about viewing the error log from concurrent diagnostics, refer to *IBM 5494 Remote Control Unit Maintenance Information*.

To view the error log entries while the 5494 is operational, do the following steps:

- 1 Press **Req**, type **203** on the 5494 keypad, then press **Enter**. The latest error log entry is displayed.

Note: The latest error log entry is displayed first. Each entry consists of three or four panels. To view each panel, press the left arrow and right arrow keys to move between panels.

The following is an example of an error log entry with four panels:

Panel 1

```
203||ii eeeeeee >
```

where:

ii is the LSID if the error is for one workstation. This value is set to 00 for all controller errors.

eeeeeee
is the SRC.

Notes:

- a. SRCs that are normally displayed as 4 digits are displayed as 6 digits with 2 leading zeros in the error log.
- b. If your SRC begins with X'FF', then this SRC is a 12-digit SRC. The first 6 digits are displayed on Panel 1, and the last 6 digits are displayed on Panel 3.

Displaying the Latest Error Log Entries

Panel 2

```
203||<mmdd hhmm >
```

where:

mmdd

is the month (mm) and day (dd) when the error occurred.

hhmm

is the hour (hh) and minute (mm) when the error occurred.

Panel 3

```
203||<ssssssssss>
```

This panel contains sense data.

Panel 4

```
203||<ss
```

This panel contains sense data.

For all error log entry panels:

< indicates the left arrow key can be used

> indicates the right arrow key can be used.

- 2** To view the next error log entry, press the up arrow key. The first panel of the next error log entry is displayed.

Note: To view the previous error log entry, press the down arrow key.

- 3** When you reach the last error log entry, the following panel is displayed:

```
203||*****
```

If there are no error entries, this is the only panel displayed.

When you are finished viewing the LCD display, press **Esc** to clear the panel. New error messages are not displayed while requested information is on the LCD display.

Information for the Advanced User

Concurrent diagnostics information can be viewed from the 5494 LCD display at any time the Ready indicator is on. Also, the information can be viewed using an attached NWS or PWS.

Concurrent diagnostics information consists of configuration information, status information, error counters, and error logs.

LCD Display Diagnostics Information

The following information can be viewed on the LCD display using the steps in this book:

- The 5494 basic status information

For information on viewing the status of your link to the AS/400 system and to your workstations, see "Requesting 5494 Status Information" on page 8-12.

- The 5250 workstation status or LAN Gateway workstation status

For information on viewing 5250 workstation and LAN Gateway workstation status, see "Verifying Workstation Connection" on page 8-13. This section provides a list of workstations that are communicating with the 5494, either by port and station address for 5250 workstations, or by address for LAN workstations.

- The 5494 date and time

For information on viewing or setting the date and time while the 5494 is operational, see "Setting the Date and Time" on page 8-15.

- The error log information for the last thirteen entries

For information on viewing the 5494 error log, see "Displaying the Latest Error Log Entries" on page 8-17.

The following information can be viewed on the LCD display using the steps in *IBM 5494 Remote Control Unit Maintenance Information*.

- The 5494 hardware and network configuration information
- The communication configuration information
- The communication state byte
- The communication interface registers
- The communication and statistical counters
- The 5250 transmit activity check (TAC) and timeout error counters
- The LAN Gateway statistical counters.

NWS or PWS Diagnostics Information

Concurrent diagnostics information can be viewed on a NWS or a PWS using the Utility Program. The 5494 must be placed in concurrent diagnostics mode to view this information or the password must be used with the Utility Program. To place the 5494 in concurrent diagnostics mode or to return it to normal mode, do the following steps:

- 1** After the Ready indicator comes on and the 5494 is operational, press **Req**, type **290** on the 5494 keypad then press **Enter**. The Test Mode indicator comes on and the 5494 is now in concurrent diagnostics mode.
- 2** To exit concurrent diagnostics mode, press **Req**, type **291**, then press **Enter**. The Test Mode indicator goes off.

For more information on displaying concurrent diagnostics data on an NWS or a PWS, and the format of the NWS screens, refer to *IBM 5494 Remote Control Unit Maintenance Information*.

Running Extended Diagnostics

To run extended diagnostics, do the following steps:

- 1** Press the 5494 power push button to set the power to **OFF**. Remove the 5494 system diskette.
- 2** Do not insert a diskette into the diskette drive. Press the 5494 power push button to set the power **ON**. The Power-On indicator comes on. The following panel is displayed:

003-02	1
--------	---

- 3** Insert the 5494 system diskette. Type **0** on the 5494 keypad, then press **Enter** to run extended diagnostics. The following panel is displayed:

020-01	1
--------	---

This panel is the extended diagnostics main menu.

For a list of available options and for information on all messages that are displayed during extended diagnostics, look up the message code in the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*, then follow the directions under Customer Action.

Chapter 9. Message Codes and System Reference Codes (SRCs)

Message Codes	9-2
System Reference Codes	9-4
SRCs 100 through 198	9-4
SRCs 0000 through 0177	9-5
SRCs 100000 through FFFFFF	9-18
SRCs FFxxxxxxxxx and **xxxxxxxxx	9-55

This chapter lists message codes and SRCs that may display on the workstation screen or on the 5494 LCD during operation.

Three-digit message codes display on the left side of the panel. SRCs display on workstations, in the 5494 error logs, and on the right side of some panels.

If you are at the 5494 and a message is displayed, see "Message Codes." If you are at a workstation or viewing the error log, see "System Reference Codes" on page 9-4.

Message Codes

Message codes are 3 digits and display on the left side of the panel:

NNN

The right side of the panel may contain an SRC. Look up the message code and follow the directions under Customer Action. For detailed information on the 5494 LCD format, see "LCD Display Format and Operation" on page 8-8.

If multiple errors occur, the error message and associated indicator is displayed for 3 seconds, then the next error message with its indicator is displayed.

When temporary errors are cleared (for example, a link is established after being inactive), the 5494 removes the error message from the LCD.

This section lists message codes 000 through 999.

000

Cause: You pressed **Req**.

Customer Action: Press **Esc** to clear or enter a request number, then press **Enter**.

001 through 099

Cause: Message codes displayed during diagnostic testing.

Customer Action: For more information about these message codes, refer to the *IBM 5494 Remote Control Unit Problem Determination Quick Reference*. Follow the directions under Customer Action.

100 through 198

Cause: There are no message codes in this numeric range.

Customer Action: Check the panel for the correct message code. It is displayed on the left side of the panel.

199

Cause: 5494 hardware error.

Customer Action: A 3-digit SRC displays on the right side of the panel. Look up the SRC in "System Reference Codes" on page 9-4.

200 through 220

Cause: Requested status information.

This is not an error. If the Call 5494 Service or See PD Guide indicator is on, press **Esc** on the keypad to see the correct message.

Customer Action: Press **Esc** to clear.

230

Cause: Request to restart communication on the token-ring or Ethernet.

Customer Action: Press **Enter** to activate or **Esc** to clear.

290

Cause: Request to enable concurrent diagnostics mode.

Customer Action: Press **Enter** to activate or **Esc** to clear.

291

Cause: Request to disable concurrent diagnostics mode.

Customer Action: Press **Enter** to activate or **Esc** to clear.

300 through 310

Cause: Copy configuration from diskette to 5494 storage in progress.

Customer Action: See "Transferring Configuration Data to the 5494" on page 5-9. Press **Esc** if you want to cancel the operation.

351

Cause: System file cannot be read from diskette.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

352

Cause: Configuration does not match your communication cable.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

355

Cause: Diskette write-protect error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

356

Cause: Diskette write error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

359

Cause: Configuration data not valid.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

361

Cause: Configuration data not found in 5494 storage or on 5494 system diskette.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

363

Cause: AS/400 system communication cable not attached.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

364

Cause: A Token-Ring or Ethernet adapter is not present.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

410

Cause: Physical link error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

420

Cause: X.25 network error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

430

Cause: X.21 network error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

440

Cause: V.25 bis error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

450

Cause: SNA communication error.

Customer Action: An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

460

Cause: Token-Ring error.**Customer Action:** An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes" on page 9-4.

710

Cause: 5494 code correction file problem.**Customer Action:** An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes."

720

Cause: 5494 code failure.**Customer Action:** An SRC displays on the right side of the panel. The SRC will be 4 or 6 digits. Look up the SRC in "System Reference Codes."

721

Cause: The controller attempted to write an error dump file to the 5494 System Diskette because of a failure in the operational microcode. However, the 5494 System Diskette was damaged or missing.**Customer Action:** Write down the SRC displayed on the operator panel. Insert a 5494 System Diskette into the controller and press **Enter** to attempt to write to the error dump file again. Contact 5494 Service and report the SRC.

The 5494 reinitializes after the error dump file is written.

722

Cause: The controller attempted to write an error dump file to the 5494 System Diskette because of a failure in the operational microcode. However, the 5494 System Diskette was write-protected.**Operator Response:** An SRC displays on the right side of the panel. Write down the SRC. Close the write-protect tab on the 5494 System Diskette. Press **Enter** to attempt to write to the error dump file again. Contact 5494 service and report the SRC.**Note:** The 5494 reinitializes automatically after approximately two minutes if you don't press **Esc** or **Enter** first.

730

Cause: 5494 code failure.**Customer Action:** Write down the SRC including the asterisks (*). Call 5494 Service and report this SRC.

999

Cause: You pressed **Req** followed by a request number that was not valid.**Customer Action:** Press **Esc** to clear the panel. Try the operation again.

System Reference Codes

SRCs are displayed on workstations, in the 5494 error log, or on the right side of some LCD panels. SRCs are 3 to 6 digits, or 12 digits.

The SRCs are organized into the following sections and, within each section, they are listed in numeric order:

- SRCs 100 through 198 are listed under "SRCs 100 through 198."
- SRCs 0000 through 0177 are listed under "SRCs 0000 through 0177" on page 9-5.
- SRCs 100000 through FFFFFF are listed under "SRCs 100000 through FFFFFF" on page 9-18.
- SRCs FFxxxxxxxx through **xxxxxxxx are listed under "SRCs FFxxxxxxxx and **xxxxxxxx" on page 9-55.

SRCs 100 through 198

The following SRCs are 5494 hardware SRCs and are always 3 digits. They are not the same as SRCs 0100-0198. SRCs 0100 through 0198 are seen only in an error log. Refer to *IBM 5494 Remote Control Unit Maintenance Information* for information on SRCs 0100-0198.

100 through 114

Cause: You have a problem with the 5494.**Customer Action:** Call 5494 Service and report this SRC.

115 through 117

Cause: You have a problem with the 5494.

Customer Action: Press the 5494 power push button to set the power **OFF**. The Power-On indicator goes off. Press the 5494 power push button to set the power **ON**. The Power-On indicator comes on. If this problem occurs again, call 5494 Service and report this SRC.

118

Cause: You have a problem with the 5494.

Customer Action: Call 5494 Service and report SRC 118.

119

Cause: A power disturbance has caused the 5494 to set the power to **OFF**.

Customer Action: Press the 5494 power push button to set the power to **OFF**. The Power-On indicator goes off. Press the 5494 power push button to set the power **ON**. The Power-On indicator comes on. If this problem continues to occur, call 5494 Service and report SRC 119.

120

Cause: An error was detected during the 5494 self-test.

Customer Action: Press **Enter** on the 5494 keypad to run extended diagnostics. Refer to the *IBM 5494 Remote Control Unit Problem Determination Quick Reference* for more information about message codes that are displayed during the test. Follow the directions under Customer Action for each message code.

If further testing displays a new SRC, call 5494 Service and report the new SRC. If a new SRC is not provided, call 5494 Service and report SRC 120.

122

Cause: The 5494 system diskette may be write-protected.

Customer Action: Make sure that the write-protect tab is closed on the 5494 system diskette. (The diskette is not write-protected.) If the write-protect tab was already closed, call 5494 Service and report SRC 122.

123

Cause: The 5494 date or time is not valid.

Customer Action: Press **Enter**. The Set Date and Time function of extended diagnostics begins. Refer to the *IBM 5494 Remote Control Unit Problem Determination Quick Reference* for more information. If this error occurs again, call 5494 Service and report SRC 123.

124 and 125

Cause: The 5494 system diskette may be damaged.

Customer Action: Install the backup copy of the 5494 system diskette and start the 5494 again. If this error occurs with the backup 5494 diskette, call 5494 Service and report this SRC.

126 through 174

Cause: You have a problem with the 5494.

Customer Action: Call 5494 Service and report this SRC.

175 through 198

Cause: You have a problem with the 5494.

Customer Action: Call 5494 Service and report this SRC.

SRCS 0000 through 0177

The following SRCS may be displayed as 4-digit SRCS or as 6-digit SRCS with leading zeroes.

0000

Cause: Help key not allowed.

You pressed Help. However, either no SRC was displayed or the application program does not support Help.

Customer Action: Press **Error Reset**. Continue entering information or refer to the meaning for the previously displayed SRC and do the recovery procedure.

0001

Cause: Keyboard overrun.

A keyboard overrun occurred because the 5494 could not keep up with the rate at which you were entering information. The last character entered was not recognized. If type ahead has been enabled, your buffer is full.

Customer Action: Press **Error Reset** and continue entering information.

0002

Cause: Incorrect scan code.

The 5494 received an incorrect scan code from the workstation's keyboard. Either the scan code is incorrect for the keyboard at the workstation, or an error occurred in translating the keystroke.

Customer Action: Press **Error Reset** and try to continue entering the data. If the error occurs again, check the language code entered in the configuration for the workstation's keyboard. If the keyboard language code entered in the configuration is correct, contact the workstation service representative and report the problem.

0003

Cause: Command or PF key not valid.

You pressed a Command key sequence, a PF key that is not supported or not valid for the current field, or an Alt key sequence that is not valid.

Customer Action: Press **Error Reset** and continue, using the correct keys.

0004

Cause: Data not allowed in this field.

You tried to enter data from the keyboard into a field where only an entry from a magnetic stripe reader or a light pen is allowed.

Customer Action: Press **Error Reset**. Move the cursor to a field where data from the keyboard can be entered.

0005

Cause: Cursor in protected area of display.

You have tried to enter data. However, the cursor is not in an input field on the display. Data cannot be entered in a protected area of the display.

Customer Action: Press **Error Reset** and move the cursor to a valid input field.

0006

Cause: Key following Sys Req Key is not valid.

You pressed a key that is not valid after pressing the Sys Req Key and before pressing Enter/Rec Adv or Error Reset.

Customer Action: Press **Error Reset** and use a valid key sequence.

0007

Cause: Mandatory entry field; you must enter data.

There is at least one field on the screen into which you must enter data before the screen can be changed or processed. (The cursor goes to the first character position of the first mandatory entry field.)

Customer Action: Press **Error Reset** and enter the required data.

0008

Cause: This field must have alphabetic characters.

You tried to enter non-alphabetic characters into a mandatory alphabetic field. Valid characters are A through Z, space, comma (,), period (.), hyphen (-), apostrophe ('), and Dup. Dup can be used to duplicate these characters in the field.

Customer Action: Press **Error Reset** and continue, using valid characters.

0009

Cause: This field must have numeric characters.

You tried to enter nonnumeric characters into a numeric-only field. Valid characters are 0 through 9, space, comma (,), period (.), plus (+), minus (-), and Dup. Dup can be used to duplicate these characters in the field.

Customer Action: Press **Error Reset** and continue, using valid characters.

0010

Cause: Only characters 0 through 9 allowed.

The key pressed is not valid for a signed numeric field. Valid entries are 0 through 9 and Dup.

Customer Action: Press **Error Reset** and continue, using valid characters.

0011

Cause: You tried to enter data into the last position of a signed numeric field.

Customer Action: Press **Error Reset**. Make sure that the data is correct, and then exit the field by using Field-, Field+, or Field Exit.

0012

Cause: Insert mode; no room to insert data.

There is no room to insert data into this field. Either there is no more room in the field or the cursor is in the last position of the field.

Do not use insert mode to change data or to enter the last character into this field.

Customer Action: Press **Error Reset**. Correct the field, if necessary, and continue.

0013

Cause: Insert mode; only data keys permitted.

You tried to exit a field while the workstation was still in insert mode.

Customer Action: Press **Error Reset**, and then press **Field Exit** to exit this field.

0014

Cause: Must fill field to exit.

You pressed a function key that would move the cursor out of this field. However, the requirements of this mandatory-fill field were not met. A mandatory-fill field must be completely filled or left blank.

Customer Action: Press **Error Reset**. Type data to fill the entire field, or move the cursor to the start of the field and use Field–, Field+, or Field Exit to erase the contents of the field.

0015

Cause: Modulo 10 or 11 check digit error. You entered data into a self-check field, and the number you entered and the check digit do not compare.

Customer Action: Press **Error Reset**. Make sure that you have correctly entered the number and check digit. If you entered them correctly, make sure that the number is valid for a self-check field. If the numbers you are using are valid but this error still occurs, contact the workstation service representative and report the problem.

0016

Cause: Field– not valid in this field.

You pressed Field– when the cursor was not in a numeric-only, digits-only, or signed numeric field.

Customer Action: Press **Error Reset**. Continue to enter data or press **Field Exit** to exit the field.

0017

Cause: Mandatory-fill field; key pressed is not valid.

You pressed Field–, Field+, or Field Exit. However, the requirements for this mandatory-fill field were not met. A mandatory-fill field must be completely filled unless you exit it from the first position of the field.

Customer Action: Press **Error Reset**. Enter data to the end of the field, or move the cursor to the start of the field and use Field–, Field+, or Field Exit to erase the contents of the field.

0018

Cause: Key used to exit this field not valid.

The cursor is in a right-adjust or field-exit-required field, and you pressed a data key.

Customer Action: Press **Error Reset**, and then press **Field Exit** to exit this field.

0019

Cause: Dup or Field Mark not permitted in this field.

You pressed Dup or Field Mark. However, the key is not permitted in this field.

Customer Action: Press **Error Reset**. Continue without using Dup or Field Mark in this field.

0020

Cause: Function key not valid for right-adjust field.

You pressed a function key that is not permitted in this field. Press Field–, Field+, or Field Exit to exit this field before pressing one of the following function keys:

- Test Req
- Clear
- Enter/Rec Adv
- Print
- Help
- Roll
- Home (when the cursor is in the home position)
- PF/Cmd1-24
- Sys Req
- Rec Backspace.

Customer Action: Press **Error Reset**. The cursor is in the same position that it was when you pressed the key that is not valid. Continue by pressing Field–, Field+, or Field Exit.

0021

Cause: Must enter data in mandatory entry field.

The cursor is positioned in a mandatory entry field. You must enter data into a mandatory entry field before you can exit the field by pressing Field-, Field+, or Field Exit. You can exit from any position if no data is entered.

Customer Action: Press **Error Reset** and type the required data.

0022

Cause: An AS/400 system error occurred. The status of the current field is not known. This error can occur during an insert or delete operation.

Customer Action: Press **Error Reset**. Check the display screen and correct the insert or delete operation.

0023

Cause: Hexadecimal mode; entry not valid.

The workstation is in hexadecimal mode but the first key pressed was not a character 4 through 9 or A through F, or the second key pressed was not a character 0 through 9 or A through F.

This error also occurs when a hexadecimal code is used in a numeric-only, signed numeric, digits-only, alphabetic-only, or I/O field.

Customer Action: Press **Error Reset**. Continue by pressing the correct keys.

0024

Cause: Decimal field; entry not valid.

You pressed a key that is not valid. Only characters 0 through 9 and Dup (if specified in the field format word) are allowed in this field.

Customer Action: Press **Error Reset** and continue by entering digits in this field.

0026

Cause: Field- entry not allowed.

You pressed Field- to exit a numeric-only field but the last position of the field was not a character 0 through 9.

Customer Action: Press **Error Reset**. Correct the last position of this field or exit the field by using a key other than Field- (for example, Field+ or Field Exit).

0027

Cause: Cannot use undefined key.

You pressed a key that is either blank or not defined for your workstation.

Customer Action: Press **Error Reset** and continue, using valid keys.

0029

Cause: Diacritic character not valid.

The second key pressed during a diacritic key function did not produce a valid diacritic character.

Customer Action: Press **Error Reset** and type a valid combination.

0031

Cause: Data buffer overflow.

The data received from the magnetic stripe reader (MSR) card was longer than the maximum allowed.

Customer Action: Press **Error Reset** and use another MSR card.

0032

Cause: MSR error.

The data from the magnetic stripe reader (MSR) card was not received correctly.

Customer Action: Press **Error Reset** and pass the card through the MSR again. If the error is still present after several attempts, contact the MSR service representative and report the problem.

0033

Cause: MSR data not authorized.

The data received from the magnetic stripe reader (MSR) card was secured data (for example, an operator ID card), and this field was not specified for secured data.

Customer Action: Press **Error Reset** and continue, using a correct MSR card.

0034

Cause: Magnetic stripe reader (MSR) data exceeds length of field.

The data received from the MSR card will not fit into the active input field.

Customer Action: Press **Error Reset**. Pass another card through the MSR. If the error is still present, contact the AS/400 system operator and report a possible programming error.

0035

Cause: MSR error.

The card to be read was incorrectly inserted into the magnetic stripe reader (MSR), was incorrectly made, or is damaged.

Customer Action: Press Error Reset. Put the card to be read through the MSR again. If the error is still present after several attempts, try another MSR or test the MSR card to make sure that the problem is not caused by a defective card. If the error is still present, contact the MSR service representative and report the problem.

0036

Cause: Cursor select not allowed in field exit required state.

You pressed Cursor Select while in field-exit-required state.

Customer Action: Press Error Reset.

Complete the current field or use Field Exit or Field Backspace to position the cursor.

0037

Cause: You pressed Cursor Select in a non-selectable field.

Customer Action: Press Error Reset. Then position the cursor to a field where the cursor select function is valid. For more information, refer to your workstation operator's guide.

0038

Cause: Light pen and magnetic stripe reader (MSR) not allowed.

You attempted to use the selector light pen or magnetic stripe reader (MSR) while using text processing. These functions are not valid for text processing.

Customer Action: Press Error Reset.

0040

Cause: The modem or data circuit-terminating equipment (DCE) is not ready for one of the following reasons:

- The data set ready (DSR) line is inactive (EIA 232D or V.35 interface).
- The modem or DCE is not ready (X.21 interface).
- The communication cable is not connected securely at both ends.

Customer Action: Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned ON
- Communication line is attached to the modem.

If you find no problems:

For a new or changed installation or configuration:

1. Verify that the 5494 configuration and the equipment match. If your communication mode is SDLC, pay particular attention to the setting for the communication line type. Valid selections are:

- Leased line
- Switched line
- Switched line/V.25 bis.

If the communication line type is correct, continue with step 2. If not, correct the setting and retry the job.

For an existing or unchanged installation or configuration:

2. To verify that the problem is not in the 5494 or 5494 communication interface cable, turn OFF and turn ON the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.

- If a different SRC is displayed, follow the Customer Action for that SRC.
- If the same SRC reoccurs, contact one of the following:
 - The network service representative and report that the network is out of service, or that no signal is being received from the modem or DCE
 - The modem service representative and report that the DSR line from the modem is inactive when it should be active.

0041

Cause: X.25: Idle condition has been detected. The receive line was idle for 15 or more contiguous bit-times.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or data circuit-terminating equipment (DCE) is securely connected
 - Modem or DCE is turned ON
 - Communication line is attached to the modem.

2. To verify that the problem is not in the 5494 or 5494 communication interface cable, turn **OFF** and turn **ON** the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.
 - If a different SRC is displayed, follow the Customer Action for that SRC.
 - If the same SRC reoccurs, contact the network service representative and report that the indicate lines (X.21 interface) or the received line signal detector (RLSD) line (EIA 232D or V.35 interface) is inactive when it should be active.

0042

Cause: The receive clock signal is not being received from the modem or data circuit-terminating equipment (DCE).

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or data circuit-terminating equipment (DCE) is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.
2. To verify that the problem is not in the 5494 or 5494 communication interface cable, turn **OFF** and turn **ON** the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.
 - If a different SRC is displayed, follow the customer action for that SRC.
 - If the same SRC reoccurs, report the problem to the modem or communication network service representative.

0043

Cause: The 5494 attempted to disconnect from the line, but the data set ready (DSR) signal was not deactivated by the modem or DCE.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.

If you find no problems, continue with step 2.

2. **For a new or changed installation or configuration:** Verify that the 5494 and DCE or modem are configured for the correct communication line type. Pay particular attention to the configuration for:
 - Line type
 - Connection method.

If configuration is correct, continue with step 3. If not, correct the setting and retry the job.

3. **For an existing or unchanged installation or configuration:** To verify that the problem is not in the 5494 or 5494 communication interface cable, turn **OFF** and turn **ON** the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.

- If a different SRC is displayed, follow the Customer Action for that SRC.
- If the same SRC reoccurs, report the problem to the modem or DCE or network service representative.

0044

Cause: Switched lines: This error indicates that no valid data has been received for 30 seconds. The 5494 disconnected the line.

LAN: The 5494 did not receive a valid frame before the (Ti) timer expired.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.

2. **For a new or changed installation or configuration:**

- a. Verify that the 5494 is configured correctly. For SDLC, pay particular attention to the setting for the communication line type. Valid entries are:
 - Leased line
 - Switched line
 - Switched line/V.25 bis.

For Token-Ring or Ethernet, verify that the 5494 is configured correctly. Pay particular attention to the LAN Ti timer.

- b. If the configuration is correct for your system, continue with step 3 on

page 9-11. If not, correct the setting and retry the job.

- 3. For an existing or unchanged installation or configuration:** To verify that the problem is not in the 5494 or 5494 communication interface cable, turn **OFF** and turn **ON** the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.

- If a different SRC is displayed, follow the Customer Action for that SRC.
- If the same SRC reoccurs, do one of the following:

SDLC: Contact the AS/400 system operator and report that the problem is with the network, AS/400 system, or modem or DCE.

X.25: If the 5494 is attached to an X.25 network, contact the X.25 network service representative.

X.21: If the 5494 is attached to an X.21 switched network, contact the X.21 network service representative.

LAN: If the 5494 is attached to a Token-Ring or Ethernet network, try increasing your Ti value. Otherwise, contact the LAN administrator.

0045

Cause: X.25: The data circuit-terminating equipment (DCE) will not activate. Either a Disconnect mode (DM) or a Disconnect (DISC) command was received during the link setup sequence.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.
2. Restart communication and retry the procedure. If this SRC occurs again, contact your network service representative and report the problem.

Probable cause: Modem, DCE, or network failure.

0046

Cause: X.25 or LAN: Frame reject received. The 5494 received a frame reject (FRMR) from the network, indicating that an error was detected in the last frame transmitted.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.
 2. If no problem is found, retry the procedure used to start AS/400 system communication. If this SRC occurs again, contact the network service representative or Token-Ring Administrator and report the problem.
- Probable cause: Modem, DCE, or network failure.

0047

Cause: X.25 or LAN: An unexpected Disconnect mode (DM) or a Disconnect (DISC) command was received while in information transfer state.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.
2. If no problem is found, restart communication and retry the job.

If this SRC occurs again, contact your network service representative or Token-Ring Administrator and report the problem.

Probable cause: Modem, DCE, or network failure.

0048

Cause: X.25: An unexpected unnumbered acknowledgment (UA) frame was received.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**

- Communication line is attached to the modem.
2. If no problem is found, restart communication and retry the job.

If this SRC occurs again, contact your network service representative and report the problem.

0049

Cause: LAN: A set asynchronous balance mode extended (SABME) was received while the 5494 was in information transfer state.

Customer Action: Restart communication and retry the job. If this SRC occurs again, contact the LAN Administrator and report the problem.

0050

Cause: Error in ready-for-sending (RFS) signal, also known as the clear-to-send (CTS) signal, received from the modem or data circuit-terminating equipment (DCE). This error is posted when one of the following has occurred:

- The RFS line is inactive for up to 30 seconds while the ready-to-send (RTS) line is active.
- The RFS line is active when the RTS line is inactive (except during V.25 bis call establishment).

Customer Action: Verify that the:

- 5494 cable to the modem or DCE is securely connected
- Modem or DCE is turned ON
- Communication line is attached to the modem.

If no problem is found and the 5494 is attached to an X.25 network, continue with step 2.

For a new or changed installation or configuration:

1. Make sure that the following 5494 configuration settings are correct for your communication line and match the configuration of your modem:

- Half-duplex or duplex
- Multipoint or point-to-point.

If the settings are correct, continue with step 2. If not, correct the settings and retry the job.

For an existing or unchanged installation or configuration:

2. To verify that the problem is not in the 5494 or 5494 communication interface cable, turn OFF and turn ON the 5494 to run power-on

diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.

- If a different SRC is displayed, follow the Customer Action for that SRC.
- If the same SRC reoccurs, contact the modem or DCE service representative and report that the RFS signal received from the modem or DCE is not correctly responding to the RTS signal sent from the 5494.

0051

Cause: The transmit clock from the modem or data circuit-terminating equipment (DCE) failed during a transmit operation.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned ON
 - Communication line is attached to the modem.
2. To verify that the problem is not in the 5494 or 5494 communication interface cable, turn OFF and turn ON the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.
 - If a different SRC is displayed, follow the Customer Action for that SRC.
 - If the same SRC reoccurs, contact the modem or DCE service representative and report that the transmit clock signal from the DCE or modem is failing.

0052

Cause: The link adapter hardware failed to complete a transmit operation within 30 seconds, but no transmit clock or other modem or data circuit-terminating equipment (DCE) signal failure was detected.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or data circuit-terminating equipment (DCE) is securely connected
 - Modem or DCE is turned ON
 - Communication line is attached to the modem.
2. To verify that the problem is not in the 5494 or 5494 communication interface cable, turn OFF and turn ON the 5494 to run power-on

diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.

- If a different SRC is displayed, follow the Customer Action for that SRC.
- Retry the link establishment procedures to start AS/400 system communication. If the same SRC reoccurs, contact 5494 Service and report the problem.

0053

Cause: X.25: The retry count has expired. No acknowledgment of a transmission was received within the allowed timeout. Timeout retry count (N2) and retry interval (T1) are specified in the 5494 configuration.

Customer Action:

1. Verify that the:
 - 5494 cable to the modem or DCE is securely connected
 - Modem or DCE is turned **ON**
 - Communication line is attached to the modem.

If no problem is found, continue with step 2.

2. **For a new or changed installation or configuration:** Verify that the 5494 is configured correctly. Pay particular attention to the settings for timeout retry count (N2) and retry interval (T1). If necessary, contact your network service representative for recommended N2 and T1 values.

For an existing or unchanged installation or configuration: To verify that the problem is not in the 5494 or 5494 communication interface cable, turn **OFF** and turn **ON** the 5494 to run power-on diagnostic tests. Wait for about 30 seconds after the Ready indicator comes on.

- If a different SRC is displayed, follow the customer action for that SRC.
- If the same SRC reoccurs, contact the X.25 network service representative and report the problem.

0054

Cause: Frame reject (FRMR) sent. The 5494 sent a link-level FRMR response to the AS/400 system after receiving a data link control (DLC) or link access procedural balanced (LAPB) command that is not valid. Sense bytes S1, S2, and S3 preserve the contents of the FRMR I-field.

Customer Action:

1. Restart communication with the AS/400 system and retry the job.

2. If this SRC occurs again:

- **SDLC, X.21, or Token-Ring:** Contact the AS/400 system operator and report a possible programming error.
- **X.25:** Contact your network service representative and report that the network sent the 5494 a LAPB command that was not valid.

0055

Cause: The 5494 ran a cable wrap test and determined that the communication cable is not attached to the 5494.

Customer Action: Determine if the communication cable is securely attached to the 5494.

If the cable is securely attached: The cable is defective. Replace the cable.

If the cable is not securely attached:

1. Attach the communication cable to the 5494.
2. Press the 5494 power push button to set the power **OFF**. The Power-On indicator goes off.
3. Press the 5494 power push button to set the power **ON**. The Power-On indicator comes on.
4. Retry the operation.

0056

Cause: The link between the AS/400 system and the 5494 was lost. A bridge failure occurred, the AS/400 system has varied off line, or a node in an SNA Subarea network has failed.

Customer Action: Make sure the LAN configuration parameters allow sufficient time for delays due to the bridge restart program. Try increasing the Ti timer value. If the error reoccurs, report the error to the LAN Administrator.

0060

Cause: Ideographic support SRC: You attempted to enter alphanumeric data into a field that accepts only double-byte data characters.

Bidirectional support SRC: You pressed a key that is not valid within an embedded segment. The cursor is within an embedded segment or on an end reverse control character.

Customer Action: For an ideographic error,

press **Error Reset** at the workstation and type the correct information into the field.

For a bidirectional error, press **Error Reset** at the workstation.

0061

Cause: **Ideographic support SRC:** You attempted to enter a double-byte character into a field that accepts only alphanumeric data.

Bidirectional support SRC: You pressed a key that is not valid outside an embedded segment. The cursor is outside an embedded segment or on a begin reverse control character.

Customer Action: For an ideographic error, press **Error Reset** and type the correct information at the workstation.

For a bidirectional error, press **Error Reset** at the workstation.

0062

Cause: You attempted to change the data type, but the cursor is not in an open field or in the first position of an ideographic either field.

Customer Action: Press **Error Reset** and type the correct information.

0063

Cause: You entered an ideographic character that is not valid while operating in Alternate Entry mode.

Customer Action: Press **Error Reset** and type the correct information into the field.

0064

Cause: You pressed a key that is not valid for the current keyboard mode.

Customer Action: Press **Error Reset** and type the correct information into the field at the workstation.

0065

Cause: The cursor is positioned in a column reserved for shift-out or shift-in characters.

Customer Action: Press **Error Reset** and type the correct information into the field at the workstation.

0066

Cause: Repeat key not valid. The cursor is positioned under a shift character or attribute character, or at the first valid entry character position of an input field. Only data characters can be repeated at these positions.

Customer Action: Press **Error Reset** and type the correct information into the field at the workstation.

0067

Cause: The workstation extension character RAM is full. Any additional extension characters display as special default characters.

Customer Action: Press **Error Reset** and type the correct information into the field at the workstation.

0068

Cause: The output data stream to the 5494 is not valid for extension characters. Any additional extension characters display as special default characters.

Customer Action: Press **Error Reset** and type the correct information into the field at the workstation.

0069

Cause: **Ideographic support SRC:** The output data stream to the 5494 contains extension characters that are not valid or are undefined. Any additional extension characters display as special default characters.

Bidirectional support SRC: The Automatic Shape Determination process cannot insert a terminating character (tail).

Customer Action: For an ideographic error, at the workstation, press **Error Reset** and type the correct information into the field. For a bidirectional error, at the workstation, press **Error Reset**.

0070

Cause: An error occurred during the word spill function or the carriage return function.

Customer Action: At the workstation, press **Error Reset**. For more information, press Help. If you are using DisplayWrite*, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0071

Cause: You attempted a start copy, move, or delete text operation while one of the previous operations was already in progress.

Customer Action: At the workstation, press **Error Reset**. Try the operation again when the operation in progress is complete. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0072

Cause: The key pressed is not valid when the cursor is in the current position.

Customer Action: At the workstation, press **Error Reset**, move the cursor to the correct position, and try again. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0073

Cause: An attempt was made to delete or replace an instruction or format change when the general prompt function was not active.

Customer Action: At the workstation, press **Error Reset** and press the general prompt command key to delete or replace instruction and format change characters. For more information, press **Help**. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0074

Cause: A key was pressed that is not valid when using the general prompt function.

Customer Action: At the workstation, press **Error Reset**. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0075

Cause: The find function failed to find the keyed characters.

Customer Action: At the workstation, press **Error Reset** and try the operation again when the operation in progress is complete. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0076

Cause: The insert function failed because the AS/400 system has not processed the text on the screen.

Customer Action: At the workstation, press **Error Reset**, wait until the AS/400 system processes the text on the screen, and try again. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0077

Cause: You either pressed a function key that is not valid at this time or tried to use a 3270 keyboard function while in word-processing mode.

Customer Action: At the workstation, press **Error Reset**. If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

0078

Cause: The required scale line is not defined for your workstation. There is an error in the application program.

Customer Action: If you are using DisplayWrite, a message similar to the information provided here is displayed. The SRC is displayed only after you press Help.

Contact the application programmer or supplier for the application program and report the error.

0081

Cause: Too many workstations are attached to the 5494. The 5494 with LAN adapter installed allows a maximum of 80 devices.

For Model 001: Error not possible.

For Model 002:

- Base 5494 allows a maximum of 40 devices
- Twinaxial Expansion Kit allows a maximum of 56 devices
- Token-Ring Upgrade Kit allows a maximum of 80 devices.

Customer Action: Determine which workstations are extra and disconnect them.

0082

Cause: Keyboard function is not valid within a selection field. These invalid functions include Dup, Erase EOF, and Field Mark.

Customer Action: Press **Error Reset**, and enter the correct information in the field at the workstation.

0083

Cause: A selection character is not valid. The numeric or mnemonic character you entered is not associated with any of the choices defined within the current selection field.

Customer Action: Press **Error Reset** and type a valid selection character.

0084

Cause: An attempt has been made to select an unavailable selection field.

Customer Action: Press **Error Reset** and select an available selection field.

0087

Cause: X.25: A flow control entry error has occurred. The 5494 configuration settings for Flow Control Negotiation and Manual Options Allowed are not compatible. If the configuration setting for Flow Control Negotiation is permitted, then Manual Options must be allowed.

Customer Action: Make sure that the settings in the 5494 configuration for X.25 communications match your X.25 communication worksheet. Pay special attention to the settings for Flow Control Negotiation and Manual Options Allowed. If these settings:

- Match, report the problem to your system planner.
- Do not match, change the incorrect values.

0089

Cause: One or more fields required for the operation of the 5494 are blank. When you press Enter, the 5494 checks for blank fields and moves the cursor to the first blank.

Customer Action: Press **Error Reset** and fill in the required field.

008A

Cause: One or more fields contain an embedded blank. When you press Enter, the 5494 checks for embedded blanks and moves the cursor to the first embedded blank.

Customer Action: Press **Error Reset** and fill in the embedded blank.

008B

Cause: Too many different keyboard codes have been used. A maximum of 4 different keyboard codes can be selected (the master country and 3 others).

Customer Action: Contact your system planner to determine which 4 keyboard codes to use, and then correct the configuration.

008D

Cause: Printer port and station values are not valid. Valid ports for the Twinaxial Expansion Kit are 4–7. Valid stations are 0–7.

Customer Action: Check the configuration. Make sure that the printer port and station address are either both numbers or both underscores. If a printer was selected, both subfields should be numbers. If not, both should be underscores.

008E

Cause: One or more fields contain an insufficient number of characters. The cursor is positioned in the field that contains an insufficient number of characters.

Customer Action: Press **Error Reset**. Refer to the configuration worksheets for the correct field value. If you entered the value incorrectly, correct the entry. If the value from the configuration worksheets is not correct, contact your system planner for the correct information.

008F

Cause: One or more fields contain a value that is outside the valid range. The cursor is placed under the first character of the field with a value that is out of range.

Customer Action: Press **Error Reset**. Refer to the configuration worksheets for the correct field value. If you entered the value incorrectly, correct the entry. If the value from the configuration worksheets is not correct, contact your system planner for the correct information.

0091

Cause: Reverse and Close keys are not supported in a Word Wrap entry field.

Customer Action: Press **Error Reset**. Do not use the Reverse or Close keys in this field.

0092

Cause: The reverse key is not supported on a display which is configured for shared addressing.

Customer Action: Press **Error Reset**. Do not use the reverse key.

0097

Cause: A test request function is not supported by the AS/400 system.

Customer Action: Contact the AS/400 system operator and determine why the function is not supported.

0098

Cause: Undefined hardware error.

The 5494 entered an error handling routine but did not detect an error.

Customer Action: Press **Error Reset**.

0099

Cause: A key requiring AS/400 system action was pressed, but one of the following has occurred:

- The requested function is not supported.
- The workstation is not in session with the AS/400 system.

Customer Action: Select the action that is appropriate for the current status of the workstations or printers:

- If this error occurs while you are establishing communication with the AS/400 system, press **Error Reset** and retry the operation.
- If this error occurs while you are trying to configure the 5494, you did not put the 5494 in configuration mode, or configuration is in process at another workstation or at the 5494 LCD display. Follow the steps under "Configuring the 5494 from an NWS" on page 5-11 to place the 5494 in configuration mode.
- If there is at least one workstation with a signon screen displayed, contact the AS/400 system operator and determine if all

workstations and printers attached to the 5494 are online.

If all attached workstations and printers are online, report to the AS/400 system operator that a mismatch may exist between the actual 5494 cluster configuration and the AS/400 system configuration record.

- If there is only one workstation attached to the 5494, contact the AS/400 system operator and have the workstation brought online.

009A

Cause: An invalid password has been entered three times in an attempt to access concurrent diagnostics from a PWS.

Customer Action: Determine the correct password and retry the operation or place the 5494 in TEST mode by pressing REQ, 290, Enter at the operator panel.

0170

Cause: A problem with an attached workstation has been detected. The workstation failed to detect the end of a printer definition table (PDT). Sense data is 00.

Customer Action: Contact your AS/400 system operator.

0172

Cause: A problem with an attached workstation has been detected. The workstation detected invalid data in a printer definition table (PDT) sent to it from the AS/400 system. The sense data is 00ccxxxxyyyyyy, where cc is the command code of the definition containing invalid data, xx is the offset from the command to invalid data in bytes, and yyyy is additional error data.

Customer Action: Contact your AS/400 system operator.

0173

Cause: A problem with an attached workstation has been detected. The workstation received a printer definition table (PDT) that was larger than its maximum size. Sense data is 00xxxxyyy, where xxxx is the workstation's maximum PDT size, and yyyy was the size of the PDT sent to the display by the AS/400 system.

Customer Action: Contact your AS/400 system operator.

0176

Cause: A problem with an attached workstation has been detected. The workstation received a microcode correction file from the AS/400 system that was in error. The sense data defines the error as follows:

- 001 The workstation failed to detect the end of the file
- 0002yyyyyy The workstation detected invalid data in the file.
yyyyyyyy Additional error data
- 0003xxxxyyy The size of the file is too large for the workstation.
xxxx Workstation's maximum file size
yyyy Size of the file sent to the workstation

Customer Action: Contact your AS/400 system operator.

0177

Cause: A problem with an attached workstation has been detected. The workstation received a font file from the AS/400 system that was in error. Sense data defines the error as follows:

- 001 The workstation failed to detect the end of the file.
- 0002yyyyyy The workstation detected invalid data in the file.
yyyyyyyy Additional error data
- 0003xxxxyyy The size of the file is too large for the workstation.
xxxx Workstation's maximum file size
yyyy Size of the file sent to the workstation

Customer Action: Contact your AS/400 system operator.

SRCS 100000 through FFFFFF

The following SRCs are always six digits.

100000

Cause: X.25: A previous command is still in progress.

Customer Action: Wait until the previous command is complete or an SRC other than 100000 is displayed.

100100

Cause: X.25: A virtual circuit has already been established. The 5494 can communicate over only one virtual circuit at a time.

Customer Action: Wait for the virtual circuit currently in use to be detached before you retry your command. If you want to detach the circuit manually, see "Ending a Communication Link" on page 7-18.

100200

Cause: X.25: An ANSWER command was entered for a PVC.

Customer Action: If you are trying to initiate communication on a PVC, use the Open (O) command.

If you are trying to initiate communication on an SVC, then your 5494 configuration is incorrect. (The virtual circuit type for this 5494 is defined as PVC only.) Verify the 5494 configuration. Pay particular attention to the setting for virtual circuit type. The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Try to restart communication with the AS/400 system. If still unsuccessful, call the AS/400 system operator.

100300

Cause: X.25: A CALL command was entered for a PVC.

Customer Action: If you are trying to initiate communication on a PVC, use the Open (O) command.

If you are trying to initiate communication on an SVC, then your 5494 configuration is incorrect. (The virtual circuit type for this 5494 is defined as PVC only.) Verify the 5494 configuration. Pay particular attention to the setting for virtual circuit type. The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Try to restart communication with the AS/400 system.

If still unsuccessful, call the AS/400 system operator.

100400

Cause: X.25: The logical channel ID entered is not valid because it is not three characters long.

Customer Action: Retry with the correct entry.

100500

Cause: X.25: The logical channel ID entered is not valid because it is not a hexadecimal value between 001 and FFF.

Customer Action: Retry with the correct entry.

100600

Cause: X.25: The password entered is not valid because it is longer than eight characters.

Customer Action: Retry with the correct entry.

100A00

Cause: X.25: You attempted to enter manual options or flow control negotiations from the keyboard, and the 5494 is not configured to allow the option.

Your 5494 configuration may be incorrect.

Customer Action: Verify the 5494 configuration. Pay particular attention to the settings for Flow Control Negotiation and Manual Options Allowed.

100B00

Cause: X.25: The facility entered contains characters that are not hexadecimal (0 through 9 or A through F).

Customer Action: Retry with the correct entry.

100C00

Cause: X.25: The packet window size entered is not valid because it is less than 02.

Customer Action: Retry with the correct entry.

100D00

Cause: X.25: The packet window size entered is not valid because it is greater than 07 and modulo 8 is specified for this subscription.

Customer Action: Press Error Reset.

- If your subscription is for modulo 8, then choose a value that is equal to or less than 07.

- If your subscription is for modulo 128 and you received this error, you have configured the 5494 for modulo 8 instead of modulo 128. Change the value for packet level sequence numbering from modulo 8 to modulo 128 in the 5494 configuration. (Refer to the AS/400 Communication Worksheet—to verify this value.)

Try to restart communication with the AS/400 system.

100E00

Cause: X.25: The packet window size entered is not valid because it is greater than 15 and modulo 128 is specified.

Customer Action: Retry with the correct entry.

100F00

Cause: X.25: The packet size is not equal to 064, 128, 256, or 512.

Customer Action: Retry with the correct entry.

101000

Cause: X.25: The closed user group option does not contain 2 decimal digits.

Customer Action: Retry with the correct entry.

101100

Cause: X.25: A circuit command was entered that is not valid.

Customer Action: The first entry following (Hx,) must be a C (CALL), A (ANSWER), O (OPEN), or D (DISCONNECT). Correct your entry and retry.

101300

Cause: X.25: An A (ANSWER), O (OPEN), C (CALL), or D (DISCONNECT) was not entered as the first control character or an A, O, C, or D was previously entered.

Customer Action: The circuit command (A, O, C, D) must be the first entry following (Hx,) and must not be repeated. Correct the entry and retry.

101500

Cause: X.25: The password option was entered for a PVC.

Customer Action: If you are trying to initiate communication on a PVC, a password is not allowed. If you are trying to initiate communication on an SVC, your 5494 configuration is incorrect. Verify the 5494 configuration. Pay particular attention to the

setting for virtual circuit type. The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Try to restart communication with the AS/400 system. If still unsuccessful, call the AS/400 system operator.

101600

Cause: X.25: The password option is not valid because it is not all alphanumeric characters.

Customer Action: Retry with the correct entry.

101800

Cause: X.25: The closed user group option was entered either for an ANSWER command or an OPEN command. The closed user group option can be entered only for a CALL command issued on an SVC.

Customer Action: Retry with the correct entry.

101900

Cause: X.25: The Q (QLLC) or E (ELLC) option was selected with the ANSWER command. The Q or E option is valid only with a CALL command issued on an SVC or an OPEN command issued on a PVC.

Customer Action: Retry with the correct entry.

101A00

Cause: X.25: An F (facility) or an R (reversed charging) option was entered for an ANSWER command or an OPEN command. The facility and reverse charging options can be entered only when initiating a CALL command on an SVC.

Customer Action: Retry with the correct entry.

101B00

Cause: X.25: The recovery value entered with the E (ELLC) option is not valid because it is not a decimal value in the range of 100 through 999.

Customer Action: Retry with the correct entry.

101C00

Cause: X.25: A CALL command was entered on an answer only SVC. Your 5494 configuration may be incorrect.

Customer Action: If you are trying to place a call on an SVC, the 5494 configuration is incorrect. Verify that the 5494 is configured correctly. Pay particular attention to the X.25 configuration selections for virtual circuit type. The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Try to restart communication with the AS/400 system. If still unsuccessful, call the AS/400 system operator.

101D00

Cause: X.25: An OPEN command was entered for an answer only SVC. Your 5494 configuration may be incorrect.

Customer Action: If you are trying to initiate communication on a PVC, the 5494 configuration is incorrect. Verify that the 5494 is configured correctly. Pay particular attention to the X.25 configuration selections for virtual circuit type. The possible selections are:

- PVC only
- SVC answer only
- Other (multiple PVC, multiple SVC, or SVC call).

Try to restart communication with the AS/400 system. If still unsuccessful, call the AS/400 system operator.

110014

Cause: X.25: The 5494 issued a Clear Request packet after receiving a packet type that is not valid for state p1.

Customer Action: Retry the operation:

1. Issue a Disconnect command.
2. Restart communication between the 5494 and the adjacent link station (ALS).

Have the X.25 network personnel verify that the modem or DCE on the network side is operating correctly. Verify with X.25 network personnel that the 5494 is configured correctly for the network.

110015

Cause: X.25: The 5494 issued a Clear Request packet after detecting a packet type that is not valid for state p2.

Customer Action: Retry the operation. You may be allowed temporary operation. However, you should report the error to the network service representative.

110017

Cause: X.25: The 5494 issued a Clear Request packet after detecting a packet type that is not valid for state p4.

Customer Action: Retry the operation. You may be allowed temporary operation. However, you should report the error to the network service representative.

110018

Cause: X.25: The 5494 issued a Clear Request packet after detecting a packet type that is not valid for state p5.

Customer Action: Retry the operation. You may be allowed temporary operation. However, you should report the error to the network service representative.

110031

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. A Call Connected was not received within 200 seconds.

Customer Action: Report the problem to the network service representative.

110032

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. A Clear Confirmation was not received within 200 seconds.

Customer Action: Report the problem to the network service representative.

110050

Cause: X.25: The 5494 issued a Clear Request packet after detecting a general ELLC/QLLC error. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

110051

Cause: X.25: The 5494 issued a Clear Request packet after detecting an undefined ELLC C-field. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

110054

Cause: X.25: The 5494 issued a Clear Request packet after detecting an undefined ELLC I-field. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

110055

Cause: X.25: The 5494 issued a Clear Request packet after detecting an I-field that was too long. The maximum I-field length accepted by the 5494 is 1033 bytes. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

110056

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. An ELLC frame reject was received. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

110057

Cause: X.25: The 5494 issued a Clear Request packet after detecting an ELLC header that is not valid. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

110059

Cause: X.25: The 5494 issued a Clear Request packet after detecting an ELLC timeout (LT1 x LN2) condition. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

11005A

Cause: X.25: The 5494 issued a Clear Request packet after detecting an ELLC receive sequence count (LNr) that is not valid. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

11005B

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. An ELLC recovery was rejected or terminated. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

1100A1

Cause: X.25: The 5494 issued a Clear Request packet after detecting an M-bit packet sequence that is not valid.

Customer Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Retry the operation.
3. If the error reoccurs, report the problem to the ALS operator.

1100A6

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. A packet was too short.

Customer Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Retry the operation.
3. If the error reoccurs, report the problem to the ALS operator.

1100A7

Cause: X.25: The 5494 issued a Clear Request packet after detecting a packet that was too long.

Customer Action:

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.

2. Retry the operation.

3. If the error reoccurs, report the problem to the ALS operator.

1100AA

Cause: X.25: The 5494 issued a Clear Request packet after detecting an unsupported interrupt packet.

Customer Action: Report the problem to the network service representative.

1100AB

Cause: X.25: The 5494 issued a Clear Request packet after detecting a packet send sequence number (Ps) that is not valid.

Customer Action: Report the error to the network service representative.

1100AC

Cause: X.25: The 5494 issued a Clear Request packet after detecting a packet receive sequence number (Pr) that is not valid.

Customer Action: Report the error to the network service representative.

1100AD

Cause: X.25: The 5494 issued a Clear Request packet after receiving a D-bit that is not valid.

Customer Action: Report the problem to the ALS operator.

1100D0

Cause: X.25: The 5494 issued a Clear Request packet after detecting a general resources error.

Customer Action: Retry the operation. Other applications may operate normally. However, you should report the error to the ALS operator.

1100D2

Cause: X.25: The 5494 issued a Clear Request packet after detecting a path information unit (PIU) that was too long. The maximum PIU length accepted by the 5494 is either 521 or 1033 bytes, depending on the XID exchange.

Customer Action: Retry the operation. Other applications may operate normally. However, you should report the error to the ALS operator.

1100E0

Cause: X.25: The 5494 issued a Clear Request packet after detecting a facility length that is not valid.

Customer Action: Report the problem to the network service representative.

1100E6

Cause: X.25: The 5494 issued a Clear Request packet after detecting unsupported facility parameters.

Customer Action: Report the problem to the network service representative.

1100E7

Cause: X.25: The 5494 issued a Clear Request packet after detecting an unsupported facility.

Customer Action: Report the problem to the network service representative.

1100E8

Cause: X.25: The 5494 issued a Clear Request packet after detecting a call from an unexpected data terminal equipment (DTE).

Customer Action: Make sure that the correct AS/400 system is selected during AS/400 link establishment and the network address is configured correctly for the selected ALS.

Retry the operation. If the problem continues, report the error to the ALS operator.

1100E9

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. A D-bit that is not valid was requested.

Customer Action: Report the problem to the AS/400 system operator.

1100EA

Cause: X.25: The 5494 issued a Clear Request packet after detecting an error. There was a Reset indication on an SVC.

Customer Action: Retry the operation. If the error reoccurs, report the problem to the network service representative.

1100EB

Cause: X.25: The 5494 issued a Clear Request packet after detecting a protocol identifier that is not valid.

Customer Action: Make sure that the diagnostic code setting (in the 5494 configuration) and the LLC protocol entered (in the configuration or manually entered) are correct. Retry the operation. If the error reoccurs, report the problem to the ALS operator.

1100EC

Cause: X.25: The 5494 issued a Clear Request packet after detecting a password mismatch.

Customer Action: Make sure that the password entered during AS/400 link establishment matches the password configured on the AS/400 for this circuit. Retry the operation. If the error reoccurs, report the problem to the AS/400 system operator.

12001B

Cause: X.25: The 5494 issued a Reset Request packet after detecting a packet type that is not valid for state d1.

Customer Action: Retry the operation. You may be allowed temporary operation. However, you should report the error to the network service representative.

120033

Cause: X.25: The 5494 issued a Reset Request packet after detecting an error. A reset confirmation was not received within 200 seconds.

There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

120050

Cause: X.25: The 5494 issued a Reset Request packet after detecting a general ELLC/QLLC error.

There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

120051

Cause: X.25: The 5494 issued a Reset Request packet after detecting an undefined ELLC C-field.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

120054

Cause: X.25: The 5494 issued a Reset Request packet after detecting an undefined ELLC I-field.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

120055

Cause: X.25: The 5494 issued a Reset Request packet after detecting an ELLC I-field that was too long.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

120056

Cause: X.25: The 5494 issued a Reset Request packet after detecting an error. An ELLC frame reject was received.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

120057

Cause: X.25: The 5494 issued a Reset Request packet after detecting an ELLC header that is not valid.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

120059

Cause: X.25: The 5494 issued a Reset Request packet after detecting an ELLC timeout (LT1 x LN2) condition.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

12005A

Cause: X.25: The 5494 issued a Reset Request packet after detecting an ELLC receive sequence count (LN_r) that is not valid.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

12005B

Cause: X.25: The 5494 issued a Reset Request packet after detecting an error. An ELLC recovery was rejected or terminated.

| There is a problem at the target X.25 DTE.

| **Customer Action:** Report the problem to the ALS operator.

1200A1

Cause: X.25: The 5494 issued a Reset Request packet after detecting an M-bit packet sequence that is not valid.

| **Customer Action:**

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Retry the operation.
3. If the error reoccurs, report the problem to the ALS operator.

1200A6

Cause: X.25: The 5494 issued a Reset Request packet after detecting a packet that was too short.

| **Customer Action:**

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Retry the operation.
3. If the error reoccurs, report the problem to the ALS operator.

1200A7

Cause: X.25: The 5494 issued a Reset Request packet after detecting a packet that was too long.

| **Customer Action:**

1. Make sure that the packet size entered (in the configuration or manually entered) matches the network subscription.
2. Retry the operation.

3. If the error reoccurs, report the problem to the ALS operator.

1200AA

Cause: X.25: The 5494 issued a Reset Request packet after detecting an unsupported interrupt packet.

Customer Action: Report the error to the network service representative.

1200AB

Cause: X.25: The 5494 issued a Reset Request packet after detecting a packet send sequence number (Ps) that is not valid.

Customer Action: Report the error to the network service representative.

1200AC

Cause: X.25: The 5494 issued a Reset Request packet after detecting a packet receive sequence number (Pr) that is not valid.

Customer Action: Report the error to the network service representative.

1200AD

Cause: X.25: The 5494 issued a Reset Request packet after receiving a D-bit that is not valid. There is a problem at the target X.25 DTE.

Customer Action: Report the problem to the ALS operator.

1200D0

Cause: X.25: The 5494 issued a Reset Request packet after detecting a general resources error.

Customer Action: Retry the operation. Other applications may operate normally. However, you should report the error to the ALS operator.

1200D2

Cause: X.25: The 5494 issued a Reset Request packet after detecting a path information unit (PIU) that was too long. The maximum PIU length accepted by the 5494 is 1033 bytes.

Customer Action: Retry the operation. Other applications may operate normally. However, you should report the error to the ALS operator.

1800dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Call clearing originated at the target X.25 DTE.

Customer Action: Report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1801dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

The target X.25 is busy.

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, contact the ALS operator to see if the X.25 DTE port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called AS/400 system is correct. If the error persists, contact your network service representative.

1803dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Facility request not valid.

Customer Action: Make sure that the facility request was entered correctly and retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1805dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Network congestion.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1809dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Out of order—target X.25 DTE not ready |

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact the AS/400 system operator and make sure that:

- DCE is turned **ON** and operational
- All 5494-related descriptions (line, controllers, and devices) are brought online.

If the problem persists, contact your network service representative.

180Bdd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Access to the target X.25 DTE is not allowed. |

Customer Action: Make sure that you selected the correct AS/400 system during link establishment. Make sure you entered the correct network address for the target X.25 DTE during configuration. Then retry the operation. If the problem continues, report the problem, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

180Ddd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Unrecognized target X.25 DTE network address. |

Customer Action: Make sure that you selected the correct AS/400 system during link establishment. Make sure that you entered the correct network address for the target X.25 DTE during configuration. Then retry the operation. If the problem continues, report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1811dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Error at the target X.25 DTE. |

Customer Action: Report the error, including the diagnostic code (dd), to the ALS system operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1813dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Error at the 5494. |

Customer Action: Retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the person who planned the procedures. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1815dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Recognized Private Operating Agency (RPOA) out of order. |

Customer Action: Make sure that the correct RPOA facility is selected or select a different RPOA. If the error reoccurs, report the problem, including the diagnostic code (dd), to the ALS network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1819dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

| Reverse charging not subscribed. |

Customer Action: If you entered a reverse charging request during link establishment, your subscription does not allow reverse charging. Retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1821dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Incompatible destination.

Customer Action: Make sure that you selected the correct AS/400 system during link establishment. Make sure that you entered the correct network address for the target X.25 DTE during configuration.

If the address is correct, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1829dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Fast select not subscribed.

Customer Action: Make sure that link establishment is correct. The fast select facility should not be selected.

1841dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Gateway-detected procedure error.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1843dd

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Gateway congestion error.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1880xx

Cause: X.25 Public Network: The network issued a Clear Indication packet after detecting an error.

Call clearing originated at the target X.25 DTE.

Customer Action: If xx = 00, this is a normal SVC clearing. Otherwise, report the error to the ALS operator. Include the xx value, which is the SNA-extended diagnostic code.

1881dd

Cause: X.25 Private Network: The network issued a Clear Indication packet after detecting an error.

Target X.25 DTE busy.

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, contact the ALS operator to see if the X.25 DTE port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called system is correct. If the error reoccurs, contact your network service representative.

1883dd

Cause: X.25 Private Network: The network issued a Clear Indication packet after detecting an error.

Facility request not valid.

Customer Action: Make sure that the facility request was entered correctly and retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1885dd

Cause: X.25 Private Network: The network issued a Clear Indication packet after detecting an error.

Network congestion.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1889dd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Out of order—target X.25 DTE not ready.

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact the ALS operator and make sure that:

- DCE is turned **ON** and operational
- All 5494-related descriptions (line, controllers, and devices) are brought online.

If the problem persists, contact your network service representative.

188Bdd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Access to the selected target X.25 DTE not allowed.

Customer Action: Make sure that you selected the correct target X.25 DTE during link establishment. Make sure that you entered the correct network address for the target X.25 DTE during configuration. Then retry the operation. If the error reoccurs, report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

188Ddd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Unrecognized target X.25 DTE network address.

Customer Action: Make sure that you entered the correct network address for the target X.25 DTE during configuration. Then retry the operation. If the error reoccurs, report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1891dd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Error at the target X.25 DTE.

Customer Action: Report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1893dd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Error at the 5494.

Customer Action: Retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the person who planned the procedures. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1895dd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Recognized private operating agency (RPOA) out of order.

Customer Action: Make sure that the correct RPOA facility is selected or select a different RPOA. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1899dd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Reverse charging not subscribed.

Customer Action: If you entered a reverse charging request during link establishment, your subscription does not allow reverse charging. Retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

18A1dd

Cause: **X.25 Private Network:** The network issued a Clear Indication packet after detecting an error.

Incompatible destination.

Customer Action: Make sure that you selected the correct AS/400 system during link establishment. Make sure that you entered the correct network address for the target X.25 DTE during configuration.

If the address is correct, report the problem, including the diagnostic code (dd), to the network service representative. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

18A9dd	Cause: X.25 Private Network: The network issued a Clear Indication packet after detecting an error. Fast select not subscribed. Customer Action: Make sure that link establishment is correct. The fast select facility should not be selected.	operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.
18C1dd	Cause: X.25 Private Network: The network issued a Clear Indication packet after detecting an error. Gateway-detected procedure error. Customer Action: Wait, and then retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.	Error at the target X.25 DTE. Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.
18C3dd	Cause: X.25 Private Network: The network issued a Clear Indication packet after detecting an error. Gateway congestion error. Customer Action: Wait, and then retry the operation. If the error reoccurs, report the problem, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.	Error at the 5494. Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the AS/400 system planner. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.
1900dd	Cause: X.25 Public Network: The network issued a Reset Indication packet after detecting an error. Reset originated at target X.25 DTE. Customer Action: Report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.	Error at the target X.25 DTE. Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).
1901dd	Cause: X.25 Public Network: The network issued a Reset Indication packet after detecting an error. Out of order—disconnected target X.25 DTE. Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS	Network congestion. Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).
1903dd		
1905dd		
1907dd		
1909dd		
190Fdd		

1911dd

Cause: X.25 Public Network: The network issued a Reset Indication packet after detecting an error.

Incompatible destination.

Customer Action: Make sure that you entered the correct logical channel identifier during link establishment or configuration. If the logical channel identifier is correct, report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

191Ddd

Cause: X.25 Public Network: The network issued a Reset Indication packet after detecting an error.

Network out of order.

Customer Action: Retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1980xx

Cause: X.25 Public Network: The network issued a Reset Indication packet after detecting an error. Call clearing originated at the target X.25 DTE.

Customer Action: Report the error to the ALS operator. Include the xx value, which is the SNA extended diagnostic code (xx).

1981dd

Cause: X.25 Private Network: The network issued a Reset Indication packet after detecting an error.

Out of order due to a disconnected target X.25 DTE.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1983dd

Cause: X.25 Private Network: The network issued a Reset Indication packet after detecting an error. Error at the target X.25 DTE.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1985dd

Cause: X.25 Private Network: The network issued a Reset Indication packet after detecting an error.

Error at the 5494.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the person who planned the procedures. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1987dd

Cause: X.25 Private Network: The network issued a Reset Indication packet after detecting an error.

Network congestion.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code.

1989dd

Cause: X.25 Private Network: Remote DTE is operational. This is not an error. It is a normal condition at startup on some networks.

Customer Action: None. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

198Fdd

Cause: X.25 Private Network: Network is operational. This is not an error. It is a normal condition at startup on some networks.

Customer Action: None. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1991dd

Cause: X.25 Private Network: The network issued a Reset Indication packet after detecting an error.

Incompatible destination.

Customer Action: Make sure that you entered the correct logical channel identifier for the AS/400 system during configuration. If the address is correct, report the error, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

199Ddd

Cause: X.25 Private Network: The network issued a Reset Indication packet after detecting an error.

Network out of order.

Customer Action: Retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1A00dd

Cause: X.25: The network issued a Restart. No additional information.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1A01dd

Cause: X.25: The network issued a Restart. Local procedure error.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1A03dd

Cause: X.25: The network issued a Restart. Network congestion.

Customer Action: Wait, and then retry the operation. If the error reoccurs, report it, including the diagnostic code (dd), to the network service representative and the ALS operator. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1A07dd

Cause: X.25: Network is operational. This is not an error. It is a normal condition at startup on some networks.

Customer Action: None. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

1A7Fdd

Cause: X.25: Registration or cancelation confirmed. This is not an error. It is a normal condition at startup on some networks.

Customer Action: None. See Table 9-1 on page 9-32 for an explanation of the diagnostic code (dd).

Diagnostic Codes for 18xxdd, 19xxdd, and 1Axxdd Errors: The diagnostic codes (dd) listed here are defined by CCITT Recommendation X.25. IBM does not guarantee that they will apply to your network. You should consult a representative of your network to determine the diagnostic codes that apply to you.

Table 9-1. Diagnostic Codes for 18xxdd, 19xxdd, and 1Axxdd Errors

Diagnostic Code (dd)	Description
00	No additional information
01	Send sequence not valid—P (S)
02	Receive sequence not valid—P (R)
10	Packet type not valid
11	State r1
12	State r2
13	State r3
14	State p1
15	State p2
16	State p3
17	State p4
18	State p5
19	State p6
1A	State p7
1B	State d1
1C	State d2
1D	State d3
20	Packet not allowed
21	Unidentifiable packet
22	Call on one-way logical channel
23	Packet type on permanent virtual circuit not valid
24	Packet on unassigned logical channel
25	Reject not subscribed to
26	Packet too short
27	Packet too long
28	General format identifier not valid
29	Restart with LCID not equal to X'000'
2A	Packet type not compatible with facility
2B	Unauthorized interrupt confirmation
2C	Unauthorized interrupt
2D	Unauthorized reject
30	Timer expired, general
31	Timer expired for incoming call
32	Timer expired for clear indication
33	Timer expired for reset indication

Table 9-1. Diagnostic Codes for 18xxdd, 19xxdd, and 1Axxdd Errors

Diagnostic Code (dd)	Description
34	Timer expired for restart indication
35	Timer expired for call deflection
40	Call setup, or call clearing, or registration problem
41	Facility registration code not allowed
42	Facility parameter not allowed
43	Called DTE address not valid
44	Calling DTE address not valid
45	Facility/registration length not valid
46	Incoming call barred
47	No logical channel available
48	Call collision
49	Duplicate facility requested
4A	Nonzero address length
4B	Nonzero facility length
4C	Facility not provided when expected
4D	CCITT-specified DTE facility not valid
4E	Maximum number of call redirections or call deflections exceeded
50	Miscellaneous problems
51	Improper cause code from DTE
52	Not aligned octet
53	Inconsistent Q-bit setting
54	Network user identifier (NUI) problem
60-6F	Not assigned
70	International problem
71	Remote network problem
72	International protocol problem
73	International link out of order
74	International link busy
75	Transit network facility problem
76	Remote network facility problem
77	International routing problem
78	Temporary routing problem
79	Unknown called DNIC
7A	Maintenance action (this diagnostic code can also apply to a maintenance action within a national network)
80-FF	Network-specific diagnostic information See your network administrator for a description of the diagnostic codes in this range.

1B1100

Cause: X.25: An unsolicited Restart Confirmation packet was received. The 5494 issued a Restart Request packet after detecting the error.

Customer Action: Notify the network service representative that an unsolicited Restart Confirmation packet was received.

1B3400

Cause: X.25: A Restart Confirmation packet was not received within 200 seconds. The 5494 issued a Restart Request packet after detecting the error.

Customer Action: Notify the network service representative that a Restart Confirmation packet was not received within 200 seconds.

1BA5yy

Cause: X.25: A Diagnostic packet was received.

The definitions of yy are described in *The X.25 Interface for Attaching IBM SNA Nodes to Packet-Switched Data Networks General Information Manual*.

Customer Action: Report the problem to the network service representative.

1BA600

Cause: X.25: The packet was too short. The 5494 issued a Restart Request packet after detecting the error.

Customer Action: Notify the network service representative that a packet was received that was too short.

1BA700

Cause: X.25: The packet was too long. The 5494 issued a Restart Request packet after detecting the error.

Customer Action: Notify the network service representative that a packet was received that was too long.

1BA800

Cause: X.25: The general format identifier (GFI), restart indication, or confirmation is not valid. The 5494 issued a Restart Request packet after detecting the error.

Customer Action: Notify the network service representative that a packet was received with a GFI, restart indication, or confirmation that is not valid.

1BE200

Cause: X.25: The logical channel identifier (LCID) is not equal to 0 on the Restart Indication/Confirmation packet. The 5494 issued a Restart Request packet after detecting the error.

Customer Action: Notify the network service representative that the LCID is not equal to 0 on the Restart Indication/Confirmation packet.

1BE500

Cause: X.25: The logical channel identifier (LCID) is equal to 0 on a non-Restart/Diagnostic packet. The 5494 issued a Restart Request packet after detecting the error. The 5494 does not support data on LCID=0.

Customer Action: Check your network subscription.

200000

Cause: X.21: CALL command already in progress.

Customer Action: Wait until the CALL command is complete or an SRC other than 200000 is displayed.

200100

Cause: X.21: Disconnect command accepted. Call clearing is in progress.

Customer Action: You can now make another call, if required.

200200

Cause: X.21: You attempted a Disconnect command while a CALL command was in progress or when no circuit connection existed.

Customer Action: Wait until the previous command completes, then try again. If no command was in progress you can now make a call.

210100

Cause: X.21: The call was received by the called ALS. Communication should be established shortly. This is not an error. (Call progress signal 01.)

Customer Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210200

Cause: X.21: The call is being redirected by the network to a number other than the one called. Call connection is in progress. This is not an error. (Call progress signal 02.)

Customer Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210300

Cause: X.21: The call was queued by the network. Communication will be established when the ALS called is not busy. This is not an error. (Call progress signal 03.)

Customer Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210400

Cause: X.21: A private network was reached. Call connection is in progress. This is not an error. (Call progress signal 04.)

Customer Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

210500

Cause: X.21: A public network was reached. Call connection is in progress. This is not an error. (Call progress signal 05.)

Customer Action: Wait 1 minute or until a different SRC is displayed. This status is temporary.

212000

Cause: X.21: The network has reported that there is no connection. (Call progress signal 20.)

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the operation again. If the error reoccurs, make sure that the number configured in the 5494 configuration for the called AS/400 system is correct. If the error still reoccurs, report it to the network service representative.

212100

Cause: X.21: The network has reported that the number called is busy. (Call progress signal 21.)

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, contact the ALS operator to see if the AS/400 system port for the number called is

actually busy. If it is not busy, make sure that the number configured in the 5494 for the called AS/400 system is correct. If the error reoccurs, contact your network service representative.

212200

Cause: X.21: The network has reported that there is a procedure error in the selection signals sent to the network (for example, incorrect format). (Call progress signal 22.)

Customer Action: If you are placing a call, make sure the call was placed to the correct AS/400 system and that the number format, access code, and number for the called AS/400 system configured in the 5494 are correct. If you are performing Online Facility Registration, make sure the facility codes and parameters entered are consistent with network standards. Retry the call. If the error reoccurs, report it to your network service representative.

212300

Cause: X.21: The network detected a transmission error in the selection signals. This is a DCE or a network error. (Call progress signal 23.)

Customer Action: Retry your call operation. Make sure the number called is correct and try the call again after one minute. If the error reoccurs, report it to the network service representative.

214100

Cause: X.21: Network access is barred. The 5494 is not allowed to connect to the called ALS. (Call progress signal 41.)

Customer Action: Make sure that the call was placed to the correct AS/400 system and that the operating procedures and configuration are compatible with the network subscription for the 5494 and the ALS. If the procedures and configuration are correct and compatible, the failure is a network problem.

214200

Cause: X.21: The network detected that the number called has changed. (Call progress signal 42.)

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the operation again. If the error reoccurs, make sure that the number configured for the called AS/400 system is correct and has not been changed. If the error persists, report it to the network service representative.

214300

Cause: X.21: The network detected that the called number is not valid or not assigned to any DTE, or that the user class of service is not compatible. (Call progress signal 43.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, report it to your network service representative.

214400

Cause: X.21: The network detected that the number called is out of order. (Call progress signal 44.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact the ALS operator and make sure that:

- DCE is turned **ON** and operational
- All 5494-related descriptions (line, controllers, and devices) are brought online.

If the error persists, contact your network service representative.

214500

Cause: X.21: The network detected that the called DTE is signaling controlled-not-ready. (Call progress signal 45.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact the ALS operator and make sure that all 5494-related descriptions (line, controllers, and devices) are brought online. If the error persists, contact your network service representative.

214600

Cause: X.21: The network detected that the called DTE is signaling uncontrolled-not-ready. (Call progress signal 46.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact the ALS operator and make sure that:

- DCE is turned **ON** and operational
- All 5494-related descriptions (line, controllers, and devices) are brought online.

If the error persists, contact your network service representative.

214700

Cause: X.21: The network detected that the called DCE is turned **OFF**. (Call progress signal 47.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact the ALS operator and make sure that the DCE is turned **ON**. If the error persists, contact your network service representative.

214800

Cause: X.21: The network detected that the facility request code is not valid. (Call progress signal 48.)

Customer Action: Make sure that the facility subscription request entered is correct. If the error reoccurs, contact your network service representative.

214900

Cause: X.21: The network detected that there is a network problem in the local loop at the modem or DCE you called. This could be a temporary condition at the network. (Call progress signal 49.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact your network service representative.

215100

Cause: X.21: The number called cannot be obtained. (Call progress signal 51.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, report it to your network service representative.

215200

Cause: X.21: The network detected that the user class of service is not compatible. (Call progress signal 52.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, report it to your network service representative.

216100

Cause: X.21: The network is congested. This can be a temporary condition at the network. (Call progress signal 61.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. If the error reoccurs, contact your network service representative.

217100

Cause: X.21: There is long-term network congestion. (Call progress signal 71.)

Customer Action: Make sure that the call was placed to the correct AS/400 system. Some networks allow retry after a wait period. This is a network problem. If the error persists, contact your network service representative.

217200

Cause: X.21: The network detected that the recognized private operating agency (RPOA) is out of order. The failure is caused by an RPOA problem or a network problem. (Call progress signal 72.)

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the operation again. If the error reoccurs, make sure that the number format, access code, and the number for the called AS/400 system configured in the 5494 are correct. If the error persists, contact your RPOA or network service representative.

218100

Cause: X.21: This is a confirmation of the facility registration or cancelation, not an error. (Call progress signal 81.)

Customer Action: None.

218200

Cause: X.21: Redirection of call facility is activated. This is a response to a status inquiry, not an error. (Call progress signal 82.)

Customer Action: None.

218300

Cause: X.21: Redirection of call facility is deactivated. This is a response to a status inquiry, not an error. (Call progress signal 83.)

Customer Action: None.

219x00

Cause: X.21: Codes reserved for situations unique to particular countries. (Call progress signal 9x.)

Customer Action: Call the network supplier to determine the meaning of the call progress signal 9x.

220000

Cause: X.21: An Exchange Station Identification (XID) that is not valid was received (Short Hold indicators are not valid).

Customer Action:

- **For a new or changed installation or configuration:** There could be a configuration mismatch between the 5494 and the AS/400 system. Verify both configurations.
- **For an existing or unchanged installation or configuration:** The session was reset. Contact the AS/400 system operator and report this problem.

220100

Cause: X.21: An Exchange Station Identification (XID) that is not valid was received. More than 14 digits were received or the number of digits received does not equal the number of digits specified for Short Hold mode.

Customer Action: There is an ALS configuration problem. Verify the connection number in both the 5494 and the ALS configuration.

220200

Cause: X.21: An Exchange Station Identification (XID) was received from the wrong DTE during Short Hold mode (SHM) reconnection.

Customer Action:

- **For a new or changed installation or configuration:** There could be a configuration mismatch between the 5494 and the AS/400 system. Verify both configurations.
- **For an existing or unchanged installation or configuration:** The session was reset. Contact the ALS operator and report this problem.

220300

Cause: X.21: An Exchange Station Identification (XID) was required and was not received first.

Customer Action:

- **For a new or changed installation or configuration:** There could be a configuration mismatch between the 5494 and the AS/400 system. Verify both configurations.
- **For an existing or unchanged installation or configuration:** The session was reset. Contact the ALS operator and report this problem.

220400

Cause: X.21: A DCE clear was received during call selection. The failure is caused by a network or DCE problem.

Customer Action: Report the problem to the network service representative.

220500

Cause: X.21: There was a transition to data transfer state that is not valid while receiving a message. The failure is caused by a network or DCE problem.

Customer Action: Report the problem to the network service representative.

220600

Cause: X.21: A message was too long for the buffer. The failure is caused by a network or DCE problem.

Customer Action: Report the problem to the X.21 network service representative.

220700

Cause: X.21: An attempt was made to send an X.21 message to the network in SDLC state.

Customer Action: Call 5494 Service and report this SRC.

220800

Cause: X.21: An attempt was made to send an SDLC frame to the network in X.21 state.

Customer Action: Call 5494 Service and report this SRC.

220900

Cause: X.21: A message was received in the not-ready queue.

Customer Action: Call 5494 Service and report this SRC.

221101

Cause: X.21: A timeout (T1) for CALL REQUEST response occurred. The failure is caused by a network or DCE problem. This error can occur if the ALS configuration does not match the 5494 configuration.

Customer Action: Verify that the ALS and 5494 configurations match. If they match, and if you have just placed a call, retry your call. If this SRC reoccurs or an existing session is reset, report the problem to the network service representative.

221102

Cause: X.21: A timeout (T2) for selection-signal response occurred. The failure is caused by a network or DCE problem.

Customer Action: If you have just placed a call, retry your call. If this SRC reoccurs or an existing session is reset, report the problem to the network service representative.

221103

Cause: X.21: A timeout (T3A or T3B) for call-progress-signal response occurred. The failure is caused by a network or DCE problem.

Customer Action: If you have just placed a call, retry your call. If this SRC reoccurs or an existing session is reset, report the problem to the network service representative.

221104

Cause: X.21: A timeout (T4B) for call-accepted response occurred. The failure is caused by a network or DCE problem.

Customer Action: If you have just placed a call, retry your call. If this SRC reoccurs or an existing session is reset, report the problem to the network service representative.

221105

Cause: X.21: A timeout (T5) for DTE-clear-request occurred. The failure is caused by a network or modem or DCE problem.

Customer Action: If you have just placed a call, retry your call. If this SRC reoccurs or an existing session is reset, report the problem to the network service representative.

221106

Cause: X.21: A timeout (T6) for DTE-clear-confirmation occurred. The failure is caused by a network or DCE problem.

Customer Action: If you have just placed a call, retry your call. If this SRC reoccurs or an existing session is reset, report the problem to the network service representative.

221300

Cause: X.21: A call-collision error occurred.

Customer Action: Try the operation again. If the error reoccurs, report the problem to your network service representative.

221400

Cause: X.21: A DCE clear was received during X.21 data transfer state. Connection to the ALS was lost.

Customer Action: Make sure that the network address for the ALS entered during 5494 configuration is correct. If the number is correct, there is an ALS or network problem.

221500

Cause: X.21: The received Exchange Station Identifier (XID) indicated that the ALS was busy.

Customer Action: Wait until the AS/400 system is not busy, or try a different AS/400 system.

23xx00

Cause: X.21: A call progress signal (xx) was received from the network, but a call was not placed. The failure is caused by a network problem.

Customer Action: Report the problem to the network service representative.

240000

Cause: X.21: The 5494 received a call progress signal that is not valid. The failure is caused by a network problem.

Customer Action: Report the problem to the network service representative.

250100

Cause: X.21: The XID3 command received does not contain a network name control vector.

Customer Action: There is an ALS configuration error. Report the problem to the ALS operator.

250200

Cause: X.21: The XID3 command received does not contain a Short Hold Mode (SHM) control vector.

Customer Action: There is an ALS configuration error. Report the problem to the ALS operator.

250300

Cause: X.21: The XID3 command received does not contain a Shared Hold Mode (SHM) connection ID.

Customer Action: There is an ALS configuration error. Report the problem to the ALS system operator.

300000

Cause: V.25 bis: Call request not allowed. A link is not established or another call is in progress.

Customer Action: Wait until an SRC other than 300000 is displayed, or wait 30 seconds and retry the call.

300100

Cause: V.25 bis: Disconnect command accepted. Call clearing is in progress.

Customer Action: If necessary, try to make another call.

300200

Cause: Call clearing is not allowed.

Customer Action: Do not attempt call clearing at this time.

3101ET

Cause: V.25 bis: The number is busy. This can be a normal condition.

Customer Action: Make sure that the call was placed to the correct AS/400 system and try the call again. If the number is busy for longer than normal, contact the ALS operator to see if the AS/400 system port for the number called is actually busy. If it is not busy, make sure that the number configured in the 5494 for the called AS/400 system is correct. If the error reoccurs, contact your network service representative.

Any other 3101xx

Cause: V.25 bis: Call Failure Indication received. xx is one of the following parameters:

CB Local DCE Busy
RT Ring Tone (timeout)
AB Abort Call (timeout)

NT Answer Tone Not Detected
 FC Forbidden Call (for nationally dependent parameters).

Note: The 5494 may receive other parameters that indicate a problem in the modem or DCE.

Customer Action: Make sure that the modem or DCE is connected to the network line. Also make sure that the call information entered in the configuration is correct. Retry the call. If the error reoccurs, report it to the modem, DCE, or network service representative.

3102xx

Cause: V.25 bis: Delayed Call Indication was received. xx is the time in minutes.

Note: xx=99 could indicate a number greater than 99.

Customer Action: Wait the number of minutes indicated by xx, then retry the call. If the error reoccurs, report it to the network service representative.

310300

Cause: V.25 bis: A Call Indication was received that is not valid. There was a procedure error in selection signals sent to the network.

Customer Action: Retry your call operation. If the error reoccurs, report it to the network service representative.

320100

Cause: V.25 bis: A message transmission error occurred.

Customer Action: Retry the call. If the error reoccurs, call 5494 Service and report this SRC.

320600

Cause: V.25 bis: A message was too long for the buffer.

Customer Action: Call 5494 Service and report this SRC.

320900

Cause: V.25 bis: A message was received in the not-ready queue.

Customer Action: Call 5494 Service and report this SRC.

321000

Cause: V.25 bis: A Ready for Sending (RFS) timeout occurred during link establishment.

Customer Action: Make sure you selected the correct AS/400 system during link establishment, then attempt the call again. If the error reoccurs, contact your network service representative.

321100

Cause: V.25 bis: A call-connected timeout occurred for an outgoing call.

Customer Action: Make sure you selected the correct AS/400 system during link establishment, then attempt the call again. If the error reoccurs, contact your network service representative.

321200

Cause: V.25 bis: A call-connected timeout occurred for an incoming call.

Customer Action: Make sure you selected the correct AS/400 system during link establishment, then attempt the call again. If the error reoccurs, contact your network service representative.

322000

Cause: V.25 bis: A call-collision error occurred.

Customer Action: Try the operation again. If the error reoccurs, contact your network service representative and report the problem.

322100

Cause: V.25 bis: An incoming call was rejected because the call state is not valid.

Customer Action: Try the operation again. If the error reoccurs, contact your network service representative and report the problem.

323100

Cause: V.25 bis: A message containing fewer than three characters was received.

Customer Action: Report the problem to the modem service representative or network service representative.

323300	400500
<p>Cause: V.25 bis: The call-failure-indication parameter received is not valid.</p> <p>Customer Action: Report the problem to the modem service representative or network service representative.</p>	<p>Cause: The request was rejected. The command is not allowed for this communication configuration.</p> <p>Customer Action: Retry with the correct entry. If the problem reoccurs, call 5494 Service.</p>
323400	400600
<p>Cause: V.25 bis: A delayed call failure indication was received with no time indicated.</p> <p>Customer Action: Report the problem to the modem service representative or network service representative.</p>	<p>Cause: The format of the command is not valid.</p> <p>Customer Action: See Chapter 7, "Communicating with Your AS/400 System" for the correct format. Correct and retry.</p>
400000	400700
<p>Cause: A connection attempt is already in progress.</p> <p>Customer Action: Wait for a sign-on screen or until an SRC other than 400000 appears. If attempting to stop continuous retries, wait and retry the attempt in a few seconds.</p>	<p>Cause: The request was rejected because the connection number is not configured for the selected AS/400 system.</p> <p>Customer Action: Correct the configuration, or select a different AS/400 system.</p>
400100	400800
<p>Cause: A connect request was rejected. The link is not active.</p> <p>Customer Action: Wait 1 minute to retry your connect request. If still unsuccessful, there is a modem, DCE, or network problem.</p>	<p>Cause: The request was rejected because the link to the AS/400 system already exists.</p> <p>Customer Action: Wait for a sign-on screen or until an SRC other than 400800 is displayed.</p>
400200	400900
<p>Cause: You have entered data in the wrong format. The first character must be an H.</p> <p>Customer Action: Correct your request and retry.</p>	<p>Cause: The request was rejected because the 5494 is already establishing a link to the AS/400 system.</p> <p>Customer Action: Wait for a sign-on screen or until an SRC other than 400900 is displayed.</p>
400300	410000
<p>Cause: You are trying to disconnect from an AS/400 system that is not currently connected.</p> <p>Customer Action: If you have selected the wrong AS/400 system, correct the request and retry.</p>	<p>Cause: An Exchange Station Identifier (XID) exchange protocol error occurred. This could be a temporary condition. If it lasts for longer than 1 minute, there may be a configuration problem in the 5494 or the ALS.</p> <p>Customer Action: Verify your configuration. If the error reoccurs, contact your ALS operator or network service representative.</p>
400400	
<p>Cause: The request was rejected because the LU name is not configured for the selected AS/400 system.</p> <p>Customer Action: Correct the configuration, or select a different AS/400 system.</p>	

<p>410100</p> <p>Cause: One of the following Exchange Station Identifier (XID) command length errors was detected:</p> <ul style="list-style-type: none"> • The I-field is greater than 255 bytes. • The I-field is less than 29 bytes. • The XID command length field does not match the I-field length. <p>There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report this problem to the ALS operator or network service representative.</p>	<p>410700</p> <p>Cause: An XID3 command specified a maximum Basic Transmission Unit (BTU) length less than 265 bytes. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report the problem to the ALS operator or network service representative.</p>
<p>410200</p> <p>Cause: An Exchange Station Identifier (XID) contained an unsupported I-field format. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report this problem to the ALS operator or network service representative.</p>	<p>410800</p> <p>Cause: An XID3 command specified an SDLC profile that is not valid. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report the problem to the ALS operator or network service representative.</p>
<p>410300</p> <p>Cause: Exchange Station Identifier (XID) command exchange state indicators are set to 'not supported'. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report this problem to the ALS operator or network service representative.</p>	<p>410900</p> <p>Cause: The XID3 command specifies a maximum I-frame's outstanding value that is not valid or not supported. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report this problem to the ALS operator or network service representative.</p>
<p>410400</p> <p>Cause: An XID3 command did not specify SDLC link protocol. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report this problem to the ALS operator or network service representative.</p>	<p>411200</p> <p>Cause: The ALS reported an error in the Exchange Station Identification (XID) response received from the 5494. There could be a mismatch between the 5494 and the ALS configuration.</p> <p>The 3-byte error offset received in the control vector is logged as sense data.</p> <p>Customer Action: Verify the 5494 configuration; pay particular attention to the following fields:</p> <ul style="list-style-type: none"> • 5494 ID number • 5494 station address • 5494 CP name • 5494 network name <p>These values must match values associated with this 5494 that are configured in the ALS. If the ALS is an AS/400 system, these values are found in the APPC controller description.</p> <p>If the configuration is correct, call the ALS operator and verify that the 5494 is varied on.</p> <p>Verify that the ID field, if configured, is correct. For SNA Subarea networks, it should match the PU CP name field in the ALS. For all others, it should match the remote CP name field in the AS/400 configuration for that APPC controller.</p>
<p>410500</p> <p>Cause: An XID3 command specified asynchronous balanced mode (ABM) support. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report this problem to the ALS operator or network service representative.</p>	
<p>410600</p> <p>Cause: An XID3 command specified that an adjacent link station (ALS) is secondary. There is a system programming or configuration problem in the ALS.</p> <p>Customer Action: Report the problem to the ALS operator or network service representative.</p>	

If the configuration is correct, call both the ALS operator and the AS/400 system operator and make sure the controller descriptions for this 5494 are active.

If these controller descriptions are active, and the problem persists, report this SRC and the sense data to the ALS operator or network service representative.

420000

Cause: A timeout occurred on completion of a change number of sessions (CNOS) exchange. This could be caused by an AS/400 system or communication network problem.

Customer Action: Try to restart communication with the AS/400 system. If it is still unsuccessful, report the problem to the AS/400 system operator.

420001

Cause: A timeout occurred on completion of a change number of sessions (CNOS) exchange. This could be caused by an AS/400 system or communication network problem. The controller is retrying the connection at 10-minute intervals.

Customer Action: Report the problem to the AS/400 system operator. Wait for the connection to be reestablished or for a different error code to appear.

420100

Cause: A change number of sessions (CNOS) reply contains unacceptable values. This indicates a configuration problem in the AS/400 system, probably in the mode configuration used for this connection.

Customer Action: Report the problem to the AS/400 system operator.

420200

Cause: There was a format error in a change number of sessions (CNOS) General Data Stream (GDS) reply. This indicates an AS/400 system problem.

Customer Action: Report the problem to the AS/400 system operator.

4203xx

Cause: The AS/400 system returned an abnormal change number of sessions (CNOS) General Data Stream (GDS) reply. This indicates an AS/400 configuration problem.

Customer Action: Inform the AS/400 system operator. The xx in the SRC is the reply modifier. If xx = 02, the 5494 mode name is not defined in the AS/400 system.

Note: Other values for xx are described in *Systems Network Architecture Formats*.

421000

Cause: The 5494 received a negative response to the change number of sessions (CNOS) BIND (sent to activate a session with the logical unit). This indicates a configuration or network problem.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Try to restart communication with the AS/400 system. If still unsuccessful, report the problem to the AS/400 system operator.

4211xx

Cause: The 5494 received an UNBIND of type xx. This indicates a configuration or network problem.

Notes:

1. For values and descriptions of xx, refer to *IBM Systems Network Architecture Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Verify the following:

- The AS/400 system is available and has all descriptions associated with this 5494 varied on.
- The network connection between the 5494 and the AS/400 system is available.
- Verify the 5494 configuration. Pay particular attention to the 5494 LU name, the 5494

network name, the AS/400 system LU name, and the AS/400 system network name.

If the configuration is correct and the communication link is available, try to restart communication with the AS/400 system. If it is still unsuccessful, report the problem to the AS/400 system operator.

421200

Cause: An error was detected during establishment or progress of the LU 6.2 change number of sessions (CNOS) between the 5494 and the AS/400 system. The 5494 received a functional management header 7 (FMH7) indicating session termination. This could be a normal termination, or, if this error occurs frequently, there can be a configuration or AS/400 system problem.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Verify the configuration, then retry the operation. If the error reoccurs, report the problem to the AS/400 system operator.

421300

Cause: An error was detected during establishment or progress of the change number of sessions (CNOS) between the 5494 and the AS/400 system. The 5494 received a conditional end bracket (CEB) indicating session termination. This could be a normal termination or, if this error occurs frequently, there can be a configuration or AS/400 system problem.

Customer Action: Verify the configuration, then retry the connection attempt. If the error reoccurs, report the problem to the AS/400 system operator.

4221xx

Cause: The 5494 sent an UNBIND of type xx. This indicates a configuration or network problem.

Notes:

1. For values and descriptions of xx, refer to *IBM Systems Network Architecture Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing

the problem. To display the SNA sense data while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Try to restart communication with the AS/400 system. If still unsuccessful, report the problem to the AS/400 system operator.

430000

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). A timeout on the completion of the controller session occurred. This can be caused by an AS/400 system problem or communication network problem.

Customer Action: Try to restart communication with the AS/400 system. If still unsuccessful, report the problem to the AS/400 system operator.

430001

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). A timeout occurred on completion of a controller session. This could be caused by an AS/400 system or communication network problem. The controller is retrying the connection at 10-minute intervals.

Customer Action: Report the problem to the AS/400 system operator. Wait for the connection to be reestablished or for a different error code to appear.

431000

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). The 5494 received a negative response to the controller session BIND. This indicates a configuration or network problem.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Try to restart communication with the AS/400 system. If still unsuccessful, report the problem to the AS/400 system operator.

4311xx

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system (controller session). The 5494 received an UNBIND of type xx. This indicates a configuration or AS/400 system problem.

Notes:

1. For values and descriptions of xx, refer to *IBM Systems Network Architecture Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow key on the keypad.

Customer Action: Verify the configuration, then retry the operation. If the error reoccurs, report the problem to the AS/400 system operator.

431200

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system. The 5494 received a Functional Management Header 7 (FMH7) indicating session termination. This could be a normal termination, or, if this error occurs frequently, there can be a configuration or AS/400 system problem.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow key on the keypad.

Customer Action: Verify the configuration, then retry the operation. This problem may occur if the AS/400 system is powered up and all the subsystems are not restarted when the session establishment is attempted. The 5494 will retry session establishment under these circumstances. If the error reoccurs, report the problem to the AS/400 system operator.

431300

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system. The 5494 received a conditional end bracket (CEB) indicating session termination. This could be a normal termination or, if this error occurs frequently, there may be a configuration or AS/400 system problem. The controller is attempting to reestablish the session.

Customer Action: If the AS/400 system is in an operational state, verify the configuration. Otherwise, wait for the connection to be reestablished, or for a different error code to appear.

4321xx

Cause: An error was detected during establishment or progress of the LU 6.2 session between the 5494 and the AS/400 system. The 5494 sent an UNBIND of type xx. This indicates an AS/400 system problem.

Notes:

1. For values and descriptions of xx, refer to *IBM Systems Network Architecture Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow key on the keypad.

Customer Action: Retry the operation. If the error reoccurs, report the problem to the AS/400 system operator.

438904

Cause: The AS/400 system did not accept the 5494 connection request because the 5494 description was not found.

Customer Action: Verify the 5494 configuration. Pay special attention to the 5494 CP name and the LU name. Retry the operation. If the configuration is correct and the error reoccurs, report the problem to the AS/400 system operator.

438905

Cause: The AS/400 system did not accept the 5494 connection request because this 5494 description was already active.

Customer Action: Verify the 5494 configuration. Pay special attention to the 5494 CP and LU name. Then retry the operation. If the error reoccurs, report the problem to the AS/400 system operator.

438908

Cause: The AS/400 system did not accept the 5494 connection request because this 5494 description has been varied offline.

Customer Action: The problem could be due to a temporary condition. Retry the operation. If the error reoccurs, have the AS/400 system operator vary on this 5494 remote workstation (RWS) controller description.

438909

Cause: The AS/400 system did not accept the 5494 connection request because the 5494 recovery is pending.

Customer Action: The problem could be due to a temporary condition. Retry the operation. If the error reoccurs, have the AS/400 system operator reset this 5494 RWS controller description.

438910

Cause: The AS/400 system did not accept the 5494 connection request because the recovery of this 5494 has been canceled.

Customer Action: The problem could be due to a temporary condition. Retry the operation. If the error reoccurs, have the AS/400 system operator reset this 5494 RWS controller description.

438911

Cause: The AS/400 system did not accept the 5494 connection request because this 5494 description is in a failed state.

Customer Action: The problem could be due to a temporary condition. Retry the operation. If the error reoccurs, have the AS/400 system operator reset this 5494 RWS controller description.

438912

Cause: The AS/400 system did not accept the 5494 connection request because the AS/400 system has an internal error.

Customer Action: The problem could be due to a temporary condition. Retry the operation. If the error reoccurs, have the AS/400 system operator reset the appropriate line, advanced program-to-program communication (APPC) controller description, and RWS controller description.

439900

Cause: Data that is not valid was received from the AS/400 system while waiting for a response to the 5494 connection request. This indicates an AS/400 system configuration or system problem.

Customer Action: Report the problem to the AS/400 system operator.

4411xx

Cause: An error was detected during establishment or progress of the LU6.2 session for an NWS. The 5494 received an UNBIND of type xx. This indicates an AS/400 system problem.

Notes:

1. For values and descriptions of xx, refer to *IBM Systems Network Architecture Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow key on the keypad.

Customer Action: Report the problem to the AS/400 system operator.

441200

Cause: An error was detected during establishment or progress of the LU6.2 session for an NWS. The 5494 received a Functional Management Header 7 (FMH7) indicating an abnormal session termination. This indicates an AS/400 system problem.

Note: The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Report the problem to the AS/400 system operator.

4421xx

Cause: An error was detected during establishment or progress of the LU6.2 session for an NWS. The 5494 sent an UNBIND of type *xx*. This indicates a network or AS/400 system problem.

Notes:

1. For values and descriptions of *xx*, refer to *IBM Systems Network Architecture Formats*.
2. The last 4 bytes of the 5494 error log entry for this SRC contain the SNA sense data, which is useful to the AS/400 system operator or network personnel in diagnosing the problem. To display the SNA sense data, while this SRC is being displayed on the LCD, press the right arrow (→) key on the keypad.

Customer Action: Report the problem to the AS/400 system operator.

4500xx

Cause: An error was detected during communication with a PWS. The error occurred while trying to initiate the link with the PWS. If you viewed this SRC on the operator panel LCD, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, see "Displaying the Latest Error Log Entries" on page 8-17 for instructions on displaying the LSID.

Note: The possible values for *xx* are:

- 01 = Bad initiate link reply (incorrect length)
- 02 = Bad initiate link reply (nonzero RC).

Customer Action: This could be a PWS configuration problem. Verify your PWS configuration, turn the power **OFF** and back **ON** at the PWS, then restart your PWS communication program.

4501xx

Cause: An error was detected during communication with a PWS. The link to the PWS was ended because a frame that is not valid was received from the PWS.

Note: The *xx* is the flag byte received in the frame that is not valid. If you viewed this SRC on the operator panel LCD, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, see "Displaying the Latest Error Log

Entries" on page 8-17 for instructions on displaying the LSID.

Customer Action: This could be a PWS configuration problem. Verify your PWS configuration, turn the power **OFF** and back **ON** at the PWS, then restart your PWS communication program.

4510xx

Cause: An error was detected during communication with a PWS. The error occurred during the Exchange Station Identification (XID) exchange with the PWS.

If you viewed this SRC on the operator panel LCD, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, see "Displaying the Latest Error Log Entries" on page 8-17 for instructions on displaying the LSID.

Note: The possible values for *xx* are:

- 80 = Frame length too long
- 40 = Not a format 3 XID
- 20 = Length inconsistency between XID and input/output block (IOB) length
- 10 = XID exchange state was not '01'b or '00'b
- 08 = Link station role was not '00'b
- 04 = Maximum basic transmission unit (BTU) acceptable to PWS was less than X'109'
- 02 = PWS responded to XID with neither an XID nor a Disconnect command
- 01 = XID frame length too short.

Customer Action: This could be a PWS configuration problem. Verify your PWS configuration, turn the power **OFF** and back **ON** at the PWS, then restart your PWS communication program.

4511xx

Cause: An error was detected during communication with a PWS. The link to the PWS was ended because a twinaxial data link control (TDLC) link level frame that is not valid was received from the PWS.

Note: *xx* is the first byte of the control field.

If you viewed this SRC on the operator panel LCD, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, see "Displaying the Latest Error Log Entries" on

page 8-17 for instructions on displaying the LSID.

Customer Action: This could be a PWS configuration problem. Verify your PWS configuration, turn the power **OFF** and back **ON** at the PWS, then restart your PWS communication program.

4520xx

Cause: An error was detected during communication with a PWS. The link to the PWS was ended because of a severe session state conflict between the PWS and the 5494. All sessions are terminated for this PWS.

If you viewed this SRC on the operator panel LCD, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, see "Displaying the Latest Error Log Entries" on page 8-17 for instructions on displaying the LSID.

Customer Action: Turn the power **OFF** and back **ON** at the PWS, and then restart your PWS communication program. If necessary, make sure your PWS communication program is correctly installed and configured.

4521xx

Cause: The LAN link with the PWS terminated due to a severe session state conflict between the PWS and the 5494. All sessions for this PWS are terminated.

Customer Action: Turn the power **OFF** and back **ON** at the PWS, and then restart your PWS communication program. If necessary, make sure your PWS communication program is correctly installed and configured.

4522xx

Cause: The twinaxial data link control (TDLC) link with the PWS terminated due to the receipt of a frame with a Local Form Session ID (LFSID) value that is not valid in the transmission header. All sessions for this PWS are terminated.

Note: xx is the twinaxial device LSID.

Customer Action: Turn the power **OFF** and back **ON** at the PWS, and then restart your PWS communication program. If necessary, make sure your PWS communication program is correctly installed and configured.

4523xx

Cause: The LAN link with the PWS terminated due to receipt of a frame with a Local Form Session ID (LFSID) value that is not valid in the transmission header. All sessions for this PWS are terminated.

Customer Action: Turn the power **OFF** and back **ON** at the PWS, and then restart your PWS communication program. If necessary, make sure your PWS communication program is correctly installed and configured.

4524xx

Cause: The twinaxial data link control (TDLC) link with the PWS terminated due to the receipt of a frame with an Origin-Destination Assignor Identifier (ODAI) value that is not valid in the transmission header. All sessions for this PWS are terminated.

If you viewed this SRC on the operator panel LCD, the LSID, which identifies the failing workstation's local address, is the 2-digit value to the left of this SRC. Otherwise, see "Displaying the Latest Error Log Entries" on page 8-17 for instructions on displaying the LSID.

Customer Action: Turn the power **OFF** and back **ON** at the PWS, and then restart your PWS communication program. If necessary, make sure your PWS communication program is correctly installed and configured.

4525xx

Cause: The LAN link with the PWS terminated due to receipt of a frame with an Origin-Destination Assignor Identifier (ODAI) value that is not valid in the transmission header. All sessions for this PWS are terminated.

Note: xx is the token-ring workstation ID.

Customer Action: Turn the power **OFF** and back **ON** at the PWS, and then restart your PWS communication program. If necessary, make sure your PWS communication program is correctly installed and configured.

460000

Cause: A frame was received containing an unrecognized session address.

Customer Action: If this error occurs frequently, report the error to the AS/400 system operator.

460100

Cause: A frame was received containing an incorrect format identification (FID) type.

Customer Action: If this error occurs frequently, report the error to the AS/400 system operator.

460200

Cause: A frame was received that was not long enough to contain a full transmission header (TH).

Customer Action: If this error occurs frequently, report the error to the AS/400 system operator.

460300

Cause: A frame was received that was not long enough to contain a full transmission header (TH) and request header (RH).

Customer Action: If this error occurs frequently, report the error to the AS/400 system operator.

460400

Cause: A session control frame was received that was not long enough to contain a session control request code.

Customer Action: If this error occurs frequently, report the error to the AS/400 system operator.

460500

Cause: A segmented frame was received. The 5494 does not support segmenting.

Customer Action: If this error occurs frequently, report the error to the AS/400 system operator.

470100

Cause: A BIND request was received with an incorrect Origin-Destination Assignor Identification (ODAI) value in the local form session identifier (LFSID). The communication link to the ALS was deactivated.

Customer Action: Report the problem to the ALS operator or network service representative.

470200

Cause: A BIND request was received with an incorrect SIDH/SIDL value in the Local Form Session Identifier (LFSID). The communication link to the ALS was deactivated.

Customer Action: Report the problem to the ALS operator or network service representative.

500001

Cause: System files or translate table data cannot be read from the system diskette.

Customer Action: Press the 5494 power push button to set the power **OFF**. Replace the system diskette with the backup system diskette. Press the 5494 power push button to set the power **ON**. The Power-On indicator comes on. If the backup system diskette corrects the problem, obtain a new system diskette. See Appendix F, "Ordering Replacement Diskettes."

If the error reoccurs, contact 5494 Service and report the problem.

500002

Cause: The current configuration specifies parameters that are not supported by the current hardware. This can occur if X.21 protocol is configured, but the communication cable does not support X.21.

Customer Action: Check the configuration parameters and correct them if necessary. If the configuration is correct, make sure that you have the correct communication cable for the configured protocol.

500003

Cause: The system diskette is not compatible with the 5494 hardware.

Customer Action: Replace the diskette with a valid 5494 System Diskette.

500004

Cause: You are not using a 5494 System Diskette.

Customer Action: Replace the diskette with a valid 5494 System Diskette.

500005

Cause: The 5494 System Diskette is write-protected.

Customer Action: Remove the diskette, close the write-protect tab, and reinsert the diskette.

If the error occurred during the configuration procedure or concurrent diagnostics, press **Error Reset** to clear the error and retry the operation.

If the error occurred during the power-on sequence, turn the power **OFF**, then turn the power back **ON** at the 5494.

500006

Cause: An error occurred when you tried to write information to the 5494 System Diskette.

Customer Action: If the problem occurred during the configuration procedure, press **Error Reset** and retry the operation. If the error occurred when you tried to write information to the system diskette, replace the system diskette with the backup diskette. If necessary, obtain a new system diskette.

500007

Cause: The 5494 System Diskette has been improved by a subsequent release.

Customer Action: See your IBM representative to obtain a more current release level of the 5494 System Diskette. You may continue to operate your 5494 with the current system diskette.

500009

Cause: A value that is not valid was detected in the 5494 configuration file.

Customer Action: Reconfigure the 5494. For more information, see Chapter 5, "Configuring Your System."

500011

Cause: The 5494 is not in configuration mode and a valid configuration file could not be found. Configuration mode is forced.

Customer Action:

- **For a new or changed installation or configuration:** You have not configured your system. See Chapter 5, "Configuring Your System."
- **For an existing or unchanged installation or configuration:** You may have a problem with the 5494 storage. When the 5494

attempted to use the backup copy of the configuration on the 5494 System Diskette, it could not find one. The 5494 power-on self test may have already identified the problem and you may have decided to use 5494 with the storage problem anyway.

- If a storage problem has already been identified and you want to use the 5494 anyway, you must either reconfigure the 5494 using the steps in Chapter 5, "Configuring Your System," or use a 5494 System Diskette that has a backup copy of the configuration file.
- If a storage problem has not been identified, call 5494 service and report a storage problem and this SRC.

For more information, see "Running Extended Diagnostics" on page 8-20.

500013

Cause: The 5494 does not have a communication cable that is required.

Customer Action:

- If you are using the Twinaxial Expansion Kit, verify that the 5494 communications cable is present and connected securely to the host adapter, located in the lowest slot number.
- If you are using Token-Ring or Ethernet to connect to the AS/400 system and you get this SRC, you have specified an incorrect communication mode parameter. Reconfigure the 5494 and correct the communication mode parameter.

For more information, see Chapter 5, "Configuring Your System."

- If you are not using a LAN to connect to the AS/400 system, verify that the 5494 communication cable is present and connected securely to the 5494 and the modem or DCE.

If the cable is not present, refer to the *IBM 5494 Remote Control Unit Planning Guide* to determine the communication cable required for your configuration, then contact your representative and order the communication cable.

- If the cable is present and connected, it may be defective. Run extended diagnostics and test all the 5494 hardware or call 5494 service and report this SRC.

For more information see "Running Extended Diagnostics" on page 8-20.

500014

Cause: The 5494 is configured for a LAN Gateway or a LAN AS/400 connection, but the 5494 does not recognize the token-ring or Ethernet adapter.

Customer Action:

- If a LAN adapter is not installed, correct your configuration or obtain and install an adapter.
- If a LAN adapter is installed, make sure you have configured the correct LAN. If the configuration is correct, call 5494 service and report this SRC.

500015

Cause: The keyboard translate table (KTT) or printer definition table (PDT) files are not set up correctly on the 5494 diskette. The KTT or PDT files will be downloaded from the AS/400 system.

Customer Action: Press Error Reset.

The KTT and PDT functions are operating normally but the diskette copy of these files is damaged. Replace the 5494 System Diskette with the backup system diskette the next time you turn the power off and on. See Appendix F, "Ordering Replacement Diskettes" on page F-1 to order more diskettes.

500016

Cause: The 5494 experienced a microcode failure. After logging the error in the error log, the 5494 has reinitialized itself and restarted. The microcode failure information is in the previous entry in the error log. This information has also been sent to the AS/400 as an alert.

Customer Action: An SRC will appear on the 5494 operator panel. Call 5494 Service and report this SRC.

500018

Cause: Your 5494 was restarted on the date and time in this entry. This is not an error.

Customer Action: None

500019

Cause: Both an Ethernet adapter and a token-ring adapter are installed in the 5494. You may only use one of these adapters. The 5494 uses the adapter for which it is configured. If no configuration exists, it uses the adapter in the lowest slot number.

Customer Action: None

50001A

Cause: The configuration file was changed, using the 5494 Utility Program interactively. This is an informational message that allows you to know that, at the next initialization of the 5494, the changed configuration file is in effect.

Customer Action: None

5101xx

Cause: A problem occurred while applying or removing changes contained in the code change file on the system diskette. No changes were installed.

xx is one of the following:

- 00 Change file header is not valid.
- 01 EC level is not valid.
- 02 EC level length is not valid.
- 03 EC data level is not valid.
- 05 Change file length is not valid.
- 10 Change section length is not valid.
- 20 Change is not valid—AS/400 system change file level error.

Customer Action: Retry the power-on sequence. If the error reoccurs, insert the backup diskette. Turn the power **OFF**, then turn the power back **ON** at the 5494.

If the problem occurs with the backup diskette, contact 5494 Service. If necessary, obtain a new backup diskette.

5102xx

Cause: A problem occurred while applying changes contained in the code change file from the AS/400 system. No changes were installed.

xx is one of the following:

- 00 AS/400 system file change file header is not valid.
- 01 AS/400 system file EC level is not valid.
- 02 AS/400 system file EC level length is not valid.
- 03 AS/400 system file EC data level is not valid.
- 05 AS/400 system file change file length is not valid.
- 10 AS/400 system file change section length is not valid.

Customer Action: Restart communication. If the error reoccurs, contact your AS/400 system operator.

520000

Cause: The 5494 did not find a printer that was available for local copy-to-printer operation.

Customer Action: Press **Error Reset**. Make sure that a printer is turned **ON** and is online and available. Retry the operation.

520001

Cause: The device at the address selected for the copy-to-printer operation is not a printer. The 5494 may not be configured correctly.

Customer Action: Make sure that the settings for port number and station address of the printer are configured correctly in the 5494.

520002

Cause: The designated printer is in session, turned **OFF**, in error state, or no device is turned **ON** at this address.

Customer Action: Press **Error Reset**. If the designated printer is in session, wait until printing is completed and retry the operation. Otherwise, correct any error conditions at the printer and retry the operation.

520003

Cause: The 5494 lost communication with the printer while the print operation was in progress.

Customer Action: Press **Error Reset**. If you want to restart the print job, make sure that the printer is turned **ON** and is online. Correct any error conditions, then retry the operation.

540010

Cause: **(LAN Gateway)** The Token-Ring or Ethernet adapter in the 5494 failed to initialize correctly.

Customer Action: The adapter may be failing. Run extended diagnostics and test all hardware. For information about running extended diagnostics, see "Running Extended Diagnostics" on page 8-20.

540011

Cause: **(LAN Gateway)** Manual recovery is in progress due to operator intervention.

Customer Action: None.

540021

Cause: **(LAN Gateway)** Temporary beaconing. The Token-Ring network is recovering from a beaconing condition.

Customer Action: None.

540105

Cause: **(LAN Gateway)** The command to the Token-Ring or Ethernet adapter has failed. The sense bytes are **xxyy**, where **xx** is the command that was issued to the adapter and **yy** is the return code from the adapter.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC ID is displayed.

Customer Action: Run extended diagnostics and test all hardware. For information about running extended diagnostics, see "Running Extended Diagnostics" on page 8-20.

540106

Cause: **(LAN Gateway)** The 5494 attempted to attach to the LAN (Open) and an adapter open error occurred. The 5494 will try again to attach to the LAN. For Token-Ring only, the problem could be caused by a speed mismatch between the workstations on the ring.

Customer Action: Make sure that all workstations attached to the ring are set to the same speed.

If the 5494 cannot attach to the LAN after retrying, note the following sense byte information and then refer to the *IBM Token-Ring Network Problem Determination Guide* for instructions on correcting the Token-Ring error.

Note: To obtain sense data, press the right arrow (→) key on the 5494 keypad when this SRC is displayed.

Token-Ring Sense Bytes

1100	Lobe media function failure
2600	Physical insertion ring failure
2700	Physical insertion ring failure ring beaconing
2A00	Physical insertion error timeout
2D00	No monitor detected
3200	Address verification signal loss
3500	Address verification timeout
3600	Address verification ring failure
3700	Address verification ring beaconing
3800	Address verification duplicate note address
3A00	Address verification remove received
4200	Ring poll signal loss
4500	Ring poll timeout
4600	Ring poll ring failure
4700	Ring poll beaconing
4A00	Ring poll remove received
5500	Request parameter timeout
5600	Request parameter ring failure
5700	Request parameter ring beaconing
5900	Request parameter request

5A00 Request parameter remove received.

Ethernet Sense Bytes

- 3300** Unable to transmit
- 3800** Address verification duplicate node address

540107

Cause: (LAN Gateway) The 5494 detected an error when it transmitted a LAN frame. The LAN data link is disconnected.

Sense data consisting of a 1-byte cause code and the 6-byte LAN address of the PWS that detected the error is recorded in the 5494 error log. See "Displaying the Latest Error Log Entries" on page 8-17.

The cause code is one of the following:

- 22** Error in frame transmission
- 23** Error in frame transmitted read-back checking
- 24** Unauthorized medium-access control (MAC) frame.

Customer Action: If the 5494 continues to report this problem, check the LAN Gateway configuration retry recount. It may be too low. Reconfigure the 5494 to increase the LAN retry count. (See Chapter 5, "Configuring Your System.") Retry the transmission. If the problem persists, restart the PC Support/400 program on the PWS indicated by the 6-byte LAN address.

540108

Cause: (LAN Gateway) A command to the Token-Ring or Ethernet adapter has failed. The sense bytes are *xxyy*, where *xx* is the command that was issued to the adapter and *yy* is the return code from the adapter.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC ID is displayed.

Customer Action: If this SRC reoccurs, the Token-Ring or Ethernet adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. See "Running Extended Diagnostics" on page 8-20. If extended diagnostics do not detect a problem, call 5494 service and report the SRC and sense data.

540109

Cause: (LAN Gateway) The 5494 received an exchange station identifier (XID) that is not valid from a LAN-connected PWS. The sense bytes information that is logged in the 5494 error log indicates the LAN address of the PWS.

Customer Action: Make sure that your PWS communication program is correctly installed and configured. Retry the operation.

Note: You do not have to IPL the 5494 again.

540122

Cause: (Token-Ring Gateway) The 5494 detected a Token-Ring network wire fault. There is a problem with the lobe between the 5494 and the multistation access unit (MSAU) to which it is connected.

The Token-Ring adapter in the 5494 is closed. The 5494 will continue to try to reopen the adapter until a Disconnect command is received from a 5494 operator or until the problem between the 5494 and the MSAU to which the 5494 is attached is repaired and the adapter reopens.

See "Ending a Communication Link" on page 7-18 for information on disconnecting the communication link.

Customer Action: Record the symptom *wire fault*, and then refer to the *IBM Token-Ring Network Problem Determination Guide* to repair the problem.

540123

Cause: (Token-Ring Gateway) The 5494 has removed itself from the Token-Ring network.

Customer Action:

1. Check with the Token-Ring network administrator to determine if an adapter remove was issued and was valid.
2. If the Token-Ring network administrator or network service representative did not issue an adapter remove, go to the operator panel and retry the Adapter Open command from the 5494 operator panel by pressing **Req**, typing **230**, and then pressing **Enter**.
3. If this SRC reoccurs, the Token-Ring adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. For more information, see "Running Extended Diagnostics" on page 8-20.

If extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that an auto-removal command was received.

540124

Cause: (Token-Ring Gateway) The 5494 received a remove command from the Token-Ring network.

Customer Action:

1. Check with the Token-Ring network administrator or network service representative to determine if an adapter remove was issued and was valid.
2. If the Token-Ring network administrator or network service representative did not issue an adapter remove, go to the operator panel and retry the Adapter Open command from the 5494 operator panel by pressing **Req**, typing **230**, then pressing **Enter**.
3. If this SRC reoccurs, the Token-Ring adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. For more information, see "Running Extended Diagnostics" on page 8-20.
If extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that a remove command was received.

540125

Cause: (Token-Ring Gateway) The Token-Ring network is beaconing due to a permanent error on the ring.

Customer Action:

1. Record that the Token-Ring is beaconing.
2. Refer to the *IBM Token-Ring Network Problem Determination Guide* and use *beaconing* as the symptom to repair the problem.

540404

Cause: LAN AS/400 Attachment: The ALS did not respond to the TEST command sent from the 5494. This indicates that the 5494 cannot contact the ALS. The 5494 will continue to send the TEST command until the ALS responds or an operator initiates a disconnect.

Customer Action: Contact the ALS operator to determine if the ALS is operational and configured for the 5494. Also, make sure the line is varied on at the AS/400 system.

If the Token-Ring or Ethernet line is varied off: Have the operator vary on the line. The 5494 should recover without further action.

If the Token-Ring or Ethernet line is varied on: The LAN AS/400 Attachment address configured in the 5494 is incorrect. Reconfigure

the 5494 (see Chapter 5, "Configuring Your System"), making sure that the AS/400 Token-Ring or Ethernet address matches the address in the line description at the AS/400 system.

If the Token-Ring or Ethernet line cannot be varied on because the AS/400 system is not operational: Wait for it to become operational or follow the steps in "Changing Your AS/400 System" on page 7-13 to establish communication with an alternate AS/400 system.

540405

Cause: LAN AS/400 Attachment: The ALS did not respond to the XID3 command sent from the 5494. This indicates that the 5494 cannot contact the ALS. The 5494 will continue to send the XID3 command until the ALS responds or an operator initiates a disconnect.

Customer Action: Contact the ALS operator to determine if the ALS is operational and configured for the 5494. Also, make sure the line and APPC controller descriptions are varied on at the AS/400 system.

If the APPC controller is not varied on: Vary on the 5494. The 5494 should recover without any further action.

If the APPC controller cannot be varied on because the AS/400 system is not operational: Wait for it to become operational or follow the steps in "Changing Your AS/400 System" on page 7-13 to establish communication with an alternate AS/400 system.

540406

Cause: (LAN AS/400 Attachment) Adapter open error. There was a problem when the 5494 attempted to attach to the LAN. The 5494 will try again to attach to the LAN. For Token-Ring, the problem could be caused by a speed mismatch between the workstations on the ring.

Customer Action: For Token-Ring, make sure that all workstations attached to the ring are set to the same speed.

If the 5494 cannot attach to the LAN after retrying, note the following sense byte information and then refer to the *IBM Token-Ring Network Problem Determination Guide* for instructions on correcting the error. Verify that the cabling is connected correctly.

Note: To obtain sense data, press the right arrow key on the 5494 keypad when this SRC is displayed.

Token-Ring Sense Bytes:

1100	Lobe media function failure
2600	Physical insertion ring failure
2700	Physical insertion ring failure ring beaconing
2A00	Physical insertion error timeout
2D00	No monitor detected
3200	Address verification signal loss
3500	Address verification timeout
3600	Address verification ring failure
3700	Address verification ring beaconing
3800	Address verification duplicate note address
3A00	Address verification remove received
4200	Ring poll signal loss
4500	Ring poll timeout
4600	Ring poll ring failure
4700	Ring poll beaconing
4A00	Ring poll remove received
5500	Request parameter timeout
5600	Request parameter ring failure
5700	Request parameter ring beaconing
5900	Request parameter request
5A00	Request parameter remove received.

Ethernet Sense Bytes:

3300	Unable to transmit
3800	Address verification duplicate note address

540407

Cause: (LAN AS/400 Attachment) The 5494 detected an error when it transmitted a LAN frame. The LAN data link is disconnected. The 5494 continues to send TEST commands to the ALS to reestablish the connection.

Sense data consisting of a 1-byte cause code and the 6-byte AS/400 Token-Ring address is available. To obtain sense data, press the right arrow key on the 5494 keypad when the error is displayed.

The cause code is one of the following:

- 22 Error in frame transmission
- 23 Error in frame transmitted read-back checking
- 24 Unauthorized medium access control (MAC) frame.

Customer Action: If the 5494 continues to report this problem, check your Token-Ring or Ethernet configuration retry count. It may be too low. Reconfigure the 5494 to increase the retry count. (See Chapter 5, "Configuring Your System.") Retry the transmission.

540408

Cause: (LAN AS/400 Attachment) A command to the Token-Ring or Ethernet adapter has failed. The sense bytes are xxxy, where xx is the command that was issued to the adapter and yy is the return code from the adapter.

Note: To obtain sense data, press the right arrow (→) key on the 5494 keypad when this SRC ID is displayed.

Customer Action: If this SRC reoccurs, the Token-Ring or Ethernet adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. See "Running Extended Diagnostics" on page 8-20. If extended diagnostics do not detect a problem, call 5494 service and report the SRC and sense data.

540422

Cause: (Token-Ring AS/400 Attachment) The 5494 detected a Token-Ring network wire fault. There is a problem with the lobe between the 5494 and the multistation access unit (MSAU) to which it is connected.

The Token-Ring adapter in the 5494 is closed. The 5494 will continue to try to reopen the adapter until a Disconnect command is received from a 5494 operator or until the problem is repaired and the adapter reopens. For information on the Disconnect command, see "Ending a Communication Link" on page 7-18.

Customer Action: Record the symptom *wire fault*, and then refer to the *IBM Token-Ring Network Problem Determination Guide* to repair the problem.

540423

Cause: (Token-Ring AS/400 Attachment) The 5494 has removed itself from the Token-Ring network.

Customer Action:

1. Check with the Token-Ring network administrator to determine if an adapter remove was issued and was valid.
2. If the Token-Ring network administrator or network service representative did not issue an adapter remove, go to the operator panel and retry the Adapter Open command from

the 5494 keypad by pressing **Req**, typing **230**, then pressing **Enter**.

3. If this SRC reoccurs, the Token-Ring adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. See "Running Extended Diagnostics" on page 8-20.

If the extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that an auto-removal command was received.

540424

Cause: (Token-Ring AS/400 Attachment) The 5494 received a remove command from the Token-Ring network.

Customer Action:

1. Check with the Token-Ring network administrator to determine if an adapter remove was issued and was valid.
 2. If the Token-Ring network administrator or network service representative did not issue an adapter remove, go to the operator panel and retry the Adapter Open command from the 5494 operator panel by pressing **Req**, typing **230**, then pressing **Enter**.
 3. If this SRC reoccurs, the Token-Ring adapter in the 5494 may be defective. Run extended diagnostics and test all hardware. See "Running Extended Diagnostics" on page 8-20.
- If the extended diagnostics did not detect a problem, contact the Token-Ring network administrator and report that a remove command was received.

540425

Cause: (Token-Ring AS/400 Attachment)

The Token-Ring network is beaconing due to a permanent error on the ring.

Customer Action:

1. Record that the Token-Ring is beaconing.
2. Refer to the *IBM Token-Ring Network Problem Determination Guide* and use **beaconing** as the symptom.

E00xxx

Cause: These SRCs are recorded in the 5494 error log and indicate hardware failures in the 5494. An xxx will be the 3-digit hardware SRC.

Customer Action: Call 5494 Service and report the last 3 digits of this SRC.

Fxxxxx

Cause: A 5494 code error has occurred.

Customer Action: Call 5494 service and report this SRC.

SRCs FFxxxxxxxxxx and **xxxxxxxxxx

The following SRCs are 12 digits.

FFxxxxxxxxxx

Cause: A 5494 code error has occurred.

Customer Action: Call 5494 Service and report this SRC.

**xxxxxxxxxx

Cause: A 5494 code error has occurred and the 5494 has reset and restarted.

Customer Action: Call 5494 Service and report this SRC.

SRCs FFxxxxxxxxxx

Chapter 10. Utility Program Reference Codes and Messages

Installation Reference Codes	10-2
Run-Time Messages	10-3

This chapter lists the reference codes and messages that can display on the PWS during installation and operation of the Utility Program.

For information about reference codes displayed during installation of the Utility Program, see "Installation Reference Codes."

For information about messages displayed while using the Utility Program, see "Run-Time Messages" on page 10-3.

Note: When using the Utility Program with a PWS running DOS, the Utility Program uses the PC Support/400 program. For errors displayed by the PC Support/400 program, refer to the *PC Support/400 (for PS/55): Messages and Problem Analysis Guide*.

Installation Reference Codes

The following reference codes might be displayed during the installation procedure.

0000

Cause: Installation complete.

Customer Action: None.

1010

Cause: The destination parameter is not valid. The destination drive must be a valid fixed disk and must be different from the install disk. This is a required parameter.

Customer Action: Start the INSTALL program again and provide the correct destination drive.

1020

Cause: The mode parameter is not valid. Valid mode parameters are 0, 1, 2, and (BLANK), where:

- 0 indicates that the program runs in stand-alone mode.
- 1 (**DOS only**) indicates that the program runs in interactive or stand-alone mode on a PWS using a 5250 workstation connection to the 5494.
- 2 (**DOS only**) indicates that the program runs in interactive or stand-alone mode on a PWS using

a Token-Ring connection to the 5494.

(BLANK) (**OS/2 operating system only**) indicates that the program runs in stand-alone mode, or in interactive mode with OS/2 Communications Manager.

This is a required parameter for PWSs using DOS.

Customer Action: Start the INSTALL program again and provide the correct mode parameter.

1031

Cause: The 5250 workstation address is not valid. Valid values are 0 through 6. This is an optional parameter.

Customer Action: Start the INSTALL program again and provide the correct 5250 workstation address.

1032

Cause: The Token-Ring address is not valid. Valid Token-Ring addresses are 400000000000 through 4000FFFFFF. This is an optional parameter but it is required if the Token-Ring SAP is specified.

Customer Action: Start the INSTALL program again and provide the correct Token-Ring address.

1040

Cause: The Token-Ring SAP is not valid. Valid Token-Ring SAP values are hexadecimal 04 through FC and must be divisible by 4. This is an optional parameter.

Customer Action: Start the INSTALL program again and provide the correct Token-Ring SAP.

1100

Cause: If you are installing the Utility Program for the first time, then not enough parameters were specified. If you are trying to update the Utility Program, then not enough parameters were specified to find the previous version.

Customer Action: Start the INSTALL program again and provide the necessary parameters.

2000

Cause: There is not enough storage available to run the installation program.

Customer Action: Free up at least 100 KB of memory. Start the INSTALL program again.

3000

Cause: An error occurred reading the utility diskette.

Customer Action: Make a copy of the back-up utility diskette for your operating system. Start the INSTALL program again using the backup diskette. If this does not solve the problem, order replacement diskettes. For information on ordering replacement diskettes, see Appendix F, "Ordering Replacement Diskettes."

4000

Cause: An error occurred creating the destination directory. The destination drive might not be valid or a file with the same name might already exist.

Customer Action: Make sure that the destination drive is valid and that there is not a file with the same name as 5494UP, then start the INSTALL program again.

4001

Cause: An error occurred writing to destination disk.

Customer Action: Make sure that the destination drive is valid.

4002

Cause: There is not enough disk space on the destination drive.

Customer Action: Specify another drive for the INSTALL program or free up 650 KB on the destination drive. Start the INSTALL program again and use the correct destination drive.

4003

Cause: An error occurred when updating the 5494UP.BAT file.

Customer Action: You must update this file manually by copying the correct .BAT file from the batch directory onto a diskette. In each case, you must add it into the 5494UP directory and rename it to 5494UP.BAT.

If your PC is LAN- attached to the 5494 or the AS/400 system, you must also copy the 5494TR.BAT file (5494TRR.BAT if not extended PC Support) to the 5494UP directory and name it 5494UP.BAT.

If you have a microchannel machine attached to the 5494 twinaxial ports or the AS/400 system, you must copy the file 5494TWS.BAT, or 5494TWSR.BAT if not extended PC Support.

If you have an ISA bus machine attached to the twinaxial ports of the 5494 or the AS/400

system, you must copy 5494TXC.BAT, or 5494TXCR.BAT if not extended PC Support.

4005

Cause: An error occurred during installation of the Utility Program. Installation of the Utility Program was not completed.

Customer Action: Reinstall and restart the Utility Program.

4007

Cause: Run-time options or parameters are not valid. You tried to start the Utility Program using the wrong name or parameters.

Customer Action: Reinstall and restart the Utility Program.

Run-Time Messages

The following messages can display when the Utility Program is started or is running.

These messages display in a pop-up window.

5494 Session can not be started

Cause: The PWS could not use the Utility Program with the 5494.

Customer Action: Verify the following:

- You have proper cabling and hardware setup on the PWS.
- No PWS has a Utility Program session active to this 5494.
- If attempting to use the remote access function, make sure 5494 Release 3.0 is installed on the 5494.
- If attempting to use the remote access function, make sure the parameter is correct. If using DOS, make sure the .PCS file exists. If using OS/2, make sure the alias is defined.
- If you are using CM/2, verify that the partner LU is not defined as dependent for the LU you are attempting to access. If you are not attempting to use the remote access feature, the partner LU name is LOCL5494.
- Make sure the PWS is configured correctly.
- If attempting to use the remote access function, verify the 5494 is currently communicating with an AS/400 system in the network.

If you are attempting to use the remote access function, intermediate nodes between the PWS

and the AS/400 system may have logged helpful messages.

If you have an OS/2 EE twinaxial connection, stop and start the Communications Manager again.

Start the Utility Program again. If the error reoccurs, call IBM service and report the status bytes displayed on the second line of the pop-up window.

5494 Utility Program error

Cause: The Utility Program received a parameter check or state check return code from the PWS.

Customer Action: Reinstall and start the Utility Program again. If the error reoccurs, call IBM service and report the status bytes displayed on the second line of the pop-up window.

5494 Session deallocated

Cause: Deallocate received from 5494.

Customer Action: Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

5494 Session ended

Cause: A failure prematurely ended the 5494 Utility Program. The PWS may have insufficient storage for the Utility Program.

Customer Action: Verify that the required resources are available in the PWS. See Chapter 4, "Installing and Using the 5494 Utility Program" for the resources required to run the Utility Program. If you are using an OS/2 EE twinaxial connection, stop and start Communications Manager again.

Start the Utility Program again. If the error reoccurs, call IBM service.

5494 Session connection ended

Cause: A failure prematurely ended the 5494 Utility Program. The 5494 might have lost power, been turned OFF, or the cable between the PWS and the 5494 is broken.

Customer Action: Make sure that the 5494 power push button is set to ON. The Power-On indicator should be on. Make sure that the Ready indicator is on. Make sure that the cabling is attached. If you are using an OS/2 EE twinaxial connection, stop and start Communications Manager again.

Start the Utility Program again. If the error reoccurs, call IBM service.

5494 Hardware error

Cause: A hardware failure occurred on the 5494.

Customer Action: Look up the 3-digit message code on the left side of the 5494 LCD. For more information, see Chapter 9, "Message Codes and System Reference Codes (SRCs)."

5494 System diskette invalid

Cause: The diskette in the 5494 diskette drive is not a valid 5494 system diskette.

Customer Action: Replace it with a valid 5494 system diskette, then try the function again.

5494 System diskette is write-protected

Cause: The 5494 system diskette is write-protected. The configuration data cannot be saved on this diskette.

Customer Action: Remove the 5494 system diskette from the 5494 diskette drive. Make sure that the write-protect tab is closed on the 5494 system diskette. (The diskette is not write-protected.) Insert the 5494 system diskette into the 5494 diskette drive, then try the function again.

5494 System diskette error

Cause: An error occurred writing the configuration data to the 5494 system diskette.

Customer Action: Replace the 5494 system diskette, then try the function again.

5494 System diskette file error

Cause: The configuration file was not found on the 5494 system diskette.

Customer Action: Replace the 5494 system diskette, then try the function again.

PWS diskette is write-protected

Cause: The PWS diskette is write-protected. The configuration data cannot be saved on this diskette.

Customer Action: Remove the diskette from the PWS diskette drive. Make sure that the write-protect tab is closed on the diskette. (The diskette is not write-protected.) Insert the diskette into the PWS diskette drive, then try the function again.

PWS disk error

Cause: An error occurred during an PWS read or write operation.

Customer Action: For diskette errors, replace the diskette and try again. For fixed disk errors, try the function again. If the error reoccurs, obtain service for the PWS fixed disk.

PWS file access denied

Cause: A file required by the Utility Program is access-protected. The second line of the pop-up window indicates the file that is access-protected.

Customer Action: Assign the Utility Program access to this file.

PWS disk full

Cause: There is not enough room on the PWS disk to write the configuration file.

Customer Action: Specify a different disk for the save option.

PWS file open failure

Cause: A file required by the Utility Program could not be opened.

Customer Action: Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

PWS file shared error

Cause: A file required by the Utility Program is currently owned by another program.

Customer Action: Make sure that other programs do not lock out the Utility Program files. Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

PWS file not found

Cause: A file required by the Utility Program was not found.

Customer Action: Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

PWS too many open files

Cause: The operating system has too many open files.

Customer Action: Make sure that other PWS programs are not accessing the Utility Program files. Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

PWS path not found

Cause: A path required by the Utility Program was not found. The second line of the pop-up window indicates the path that was not found.

Customer Action: Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

PWS drive not ready

Cause: The drive specified in the configuration file name is not ready.

Customer Action: Insert a diskette into the specified diskette drive.

PWS invalid drive

Cause: The drive specified in the configuration file name is not valid.

Customer Action: Specify a valid drive in the configuration file name.

PWS router is not installed

Cause: The PC Support/400 program router has not been loaded and is required by the Utility Program.

Customer Action: If you are using a Token-Ring, make sure that the Token-Ring device driver is installed and functional.

Make sure that the PC Support/400 program is installed and functional. Reinstall and start the Utility Program again. If the error reoccurs, call IBM service.

Communications Manager not started

Cause: OS/2 Communications Manager has not been started for 5494 local session.

Customer Action: Start OS/2 Communications Manager using the correct profile for the 5494 local session.

Configuration file is being saved

Cause: You selected the Save Configuration option and the configuration data is being saved.

Customer Action: None.

Save completed

Cause: The configuration data has been saved.

Customer Action: Press **Esc** to remove the pop-up window.

Data verified

Cause: The data and selections for this panel are correct.

Customer Action: Press **Esc** to remove the pop-up window.

Function not available

Cause: The function that you have selected is not available at this time. To select Network Link Establishment, you must use the Utility Program in interactive (not stand-alone) mode. To select Configuration, you must be in stand-alone mode, or you must be in interactive mode with the 5494 in configuration mode.

To select Concurrent Diagnostics, you must be in interactive mode with the 5494 in concurrent diagnostics mode.

Customer Action: Make sure that you have selected the correct mode when you started the Utility Program and that the 5494 is in the correct mode for the selected function.

For information about running the Utility Program to configure the 5494, see Chapter 5, "Configuring Your System." For information about placing the 5494 into concurrent diagnostics mode, see "NWS or PWS Diagnostics Information" on page 8-20.

Required field

Cause: You must enter a value in this field.

Customer Action: Refer to the configuration or Network Link Establishment worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. The *Planning Guide* provides instructions for completing these worksheets and describes valid entries for each field.

Invalid data

Cause: The value entered is not valid.

Customer Action: Refer to the configuration or Network Link Establishment worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. The *Planning Guide* provides instructions for completing these

worksheets and describes valid entries for each field.

Invalid range

Cause: The range entered is not valid.

Customer Action: Refer to the configuration or Network Link Establishment worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. The *Planning Guide* provides instructions for completing these worksheets and describes valid entries for each field.

Invalid length

Cause: The length entered is not valid.

Customer Action: Refer to the configuration or Network Link Establishment worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. The *Planning Guide* provides instructions for completing these worksheets and describes valid entries for each field.

Ethernet AS/400 Connection is configured

Cause: The Ethernet AS/400 connection is configured and the LAN Gateway function was requested. Only one of these options can be selected at a time.

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. To configure the 5494 for the LAN Gateway, you must first configure your AS/400 system communications to something other than Token-Ring or Ethernet.

Not available: Ethernet AS/400 Connection is configured

Cause: The Ethernet AS/400 connection is configured and the LAN Gateway function was requested. Only one of these options can be selected at a time.

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. To configure the 5494 for the LAN Gateway, you must first configure your AS/400 system communications to something other than Token-Ring or Ethernet.

Token-Ring AS/400 Connection is configured

Cause: The Token-Ring AS/400 connection is configured and the LAN Gateway function was requested. Only one of these options can be selected at a time.

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. To configure the 5494 for the LAN Gateway, you must first configure your AS/400 system communications to something other than Token-Ring or Ethernet.

Not available: Token-Ring AS/400 Connection is configured

Cause: The Token-Ring AS/400 connection is configured and the LAN Gateway function was requested. Only one of these options can be selected at a time.

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. To configure the 5494 for the LAN Gateway, you must first configure your AS/400 system communications to something other than Token-Ring or Ethernet.

LAN Gateway is configured

Cause: A LAN Gateway is configured and a token-ring or Ethernet AS/400 connection was requested. Only one of these options can be selected at a time.

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values. To configure the 5494 for Token-Ring or Ethernet AS/400 connection, select Not configured for LAN Gateway.

Invalid number of Multinational Countries

Cause: Too many keyboard codes have been used. A maximum of 4 different keyboard codes can be selected (the master country code and 3 other codes).

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values.

Connection number error

Cause: The connection number for this configuration is not valid.

Customer Action: Refer to the worksheets from the *IBM 5494 Remote Control Unit Planning Guide* for the required values.

Appendix A. Safety Notices

Danger Notices	A-2
U.S. English	A-2
Belgian Dutch	A-2
Brazilian Portuguese	A-2
Canadian French	A-2
Chinese	A-2
Danish	A-2
Finnish	A-3
French	A-3
German	A-3
Italian	A-3
Japanese	A-3
Korean	A-3
Norwegian	A-3
Portuguese	A-3
Russian	A-4
Spanish	A-4
Swedish	A-4
Caution Notices	A-4
U.S. English	A-4
Belgian Dutch	A-4
Brazilian Portuguese	A-5
Canadian French	A-5
Chinese	A-5
Danish	A-5
Finnish	A-5
French	A-6
German	A-6
Italian	A-6
Japanese	A-6
Korean	A-7
Norwegian	A-7
Portuguese	A-7
Russian	A-7
Spanish	A-8
Swedish	A-8

Danger Notices

This appendix lists all of the safety notices used in this book. It includes the following notices:

- Danger notices
- Caution notices.

Danger Notices

U.S. English

DANGER

Never work on equipment, or connect or disconnect signal cables, during periods of lightning activity.

Belgian Dutch

Gevaarlijk

Werk nooit aan een machine en koppel nooit signaalkabels los of vast tijdens een onweer.

Brazilian Portuguese

PERIGO

Nunca trabalhe em equipamento, ou conecte ou desconecte cabos de sinal durante relâmpagos e trovoadas.

Canadian French

Danger

Ne travaillez jamais sur une machine, ni ne connectez ou déconnectez de câbles de transmission pendant un orage.

Chinese

危險！

請勿在裝備上作業，或在打雷時安裝或拔掉信號電纜。

Danish

Pas på!

Man må hverken arbejde med udstyret eller tilslutte eller afbryde signal-kabler i tordenvejr.

Finnish**VAARA**

Älä työskentele ohjaimella, irrota tai kytke liitäntäkaapeleita salamoinnin aikana.

French**Danger**

N'effectuez aucune manipulation sur le 5494 et ne connectez ou ne déconnectez aucun câble d'interface pendant un orage.

German**VORSICHT**

Bei Gewittern dürfen keine Arbeiten am Gerät vorgenommen und keine Kabel angeschlossen oder gelöst werden.

Italian**Pericolo**

Durante un temporale, non operare mai sulle apparecchiature o collegare o scollegare i cavi segnali.

Japanese

危険

雷が発生している間は、けっして機器を操作したり、あるいは信号ケーブルの接続、切り離しはしないでください。

Korean

위험

번개치는 동안 신호 케이블을 연결 또는 단절시키지 마시오.
또한 장비도 사용하지 마시오.

Norwegian**FARE!**

Arbeid aldri med utstyr når det er fare for lynnedslag. I slike tilfeller må du hverken trekke ut signalkabler eller kople noen til.

Portuguese**PERIGO**

Não trabalhe nunca em equipamento, nem ligue ou desligue cabos de sinal, durante períodos de trovoadas.

Caution Notices

Russian

ОСТОРОЖНО

Запрещается работать с оборудованием, присоединять или отсоединять сигнальные кабели во время грозы.

Spanish

PELIGRO

Nunca trabaje con el equipo, ni conecte o desconecte cables de señal durante períodos en los que existe actividad meteorológica de rayos.

Swedish

Varning

Arbete aldrig med utrustning eller signalkablar vid åskväder.

Caution Notices

U.S. English

CAUTION:

For your safety, you must connect equipment only to a properly wired and grounded outlet. An improperly wired outlet can place hazardous voltage on accessible metal parts of the equipment. You are responsible for outlet wiring.

CAUTION:

Turn power off and unplug the power cord from the receptacle before connecting or disconnecting signal cables.

Belgian Dutch

Let op:

Uit veiligheidsoverwegingen moet de machine steeds worden aangesloten op een degelijk bedraad en geaard stopcontact. Bij een slecht bedraad stopcontact kunnen aanraakbare metalen delen van de machine onder een gevaarlijke spanning komen te staan. De klant is verantwoordelijk voor de bedrading van het stopcontact.

Let op:

Zet de netschakelaar op O (Uit) en trek de stekker uit het stopcontact vooraleer u signaalkabels los- of vastkoppelt.

Brazilian Portuguese

CUIDADO:

Para sua segurança, somente conecte equipamentos à tomadas aterradas e com fiação adequada. Uma tomada com fiação inadequada pode causar voltagem perigosa em partes metálicas do equipamento às quais você tem acesso. O cliente é responsável pela fiação da tomada.

CUIDADO:

Desligue a força e desconecte o cabo de força da caixa antes de conectar ou desconectar os cabos de sinal.

Canadian French

Attention:

Pour la sécurité de l'utilisateur, la machine doit toujours être branchée sur une prise de courant correctement câblée et mise à la terre. Une prise mal câblée peut provoquer une tension dangereuse sur des parties métalliques accessibles de la machine. Le client est responsable du câblage de la prise.

Attention:

Mettez l'interrupteur de tension hors tension et débranchez le cordon d'alimentation de la prise avant de connecter ou de déconnecter des câbles de transmission.

Chinese

危險！

請勿在裝備上作業，或在打雷時安裝或拔掉信號電纜。

注意：

連接或切斷信號線之前，請關掉電源並拉掉電源線。

Danish

NB

Af sikkerhedshensyn skal kontrolenheden tilsluttet en korrekt monteret jordforbundet stikkontakt. En forkert forbundet stikkontakt kan forårsage farlig spænding på tilgængelige metaldele i udstyret. Kunden har ansvaret for installation af stikkontakten.

NB

Sluk for strømmen, og tag netledningen ud af stikkontakten, før signalkablerne tilsluttes ellerafbrydes.

Finnish

VAARA

Verkkojohdon saa kytkeä vain maadoitettuun pistorasiaan. Maadoittamattoman pistorasian käyttö saattaa aiheuttaa vaarallisen jännitteen koneen metalliosiin. Asiakas on vastuussa pistorasian asianmukaisudesta.

Caution Notices

Varoitus:

Katkaise virta ja irrota verkkohoito pistorasiasta ennen kuin liität tai irrotat liittäntäkaapeleita.

French

Attention:

Une prise d'alimentation mal installée ou un mauvais câblage de la prise de raccordement peuvent provoquer une mise sous tension dangereuse des parties métalliques du contrôleur. Le client est responsable de l'installation de la prise d'alimentation qui doit être correctement câblée et mise à la terre, afin d'éviter tout choc électrique.

Attention:

Mettez le contrôleur hors tension et retirez le cordon d'alimentation de sa prise, avant de connecter ou de déconnecter les câbles d'interface.

German

ACHTUNG:

Gerät nur an Schutzkontaktsteckdose mit einwandfrei geerdetem Schutzkontakt anschließen. Bei nicht ordnungsgemäß angeschlossener Netzsteckdose können an berührbaren Metallteilen des Gerätes gefährliche Berührungsspannungen auftreten. Für den einwandfreien Zustand der Steckdose ist der Betreiber verantwortlich.

ACHTUNG:

Aus Sicherheitsgründen ist der Netzstecker zu ziehen, bevor Signalkabel angeschlossen oder aufgetrennt werden.

Italian

Attenzione:

Per la sicurezza dell'utente, collegare le apparecchiature solo ad una presa correttamente cablata e munita di collegamento a terra. Una presa che non sia correttamente cablata può portare tensioni pericolose sulle parti metalliche accessibili delle apparecchiature. E' responsabilità del cliente assicurarsi che la presa sia correttamente cablata.

Attenzione:

Spegnere l'unità e scollegare il cavo di alimentazione dalla presa, prima di collegare o scollegare i cavi segnali.

Japanese

注意:

安全のために、機器は正しく配線された接地（アース）極付きの電源コンセントに接続してください。電源コンセントの誤配線により、機器の金属部分に危険な電圧が生ずることがあります。コンセントの配線はお客様の責任で行ってください。

付録A、「安全に関する注意」に翻訳された安全に関する但し書きが記載されています。

Korean

주의 :

안전을 위해서, 장비를 올바르게 배선된 전원 공급구에 접지시키시오.
전원 공급구의 배선은 장비의 금속부분에 위험한 전압을 발생시킬
수 있습니다. 위의 사항은 고지의 책임입니다.

위험

번개치는 동안 신호 케이블을 연결 또는 단절시키지 마시오.
또한 장비도 사용하지 마시오.

Norwegian

FORSIKTIG:

For din egen sikkerhets skyld må du bare kople utstyret til en korrekt jordet stikkontakt. Hvis stikkontakten ikke er montert på godkjent måte, kan det forårsake farlige spenninger på berørbare metallflater. Kunden har ansvaret for at stikkontakten er forsvarlig koplet.

FORSIKTIG:

Slå av nettspenningen og trekk nettkabelen ut av kontakten før du tar ut eller kopler til signalkabler.

Portuguese

CUIDADO:

Para sua segurança, o equipamento só deverá ser ligado a uma tomada com os fios montados correctamente e com boa ligação de terra. Uma tomada com os fios montados incorrectamente poderá provocar o aparecimento de voltagens perigosas em partes metálicas, facilmente acessíveis, do equipamento. O cliente é responsável pela montagem dos fios da tomada e da ficha.

CUIDADO:

Deslique a corrente e retire o cabo de corrente eléctrica da tomada, antes de ligar ou de desligar os cabos de sinal.

Russian

ВНИМАНИЕ:

Согласно правилам техники безопасности аппаратуру необходимо подключать к розеткам, кабели и заземлённым надлежащим образом. Если розетка кабелирована неправильно, открытые металлические поверхности аппаратуры могут оказаться под напряжением, опасным для жизни. Правильное кабелирование - ваша ответственность.

ВНИМАНИЕ:

Перед тем, как присоединять или отсоединять сигнальные кабели, выключите питание и выньте кабель из розетки.

Caution Notices

Spanish

PRECAUCION:

Para su seguridad, usted debe conectar el equipo solamente a un tomacorriente cableado y conectado a tierra correctamente. Un tomacorriente cableado en forma inadecuada puede ser la causa de la aparición de voltajes peligrosos en partes metálicas accesibles del equipo. El cliente es responsable del cableado del tomacorriente.

PRECAUCION:

Apague la alimentación eléctrica del equipo y desenchufe el cable del receptáculo antes de conectar o desconectar cables de señal.

Swedish

Varning:

Utrustningen måste anslutas till ett korrekt kopplat jordat eluttag. Ett felkopplat uttag kan medföra att utrustningens metallytor blir spänningsförande. IBM ansvarar inte för koppling av uttag.

Varning:

Slå från strömmen och lossa nätkabeln från eluttaget innan du ansluter eller kopplar ur signalkablar.

Appendix B. Configuring the AS/400 for Communication with the 5494

This appendix provides a brief overview of the steps required to configure the AS/400 to communicate with the 5494. For more information, refer to *AS/400 Communications: Configuration* and *AS/400 Remote Work Station Support*.

The parameter values required to configure the 5494 can be recorded on the configuration worksheets in the *IBM 5494 Remote Control Unit: Planning Guide*. Completed (as well as blank) 5494 configuration worksheets are also shown in the previously referenced manual.

Note: Certain parameter values in the 5494 configuration must match the AS/400 configuration parameter values for the system to operate correctly. See Table 5-2 on page 5-53 for matching configuration parameters.

Configuring the AS/400

This section contains information necessary to configure the following components on the AS/400:

- Line
- APPC controller
- Mode
- RWS controller
- NWS devices.

For the 5494, you need the following controller descriptions:

- An APPC controller description to support the 5494 controller functions and any PWS devices.
- An RWS controller description to support the 5494 controller functions and NWS devices.

On the AS/400, use the commands explained in the following sections.

Using Automatic Configuration on the AS/400 System

The *APPC Controller* description can be automatically created by the AS/400 system when using a LAN connection to the AS/400 system. Enable this support by setting AUTOCRTCTL to *YES in the line description.

In addition, with OS/400 Version 3 Release 1, the *RWS Controller* description can be automatically created by the AS/400 system when using any protocol. Enable this support by setting the system value autoconfigure remote controller (QAUTORMT) to ON (1). The *5494-attached NWS Device* descriptions can also be automatically created by the AS/400. Enable this support by setting autocreate device (AUTOCRTDEV) to *ALL in the RWS controller description.

Refer to *AS/400 Remote Work Station Support* for more information.

Configuring a Line to the Network

To create a line configuration to the network, type **CRTLINxxx**, where *xxx* is one of the following values:

- **TRN** for Token-Ring
- **ETH** for Ethernet
- **SDLC** for SDLC and X.21
- **X25** for X.25.

Note: The line may have already been created if the AS/400 is already communicating with the network. To display the line configuration, type **DSPLIND** and enter the name of the line.

If the 5494 is not adjacent to the target AS/400 system, you can use any line type that supports Advanced Peer-to-Peer Networking (APPN) traffic.

Configuring an APPC Controller

To create an APPC controller description, type **CRTCTLAPPC**. This description is used to connect the 5494 to the AS/400 system.

Note: This example assumes the 5494 is an ALS of the AS/400 system. If you are communicating through an SNA subarea or an APPN network, then an APPC controller description explicitly for the 5494 is not necessary. The AS/400 can use an existing network connection to communicate with the 5494.

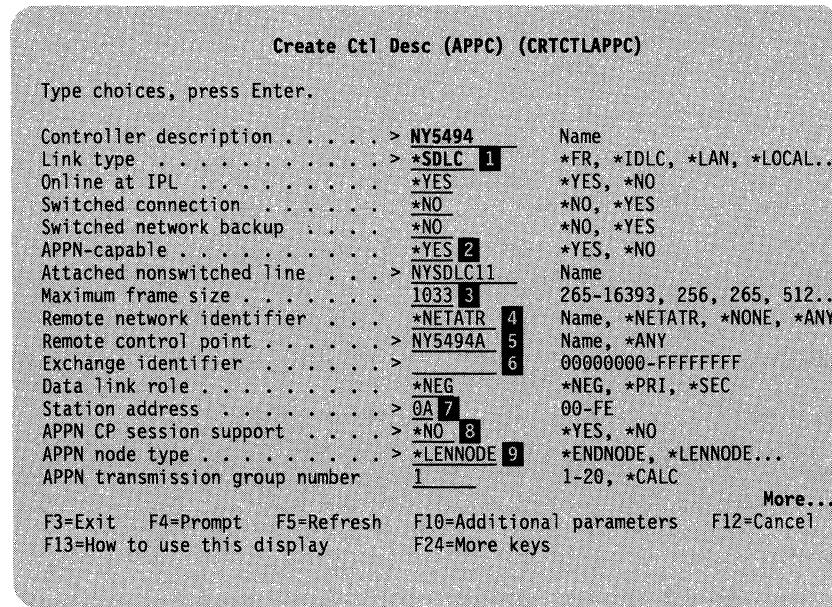


Figure B-1. APPC Controller Description Example

Select your choices for this panel. The following parameters describe the APPC controller. AS/400 keywords are shown in parentheses.

1 Link type (LINKTYPE)

Select ***SDLC**, ***X25**, or ***LAN**. The value you select depends on the type of line you created when you configured the line to the network. Select ***SDLC** if you created an SDLC line, ***X25** if you created an X.25 line, and ***LAN** if you created a Token-Ring or Ethernet line.

Note: Figure B-1 is an example of an SDLC APPC controller description. Other link types have different configuration parameters.

2 APPN-capable (APPN)

This parameter must be configured as *YES.

3 Maximum frame size (MAXFRAME)

The maximum frame size that the 5494 supports is 1033.

4 Remote network identifier (RMTNETID)

This parameter is the network ID where the 5494 is located. A value of *NETATTR selects the network ID specified in the network attributes. **This value must match the 5494 network name (NWS Field Hx:3) in the 5494 configuration.**

To display the network attributes, type **DSPNETA**

5 Remote control point (RMTCPNAME)

This parameter is the control point name of the 5494. This value is used to correlate the APPC controller to a specific RWS controller. **Since the 5494 is an ALS of the AS/400 system, this value must match the 5494 CP name (NWS Field 13) in the 5494 configuration.**

6 Exchange identifier (EXCHID)

If you are not using SDLC-switched, then this parameter is optional and can be left blank. If you are using SDLC-switched or additional security is needed, then this parameter must match the block ID and the ID number of the ALS. Since the 5494 is an ALS of the AS/400 system, use the following guidelines:

1. This parameter must begin with X'073'
2. If the 5494 ID number (NWS Field 19) is not an asterisk (*), then the remainder of this parameter must match the 5494 ID number
3. If the 5494 ID number is an asterisk (*) and the 5494 is not LAN-attached to the AS/400 system, then this parameter must be 073000xx, where xx is the 5494 station address (NWS Field 2)
4. If the 5494 ID number is an asterisk (*) and the 5494 is LAN-attached, then this parameter must be 07300000.

7 Station address (STNADR)

Select a value from X'01' to X'FE' for the station address when communicating with the 5494. **Since the 5494 is an ALS of the AS/400 system, this value must match the 5494 station address (NWS Field 2).**

8 APPN CP session support (CPSSN)

Select *NO. The 5494 does not support a CP session.

9 APPN node type (NODETYPE)

Select *LENNODE. The 5494 communicates with the AS/400 system as a LEN node.

Configuring a Mode

OS/400 has an IBM-supplied mode QRMTWSC for the 5494. QRMTWSC provides support for 28 NWS sessions in Version 2 Release 2 and 56 NWS sessions in Version 2 Release 3, and later. If the mode QRMTWSC existed prior to installing Version 2 Release 3, or later, then it will need to be modified to support 56 devices.

Configuring the AS/400

The following parameters describe the mode. AS/400 keywords are shown in parentheses.

Locally controlled sessions (LCLCTLSSN)

This field value is the number of NWSs that the 5494 can support (28 or 56).

Maximum sessions (MAXSSN)

This field value is 1 greater than the value for the LCLCTLSSN field (29 or 57).

Notes:

1. To create a mode description that matches the mode description of the 5494, type **CRTMODD**.
2. To display a mode description, type **DSPMODD**.
3. To change a mode description, type **CHGMODD**.

Configuring an RWS Controller

The RWS controller description can be created automatically. Refer to "Using Automatic Configuration on the AS/400 System" on page B-1 for more information.

To create an RWS controller description, type **CRTCTRLRWS**. The RWS controller description controls the NWS sessions and the controller session that transfers product information between the 5494 and the AS/400 system. The link type of *NONE and the Remote Location Name parameter logically connect this controller to the APPC controller.

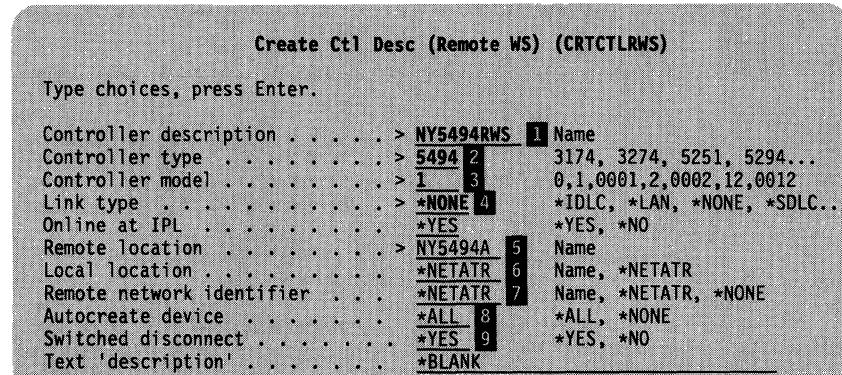


Figure B-2. RWS Controller Description Example

Select your choices for this panel. The following parameters describe the RWS controller. AS/400 keywords are shown in parentheses.

- 1 Controller description (CTLD)
Select the controller description name.
- 2 Controller type (TYPE)
Select **5494**.
- 3 Controller model (MODEL)
Select the model number of the 5494 controller. Select **2** if you have a LAN adapter installed; otherwise, select **1**.

This field is for reference only; the AS/400 system does not use it.

4 Link type (LINKTYPE)

Select *NONE to indicate LU 6.2 attachment. The controller description will not be physically attached to a line description.

5 Remote location (RMTLOCNAME)

Select the remote location name for this controller. This value is used to correlate the RWS controller with a specific APPC controller. **The remote location must match the 5494 LU name (NWS Field 12) in the 5494 configuration.**

6 Local location (LCLLOCNAME)

Select the local location name for this controller. A value of *NETATTR causes the local location name specified in the network attributes to be used. **The local location must match the AS/400 LU name (NWS Field Hx:1) in the 5494 configuration.**

To display the network attributes, type **DSPNETA**

7 Remote network identifier (RMTNETID)

Select the remote network identifier for this controller. A value of *NETATTR causes the local network identifier specified in the network attributes to be used. **The remote network identifier must match the 5494 network name (NWS Field Hx:3) in the 5494 configuration.**

To display the network attributes, type **DSPNETA**.

8 Autocreate device (AUTOCRTDEV)

In OS/400 Version 3 Release 1, select *ALL if you would like device descriptions automatically created for this controller. Otherwise, select *NONE.

9 Switched disconnect (SWTDSC)

In OS/400 Version 3 Release 1, select *YES if you would like this controller disconnected when the system determines that the last device is no longer in use. Otherwise, select *NO.

Configuring Nonprogrammable Workstation Devices

NWS device descriptions can be created automatically. Refer to “Using Automatic Configuration on the AS/400 System” on page B-1 for more information.

To configure a device description for each NWS attached to the 5494, type **CRTDEVDSP** to create a device description for displays, and **CRTDEVPRT** to create a device description for printers.

Determining the LOCADR Parameter Value

Before creating the display and printer device descriptions, determine the location address (LOCADR parameters) that must be defined for each device.

The value defined for the LOCADR parameter for the CRTDEVDSP and CRTDEVPRT commands is based on the device address and 5494 port assignments as shown in Table B-1 on page B-6.

Configuring the AS/400

Table B-1. Local Location Addresses

	6						
Workstation Address	0	1	2	3	4	5	
Port 0	00	01	02	03	04	05	06
Port 1	07	08	09	0A	0B	0C	0D
Port 2	0E	0F	10	11	12	13	14
Port 3	15	16	17	18	19	1A	1B
Port 4	1C	1D	1E	1F	20	21	22
Port 5	23	24	25	26	27	28	29
Port 6	2A	2B	2C	2D	2E	2F	30
Port 7	31	32	33	34	35	36	37

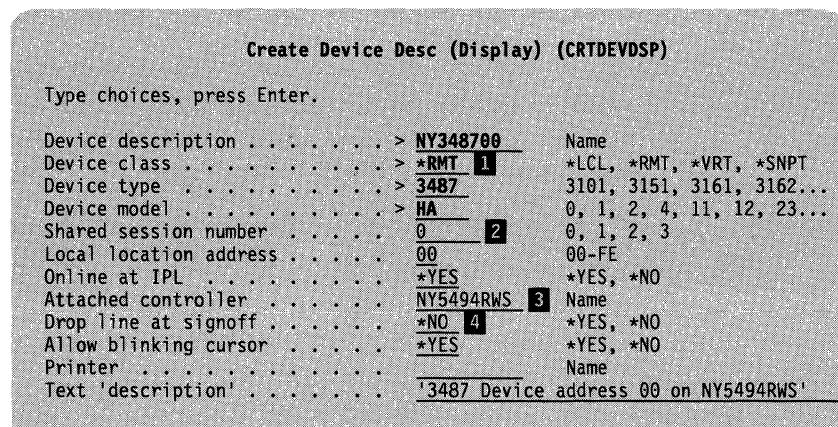


Figure B-3. Device Description Example

Select your choices for this panel. The following parameters describe the controller devices. AS/400 keywords are shown in parentheses.

1 Device class (DEVCLS)

Select the class of the device attached to the remote controller. *RMT indicates that the device is attached to a remote controller.

2 Shared session number (SHRSSNNBR)

In OS/400 Version 3 Release 1, this field specifies the shared session number for a twinaxial display station. This parameter is valid for device types which support shared addressing and is not present on other screens. A separate device description is required for each shared session. Select 0 for the base session and 1—3 for the additional shared sessions.

3 Attached controller (CTL)

Select the name you created for the RWS controller where the device is attached.

4 Drop line at signoff (DROP)

If the Switched disconnect (SWTDSC) parameter in the associated RWS controller description is *NO, the value in this field is ignored. Otherwise, this field determines whether or not signon screens remain on the displays after the last attached user signs off.

Connecting the Communication Links Example

If you have a switched line anywhere between your 5494 and your AS/400 system, select *YES. This causes the AS/400 system to drop the switched line when the last user signs off. If the lines between the 5494 and the AS/400 system are nonswitched lines, select *NO so that the line is not dropped.

Connecting the Communication Links Example

The following example outlines the necessary steps that must be performed on the AS/400 system to connect a 5494 using the SDLC leased line (NYSDLC11), the APPC controller (NY5494), and the RWS controller (NY5494RWS). This example assumes the 5494 has already been configured and the NWS devices are already configured on the AS/400 system.

- 1 To vary on the RWS controller and devices, type **WRKCFGSTS *CTL NY5494RWS** and select option 1 beside the controller description.

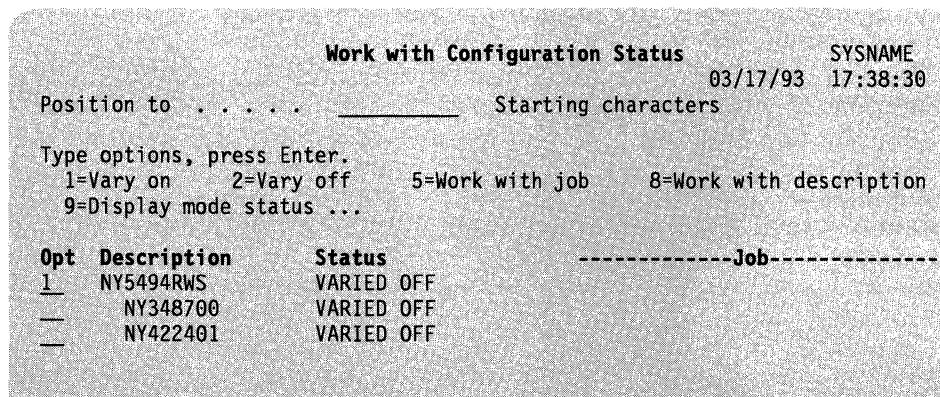


Figure B-4. Initial RWS Controller Status

After a few seconds refresh the screen (**F5**). The following information appears:

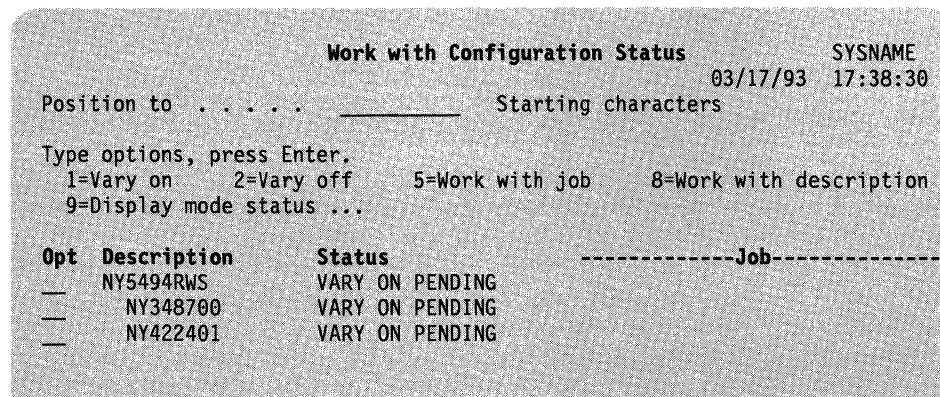


Figure B-5. RWS Controller Status After Being Varied On

Connecting the Communication Links Example

- 2** To vary on the SDLC leased line (NYSDLC11) and its APPC controller (NY5494), type **WRKCFGSTS *LIN NYSDLC11** and select option 1 beside the line description.

The screenshot shows a terminal window titled "Work with Configuration Status". The date and time are listed as "03/17/93 17:38:30" and "SYSNAME". The "Position to" field is empty, and the "Starting characters" field is also empty. Below this, a message says "Type options, press Enter." followed by a key map: "1=Vary on 2=Vary off 5=Work with job 8=Work with description 9=Display mode status ...". A table follows:

Opt	Description	Status	Job
1	NYSDLC11	VARIED OFF	
—	NY5494	VARIED OFF	

Figure B-6. Initial SDLC Leased Line Status

After a few seconds, refresh the screen (**F5**). The following information appears:

The screenshot shows the same terminal window as Figure B-6, but the status has changed. The table now shows:

Opt	Description	Status	Job
—	NYSDLC11	Active	
—	NY5494	VARY ON PENDING	

Figure B-7. SDLC Leased Line Status After Being Varied On

- 3** Insert the 5494 System diskette in the 5494, push the power button ON, and wait for the Ready indicator to light.

- 4** Switch the power ON for the attached NWS devices and start the PWSs.

The line status display appears, as shown:

Note: It may be necessary to press **F5** to refresh the screen.

Connecting the Communication Links Example

Work with Configuration Status			SYSNAME
			03/17/93 18:49:16
Position to Starting characters			
Type options, press Enter.			
1=Vary on 2=Vary off 5=Work with job 8=Work with description			
9=Display mode status ...			
Opt	Description	Status	-----Job-----
—	NYSDLC11	ACTIVE	
—	NY5494	ACTIVE	
—	NY5494A	ACTIVE	
—	QRMTWSC	ACTIVE/TARGET	NY5494A QUSER 028042
—	QRMTWSC	ACTIVE/SOURCE	NY5494A QUSER 028042
—	QRMTWSC	ACTIVE/SOURCE	NY5494A QUSER 028042
—	NYDOSTW1	ACTIVE	
—	OPCSUPP	ACTIVE/TARGET	QXFSERV NYID04 028045
—	OPCSUPP	ACTIVE/TARGET	NYDOSTW1 NYID04 028046

Figure B-8. Final SDLC Leased Line Status

The RWS controller status appears, as shown:

Work with Configuration Status			SYSNAME
			03/17/93 17:38:30
Position to Starting characters			
Type options, press Enter.			
1=Vary on 2=Vary off 5=Work with job 8=Work with description			
9=Display mode status ...			
Opt	Description	Status	-----Job-----
—	NY5494RWS	ACTIVE	
—	NY348700	SIGNON DISPLAY	
—	NY422401	VARIED ON	

Figure B-9. Final Status of the RWS Controller

- 5** To display the virtual controller for the PWS, type **WRKCFGSTS *CTL QVIRCD***. The workstation function sessions (WFS) appear, as shown:

Work with Configuration Status			SYSNAME
			03/17/93 17:38:30
Position to Starting characters			
Type options, press Enter.			
1=Vary on 2=Vary off 5=Work with job 8=Work with description			
9=Display mode status ...			
Opt	Description	Status	-----Job-----
—	QVIRCD0001	ACTIVE	
—	NYDOSTW1S1	SIGNON DISPLAY	
—	NYDOSTW1S2	SIGNON DISPLAY	

Figure B-10. Virtual Controller Status for PWS

Communicating with Your AS/400 System

After configuring your AS/400 system and connecting the communication links, see Chapter 7, "Communicating with Your AS/400 System" to establish connection.

Appendix C. System Configuration Examples

This appendix provides examples that show sample parameters for the following connections:

Token ring network	Page C-2
I Ethernet network	Page C-9
SDLC leased line with Token-Ring Gateway	Page C-16
I SDLC switched/V.25 bis autodial line with Ethernet Gateway	Page C-23
X.21 switched line	Page C-30
X.21 leased line	Page C-37
X.25 Permanent Virtual Circuit (PVC)	Page C-44
X.25 Switched Virtual Circuit (SVC)	Page C-51
SDLC leased line with Token-Ring Gateway through APPN	Page C-58
I SDLC leased line through SNA subarea network	Page C-67
I Token-Ring through SNA subarea network	Page C-77

For additional 5494 configuration examples, refer to *5494 and OS/2 Extended Services: Connecting Remote Entry User Groups with AS/400*.

The examples in this appendix assume the following software levels:

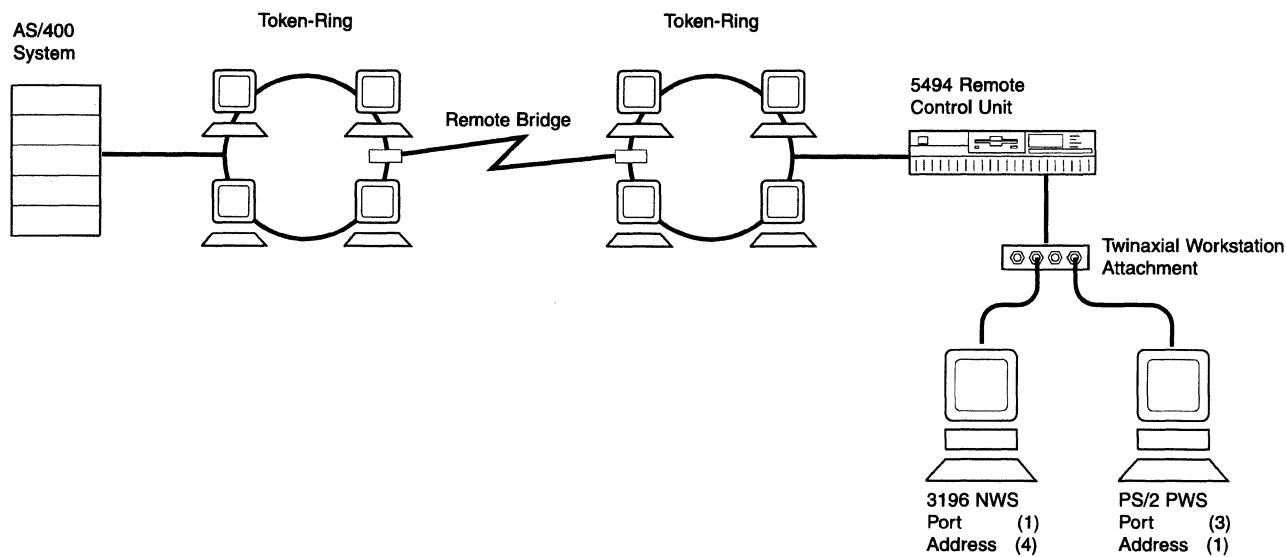
IBM Equipment	Software Level Required
AS/400 system	OS/400 Version 2 Release 1 (Modification Level 1 or higher)
Workstation (PWS)	DOS, PC Support/400 Version 2 Release 1 or higher

Note: These examples apply only to the specified software levels. IBM cannot guarantee that future software releases will support the examples described.

Token-Ring Network

AS/400 System Connection Using a Token-Ring Network

The following example describes an AS/400 system connection to the 5494 through a Token-Ring network.

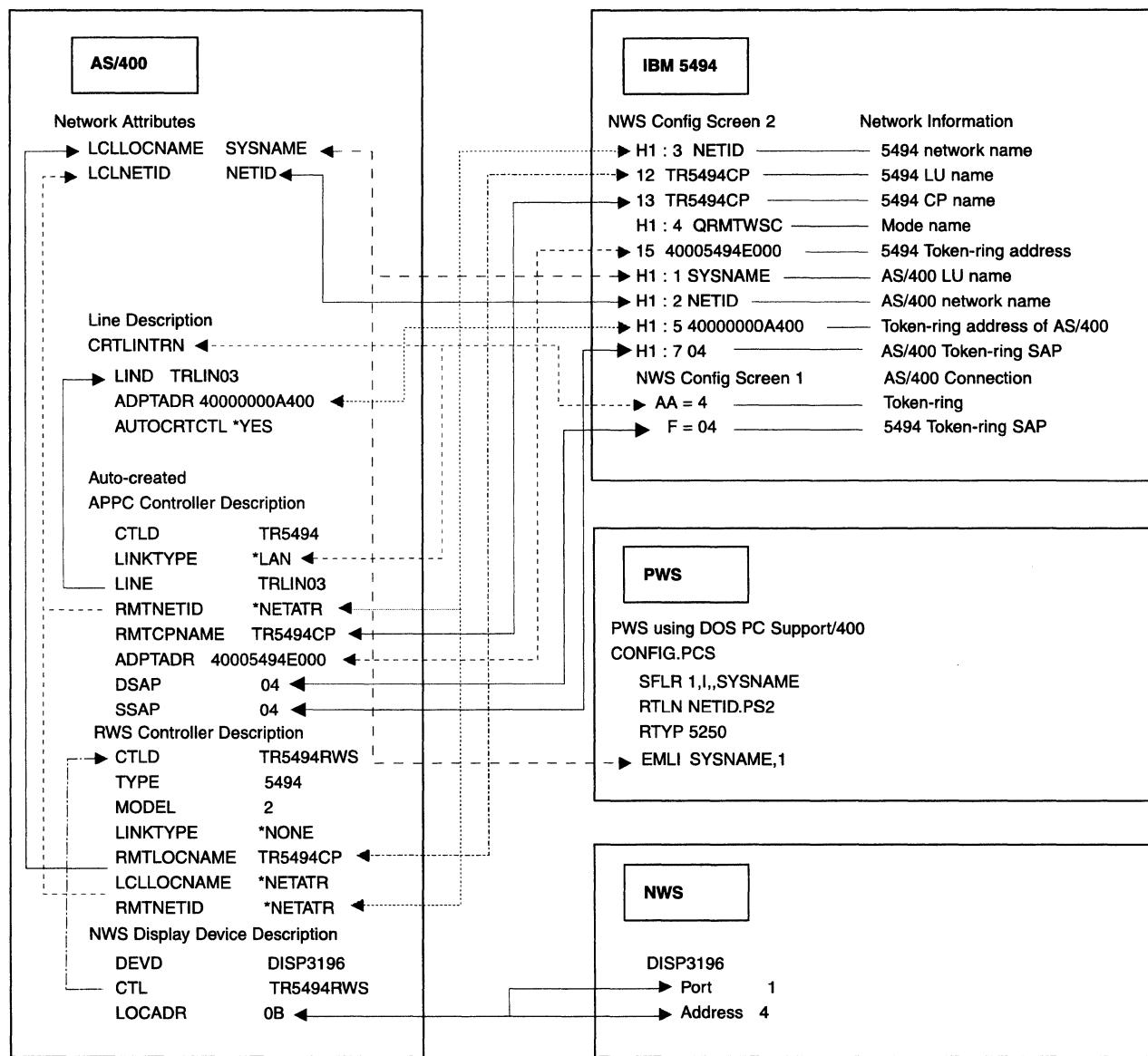


This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Refer to your AS/400 system documentation for a complete list of configuration parameters.

Token-Ring Network Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
5494 LU name	B ¹	12	TR5494CP	RMTLOCNAME
5494 CP name	C ¹	13	TR5494CP	RMTCPNAME
5494 connection number (Token-ring address of 5494)	E ¹	15	40005494E000	ADPTADR for APPCCTL
5494 token-ring SAP	A1 ²	F	04	DSAP
5494 ID number	G3 ¹	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ¹	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ¹	H1:2	NETID	LCLNETID
5494 network name	H1:3 ¹	H1:3	NETID	RMTNETID
Mode name	H1:4 ¹	H1:4	QRMTWSC	MODD
AS/400 connection number (Token-ring address of AS/400)	H1:5 ¹	H1:5	40000000A400	ADPTADR for TRLIN03
AS/400 token-ring SAP	H1:1 ²	H1:7	04	SSAP

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the AS/400 Communication Worksheet—Token-Ring in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	TRLIN03	
Resource names	RSRCNAME	LIN03	
Line speed	LINESPEED	4M	
Local adapter address	ADPTADR	40000000A400	H1:5 ¹
Maximum frame size		1033	

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLINTRN** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	TR5494	
Link type	LINKTYPE	*LAN	
Switched line list	SWLINLST	TRLIN03	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	TR5494CP	C ¹
LAN remote adapter address	ADPTADR	40005494E000	E ¹
Exchange identifier	EXCHID	07300000	G3 ²
APPN capable	APPN	*YES	
APPN node type	NODETYPE	*LENNODE	
LAN DSAP	DSAP	04	A1 ³
LAN SSAP	SSAP	04	H1:1 ³

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 With field G3 set to *, the format of the EXCHID parameter is 07300000, where X'073' is the block number assigned to the 5494 and 00000 is used for token-ring.
- 3 Refer to the AS/400 Communication Worksheet—Token-Ring in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- 1 The mode name QRMTWSC is IBM-supplied.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide* in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTL	TR5494RWS	
Controller type	TYPE	5494	
Controller model	MODEL	2 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	TR5494CP	B ¹
Local location	LCLLOCNAME	*NETADR	H1:1 ¹
Remote network identifier	RMTNETID	*NETADR	H1:3 ¹

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEV	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	TR5494RWS

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Token-Ring Network

Type WRKCFGSTS *DEV to display AS/400 system device descriptions for displays attached to the 5494.

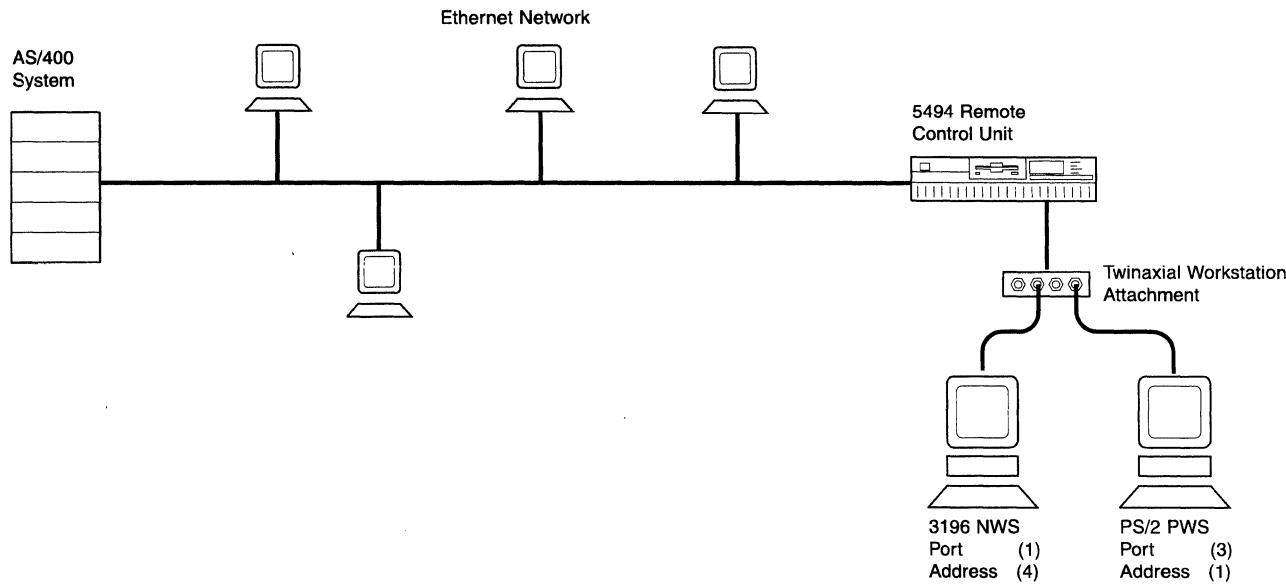
Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP 5250	
EMLI SYSNAME,1	LCLLOCNAME

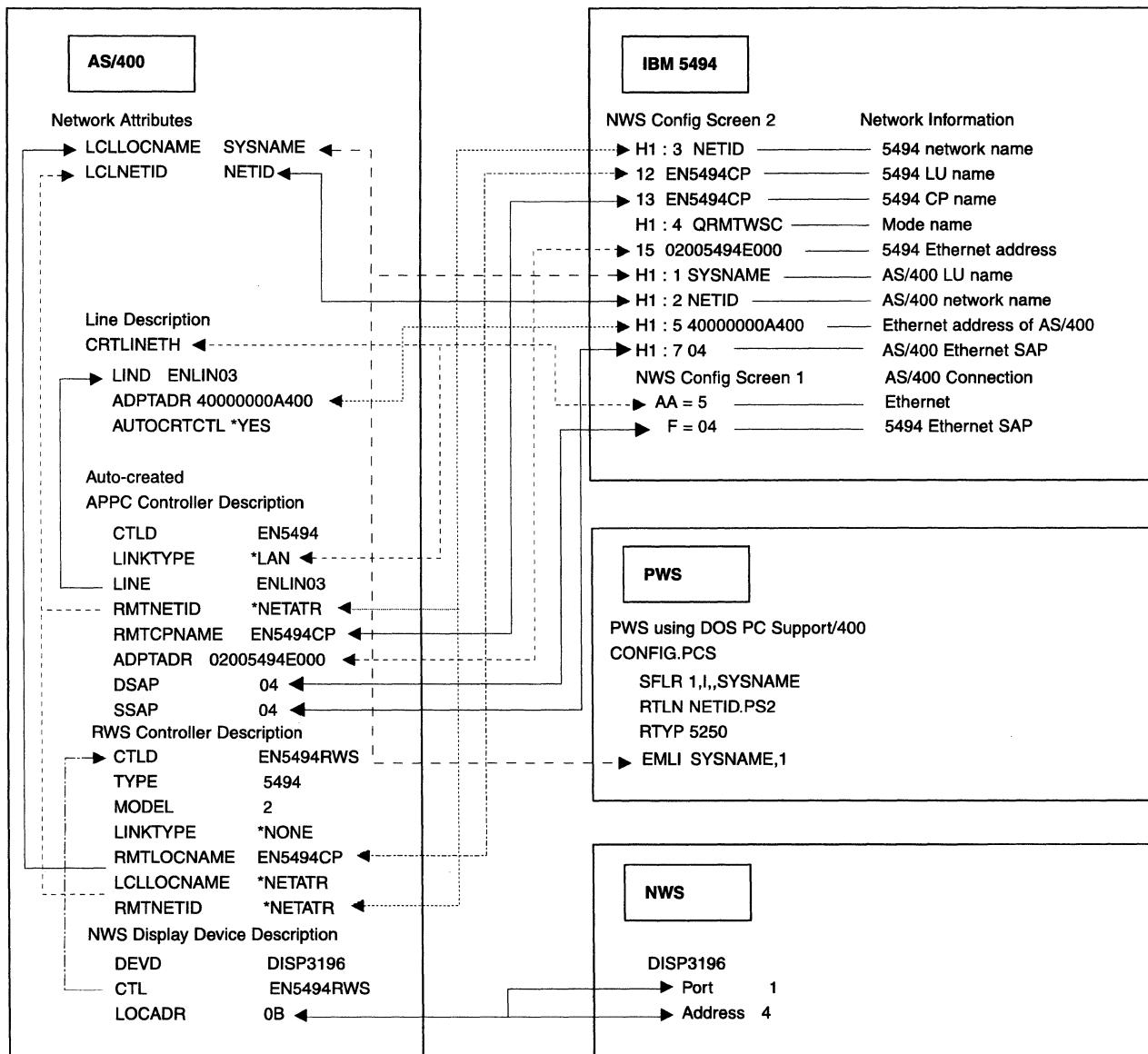
AS/400 System Connection Using an Ethernet Network

- The following example describes an AS/400 system connection to the 5494 through an Ethernet network.



- This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:
 - The 5494
 - AS/400 system network attributes
 - Line description
 - APPC controller description
 - Mode description
 - Remote workstation controller description
 - Display device description
 - The PWS.
- Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

Ethernet Network Matching Parameters



5494 Configuration

- The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
5494 LU name	B ¹	12	EN5494CP	RMTLOCNAME
5494 CP name	C ¹	13	EN5494CP	RMTCPNAME
5494 connection number (Ethernet address of 5494)	E ¹	15	02005494E000	ADPTADR for APPCCTL
5494 Ethernet SAP	A1 ²	F	04	DSAP
5494 ID number	G3 ¹	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ¹	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ¹	H1:2	NETID	LCLNETID
5494 network name	H1:3 ¹	H1:3	NETID	RMTNETID
Mode name	H1:4 ¹	H1:4	QRMTWSC	MODD
AS/400 connection number (Ethernet address of AS/400)	H1:5 ¹	H1:5	40000000A400	ADPTADR for ENLIN03
AS/400 Ethernet SAP	H1:1 ²	H1:7	04	SSAP

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the AS/400 Communication Worksheet—Ethernet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

- The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	5494 Configuration Worksheet Field	
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

- The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	ENLIN03	
Resource name	RSRCNAME	LIN03	
Local adapter address	ADPTADR	40000000A400	H1:5 ¹
Ethernet standard	ETHSTD	*ALL	
Link speed	LINKSPEED	10M	

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

- Type **CRTLINETH** to create AS/400 system line descriptions.
- Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.
- Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

- The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	EN5494	
Link type	LINKTYPE	*LAN	
Switched line list	SWLINLST	ENLIN03	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	EN5494CP	C ¹
LAN remote adapter address	ADPTADDR	02005494E000	E ¹
Exchange identifier	EXCHID	07300000	G3 ²
APPN capable	APPN	*YES	
APPN node type	NODETYPE	*LENNODE	
LAN DSAP	DSAP	04	A1 ³
LAN SSAP	SSAP	04	H1:1 ³

Notes:

- Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- With field G3 set to *, the format of the EXCHID parameter is 07300000, where X'073' is the block number assigned to the 5494 and 00000 is used for Ethernet.
- Refer to the AS/400 Communication Worksheet—Ethernet in the *5494 Remote Control Unit Planning Guide*.

- Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.
- Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

- The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- The mode name QRMTWSC is IBM-supplied.
- Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

- Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

- The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	EN5494RWS	
Controller type	TYPE	5494	
Controller model	MODEL	2 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	EN5494CP	B ¹
Local location	LCLLOCNAME	*NETATTR	H1:1 ¹
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹

Notes:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- ² Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

- Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.
- Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.
- Note:** In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

- The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	EN5494RWS

Note:

- ¹ To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

- Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

| Type WRKCFGSTS *DEV to display AS/400 system device descriptions for displays attached to the 5494.

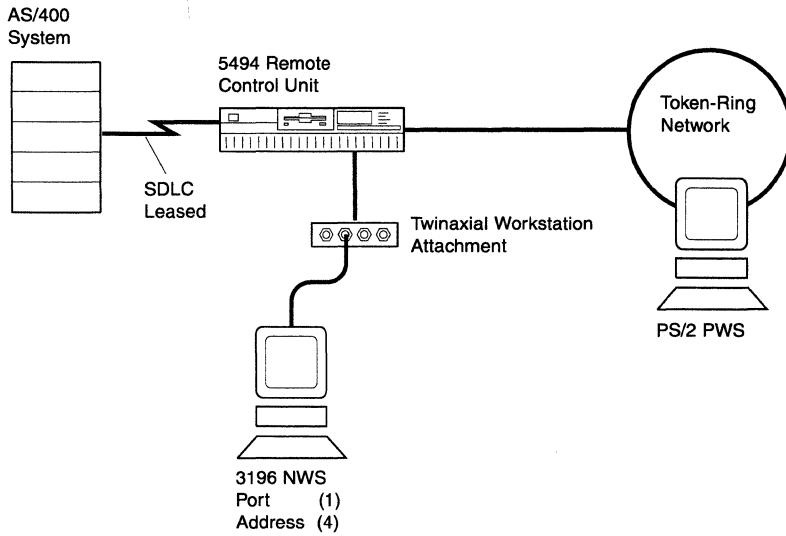
| **Programmable Workstation Using DOS PC Support/400**

| The PS/2 computer configuration file contents are as follows:

	AS/400
	Parameter
File Contents	Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP 5250	
EMLI SYSNAME,1	LCLLOCNAME

AS/400 System Connection Using an SDLC Leased Line with Token-Ring Gateway

The following example describes an AS/400 system connection to the 5494 using an SDLC leased line.

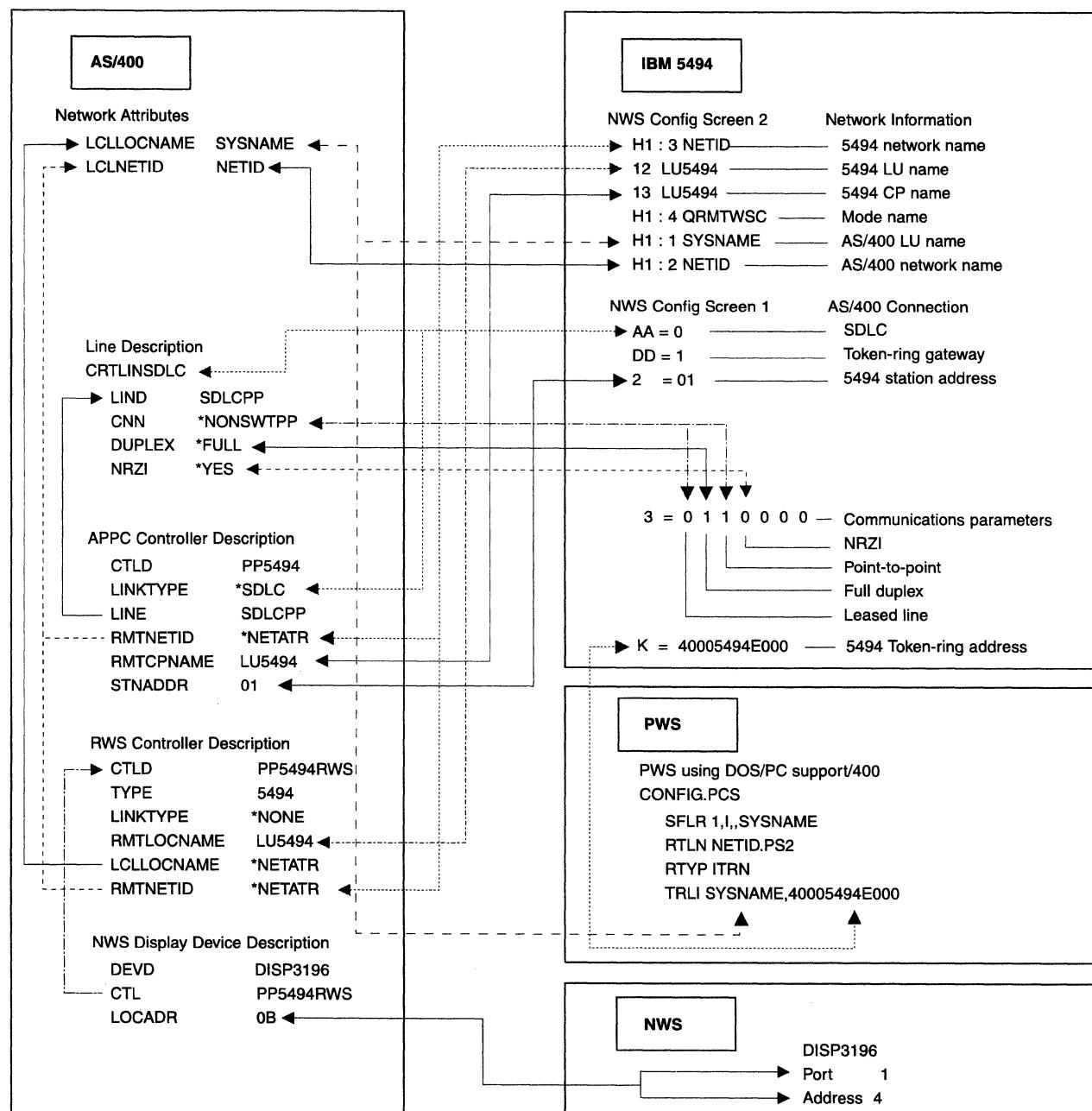


This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

SDLC Leased Line with Token-Ring Gateway Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Communication mode	title of worksheet	AA	SDLC (0)	CRTLINSDLC
LAN Gateway support	D1 ¹	DD	Token-ring (1)	N/A
Station address	A ¹	2	01	STNADR
Line type	B1 ¹	3	leased line (0)	CNN
Line facility	B2 ¹	3	full-duplex (1)	DUPLEX
Connection type	B3 ¹	3	point-to-point (1)	CNN
Data encoding	B4 ¹	3	NRZI (0)	NRZI
5494 LU name	B ²	12	LU5494	RMTLOCNAME
5494 CP name	C ²	13	LU5494	RMTCPNAME
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ²	H1:2	NETID	LCLNETID
5494 network name	H1:3 ²	H1:3	NETID	RMTNETID
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD

Notes:

- ¹ Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- ² Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	SDLCPP	
Category of line		*SDLC	
Resource names	RSRCNAME	LIN041	
Physical interface	INTERFACE	*RS232V24	
Connection type	CNN	*NONSWTPP	B1 ¹ B3 ¹
Exchange identifier	EXCHID	*SYSGEN	
NRZI data encoding	NRZI	*YES	B4 ¹
Maximum controllers	MAXCTL	1	B3 ¹
Maximum frame size	MAXFRAME	1033	
Duplex	DUPLEX	*FULL	B2 ¹

Note:

- 1 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLINSDLC** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system communication controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLID	PP5494	
Link type	LINKTYPE	*SDLC	
Switched connection	SWITCHED	*NO	
Attached nonswitched Line	LINE	SDLCPP	
Maximum frame size	MAXFRAME	1033	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	LU5494	C ¹
Data link role	ROLE	*NEG	
Station address	STNADR	01	A ²
Exchange identifier	EXCHID	07300001	A ² , G3 ³
APPN-capable	APPN	*YES	
APPN node type	NODETYPE	*LENNODE	

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- 3 With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- 1 The mode name QRMTWSC is IBM-supplied.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	PP5494RWS	
Controller type	TYPE	5494	
Controller model	MODEL	2 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	LU5494	B ¹
Local location	LCLLOCNAME	*NETATTR	H1:1 ¹
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEV D	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B ¹
Attached controller	CTL	PP5494RWS

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

SDLC Leased Line

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Type **WRKCFGSTS *DEV** to display AS/400 system device descriptions for displays attached to the 5494.

Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

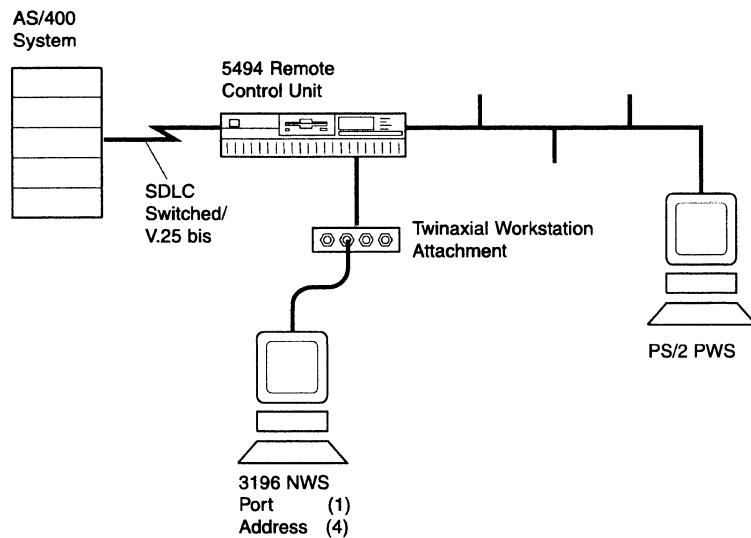
File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP ITRN	
TRLI SYSNAME, 40005494E000 ¹	LCLLOCNAME

Note:

- | 1 The destination Token-Ring address in the PS/2 computer configuration is the 5494 Token-Ring address. Refer to the Token-Ring Gateway Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Connection Using an SDLC Switched/V.25 bis Autodial Line with Ethernet Gateway

The following example describes an AS/400 system connection to the 5494 using an SDLC switched/V.25 bis line.

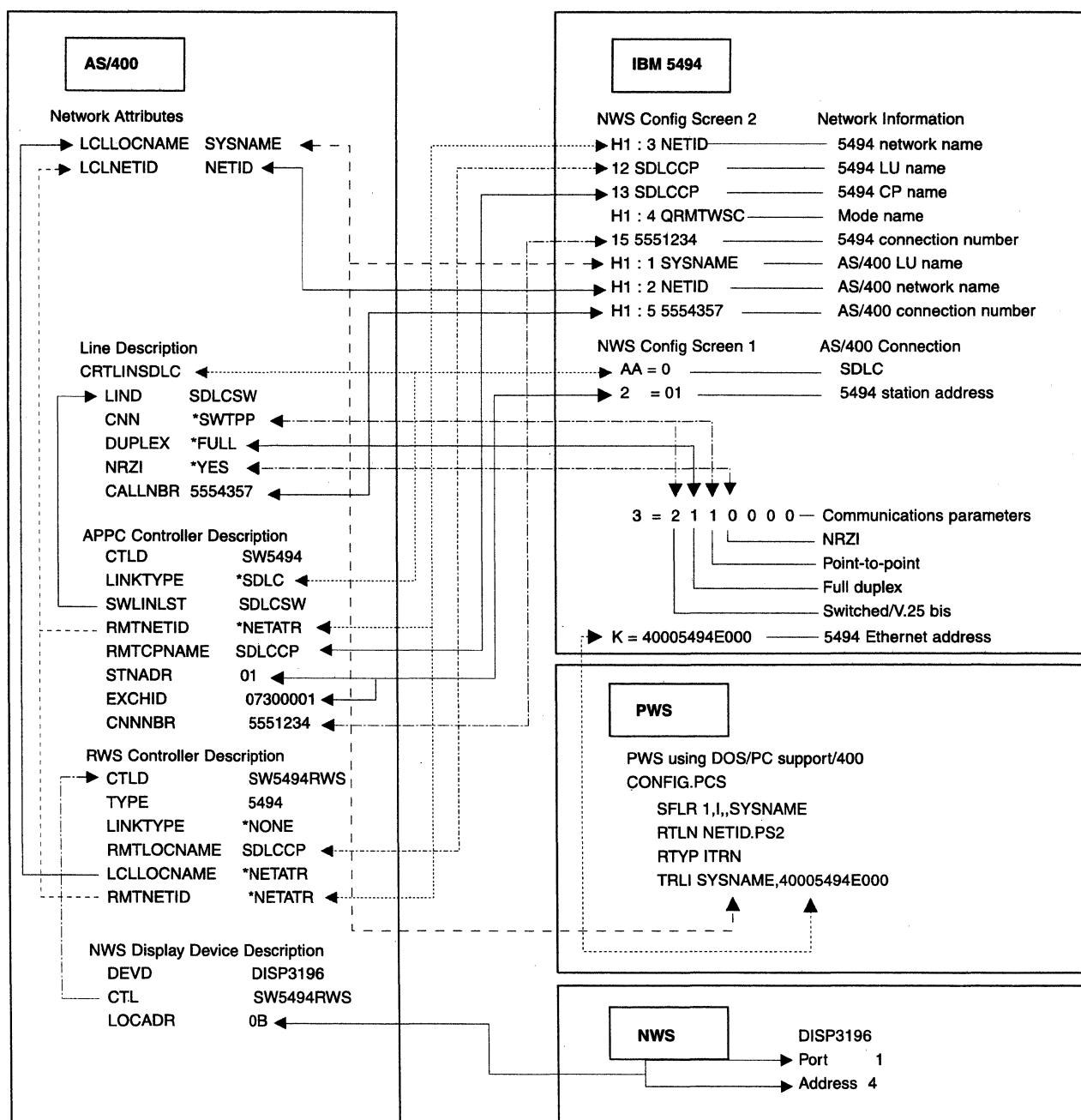


This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

SDLC Switched/V.25 bis Autodial Line with Ethernet Gateway Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Communication mode	title of worksheet	AA	SDLC(0)	CRTLINSDLC
LAN Gateway support	E1 ¹	DD	Ethernet 802.3 (2)	N/A
Station address	A ¹	2	01	STNADR
Line type	B1 ¹	3	switched/V.25 bis (2)	CNN
Line facility	B2 ¹	3	full-duplex (1)	DUPLEX
Connection type	B3 ¹	3	point-to-point (1)	CNN
Data encoding	B4 ¹	3	NRZI (0)	NRZI
5494 LU name	B ²	12	SDLCCP	RMTLOCNAME
5494 CP name	C ²	13	SDLCCP	RMTCPNAME
5494 connection number	E ²	15	5551234	CNNNBR
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ²	H1:2	NETID	LCLNETID
5494 network name	H1:3 ²	H1:3	NETID	RMTNETID
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD
AS/400 connection number	H1:5 ²	H1:5	5554357	CALLNBR

Notes:

- 1 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	SDLCSW	
Category of line		*SDLC	
Resource names	RSRCNAME	LIN021	
Physical interface	INTERFACE	*RS232V24	
Connection type	CNN	*SWTPP	B1 ¹ B3 ¹
Exchange identifier	EXCHID	*SYSGEN	
NRZI data encoding	NRZI	*YES	B4 ¹
Calling number	CALLNBR	5554357	H1:5 ²
Maximum frame size	MAXFRAME	1033	
Duplex	DUPLEX	*FULL	B2 ¹

Notes:

- 1 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLINSDLC** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	SW5494	
Link type	LINKTYPE	*SDLC	
Switched connection	SWITCHED	*YES	
APPN-capable	APPN	*YES	
Switched line list	SWLINLST	SDLCSW	
Maximum frame size	MAXFRAME	1033	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	SDLCCP	C ¹
Exchange identifier	EXCHID	07300001	A ³ , G ²
Connection number	CNNNBR	5551234	E ¹
Station address	STNADR	01	A ³
APPN node type	NODETYPE	*LENODE	

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- 3 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- 1 The mode name QRMTWSC is IBM-supplied.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	SW5494RWS	
Controller model	MODEL	2 ²	
Controller type	TYPE	5494	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	SDLCCP	B ¹
Local location	LCLLOCNAME	*NETATR	H1:1 ¹
Remote network identifier	RMTNETID	*NETATR	H1:3 ¹

Notes:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- ² Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	SW5494RWS

Note:

- ¹ To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Type **WRKCFGSTS *DEV** to display AS/400 system device descriptions for displays attached to the 5494.

Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

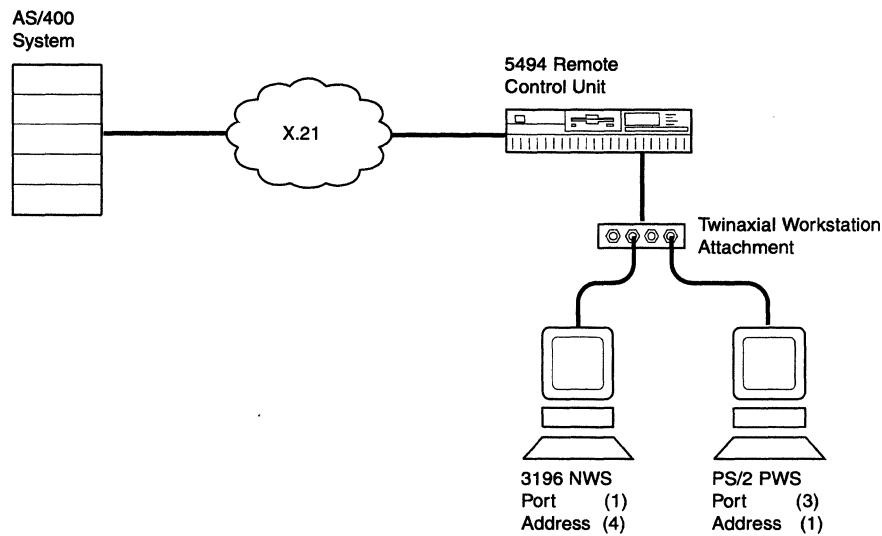
File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP ITRN	
TRLI SYSNAME, 40005494E000 ¹	LCLLOCNAME

Note:

1 The destination Ethernet address in the PS/2 computer configuration is the 5494 Ethernet address. Refer to the *Ethernet Gateway Worksheet* in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Connection Using an X.21 Switched Line

The following example describes an AS/400 system connection to the 5494 using an X.21 switched line.

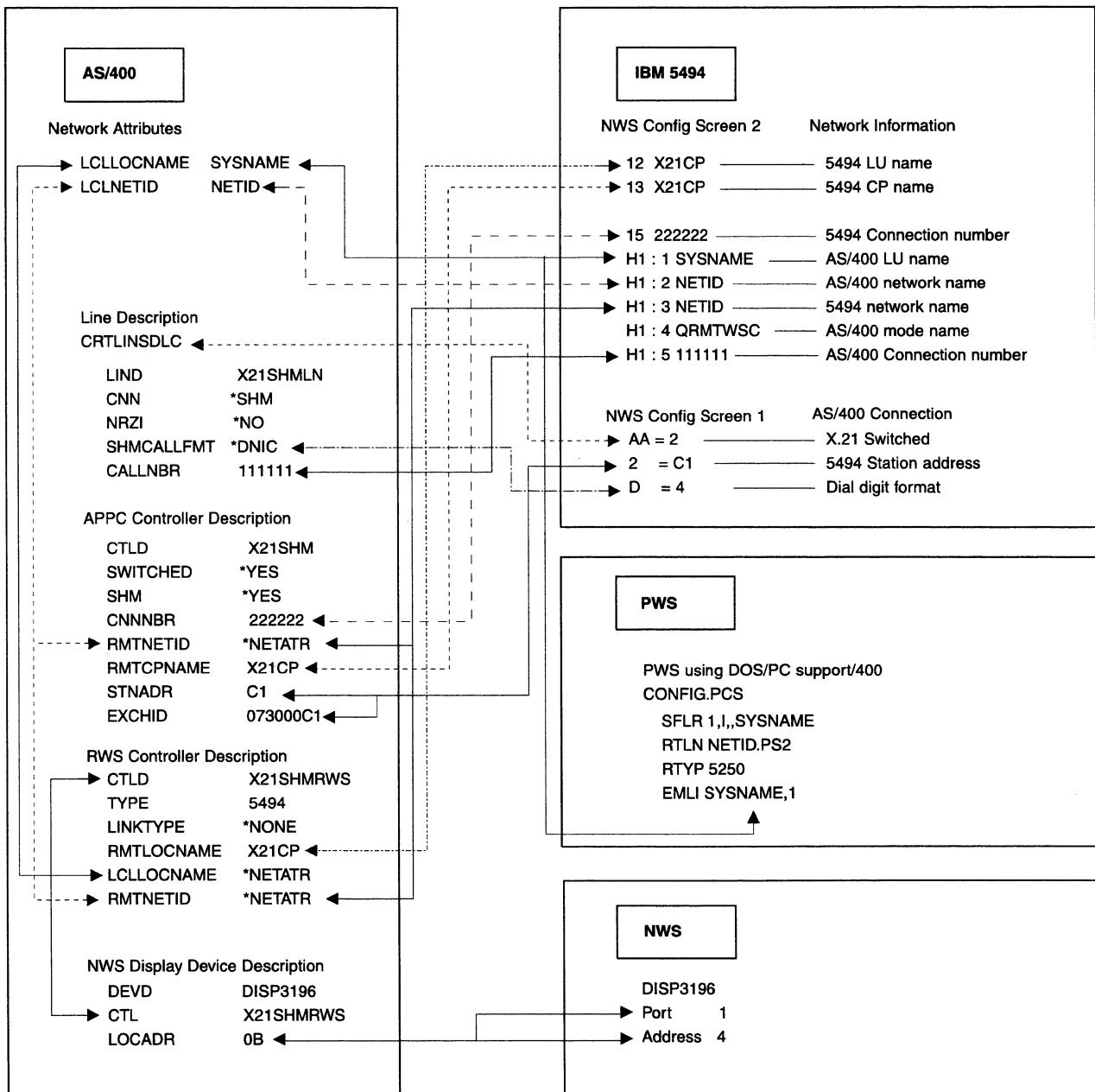


This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

X.21 Switched Line Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Station address	A ¹	2	C1	STNADR
Dial digit format	C ¹	D	4(DNIC)	SHMCALLFMT
5494 LU name	B ²	12	X21CP	RMTLOCNAME
5494 CP name	C ²	13	X21CP	RMTCPNAME
5494 connection number	E ²	15	222222	CNNNBR
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ²	H1:2	NETID	LCLNETID
5494 network name	H1:3 ²	H1:3	NETID	RMTNETID
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD
AS/400 connection number	H1:5 ²	H1:5	111111	CALLNBR

Notes:

- 1 Refer to the AS/400 Communication Worksheet—X.21 Switched in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	X21SHMLN	
Physical interface	INTERFACE	*X21	
Connection type	CNN	*SHM	
SHM node type	SHMNODE	*T21	
NRZI data encoding	NRZI	*NO	
Exchange identifier	EXCHID	*SYSGEN	
SHM Call Format	SHMCALLFMT	*DNIC	C ¹
Calling number	CALLNBR	111111	H1:5 ²
Maximum frame size	MAXFRAME	1033	

Notes:

- 1 Refer to the AS/400 Communication Worksheet—X.21 Switched in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLINSDLC** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHWDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter	Value	5494 Configuration Worksheet Field
AS/400 Field	Keyword		
Controller description	CTLD	X21SHM	
Short hold mode	SHM	*YES	
Maximum frame size	MAXFRAME	1033	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	X21CP	C ¹
Exchange identifier	EXCHID	073000C1	A ² , G3 ³
Connection number	CNNNBR	222222	E ¹
Station address	STNADR	C1	A ²
APPN-capable	APPN	*YES	
APPN node type	NODETYPE	*LENNODE	

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the AS/400 Communication Worksheet—X.21 Switched in the *5494 Remote Control Unit Planning Guide*.
- 3 With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the AS/400 Communication Worksheet—X.21 Switched in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter	Value	5494 Configuration Worksheet Field
AS/400 Field	Keyword		
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- 1 The mode name QRMTWSC is IBM-supplied.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X21SHMRWS	
Controller type	TYPE	5494	
Controller model	MODEL	1 2	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	X21CP	B 1
Local location	LCLLOCNAME	*NETATTR	H1:1 1
Remote network identifier	RMTNETID	*NETATTR	H1:3 1

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	X21SHMRWS

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

X.21 Switched Line

Type WRKCFGSTS *DEV to display AS/400 system device descriptions for displays attached to the 5494.

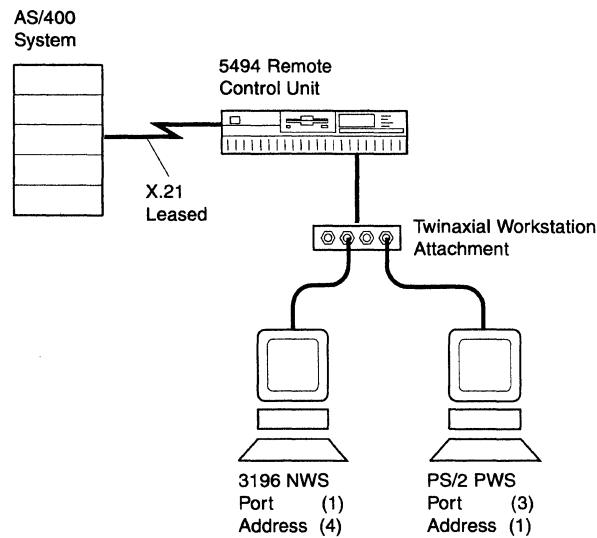
Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP 5250	
EMLI SYSNAME, 1	LCLLOCNAME

AS/400 System Connection Using an X.21 Leased Line

The following example describes an AS/400 system connection to the 5494 using an X.21 leased line.



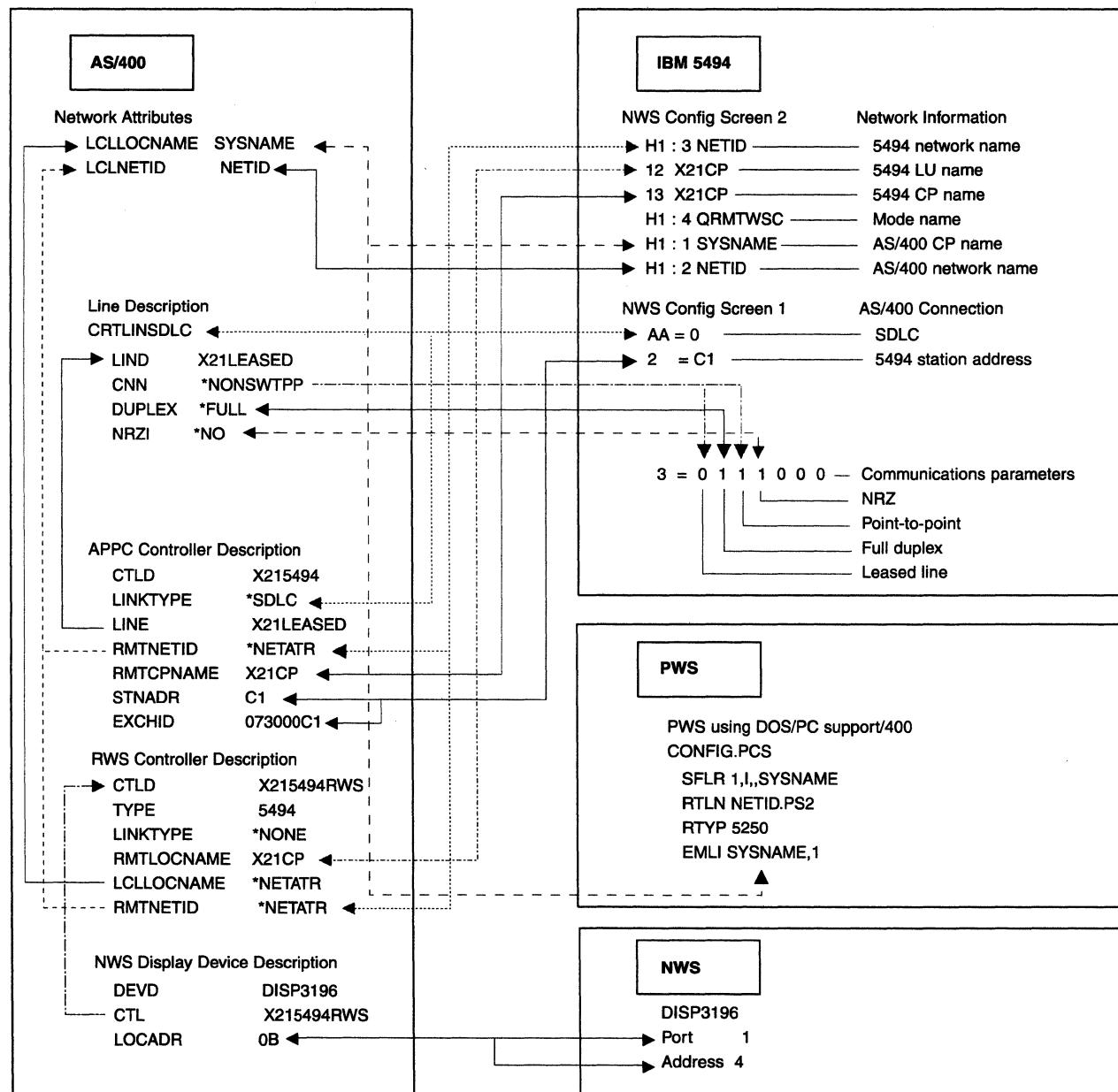
This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

X.21 Leased Line

X.21 Leased Line Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Station address	A ¹	2	C1	STNADR
Line type	B1 ¹	3	leased (0)	CNN
Line facility	B2 ¹	3	full-duplex (1)	DUPLEX
Connection type	B3 ¹	3	point-to-point (1)	CNN
Data encoding	B4 ¹	3	NRZ (1)	NRZI
5494 LU name	B ²	12	X21CP	RMTLOCNAME
5494 CP name	C ²	13	X21CP	RMTCPNAME
5494 connection number	E ²	15	not used	
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ²	H1:2	NETID	LCLNETID
5494 network name	H1:3 ²	H1:3	NETID	RMTNETID
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD
AS/400 connection number	H1:5 ²	H1:5	not used	

Notes:

- 1 Refer to the AS/400 Communication Worksheet—X.21 Leased in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	X21LEASED	
Physical interface	INTERFACE	*X21	
Connection type	CNN	*NONSWTPP	B1 ¹ B3 ¹
Exchange identifier	EXCHID	*SYSGEN	
NRZI data encoding	NRZI	*NO	B4 ¹
Maximum frame size	MAXFRAME	1033	
Duplex	DUPLEX	*FULL	B2 ¹

Note:

¹ Refer to the AS/400 Communication Worksheet—X.21 Leased in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLINSDLC** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X215494	
Link type	LINKTYPE	*SDLC	
Attached nonswitched line	LINE	X21LEASED	
Switched connection	SWITCHED	*NO	
Maximum frame size	MAXFRAME	1033	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	X21CP	C ¹
Exchange identifier	EXCHID	073000C1	A ² , G3 ³
Station address	STNADR	C1	A ²
APPN-capable	APPN	*YES	
APPN node type	NODETYPE	*LENODE	

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the AS/400 Communication Worksheet—X.21 Leased in the *5494 Remote Control Unit Planning Guide*.
- 3 With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the AS/400 Communication Worksheet—X.21 Leased in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- 1 The mode name QRMTWSC is IBM-supplied.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

X.21 Leased Line

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X215494RWS	
Controller type	TYPE	5494	
Controller model	MODEL	1 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	X21CP	B ¹
Local location	LCLLOCNAME	*NETADR	H1:1 ¹
Remote network identifier	RMTNETID	*NETADR	H1:3 ¹

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	X215494RWS

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Type **WRKCFGSTS *DEV** to display AS/400 system device descriptions for displays attached to the 5494.

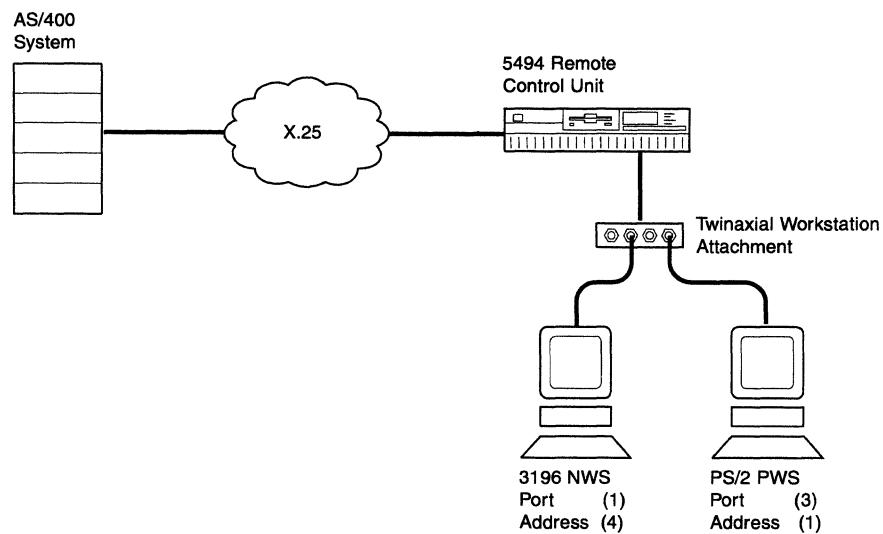
Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP 5250	
EMLI SYSNAME, 1	LCLLOCNAME

AS/400 System Connection Using an X.25 PVC

The following example describes an AS/400 system connection to the 5494 using an X.25 PVC.

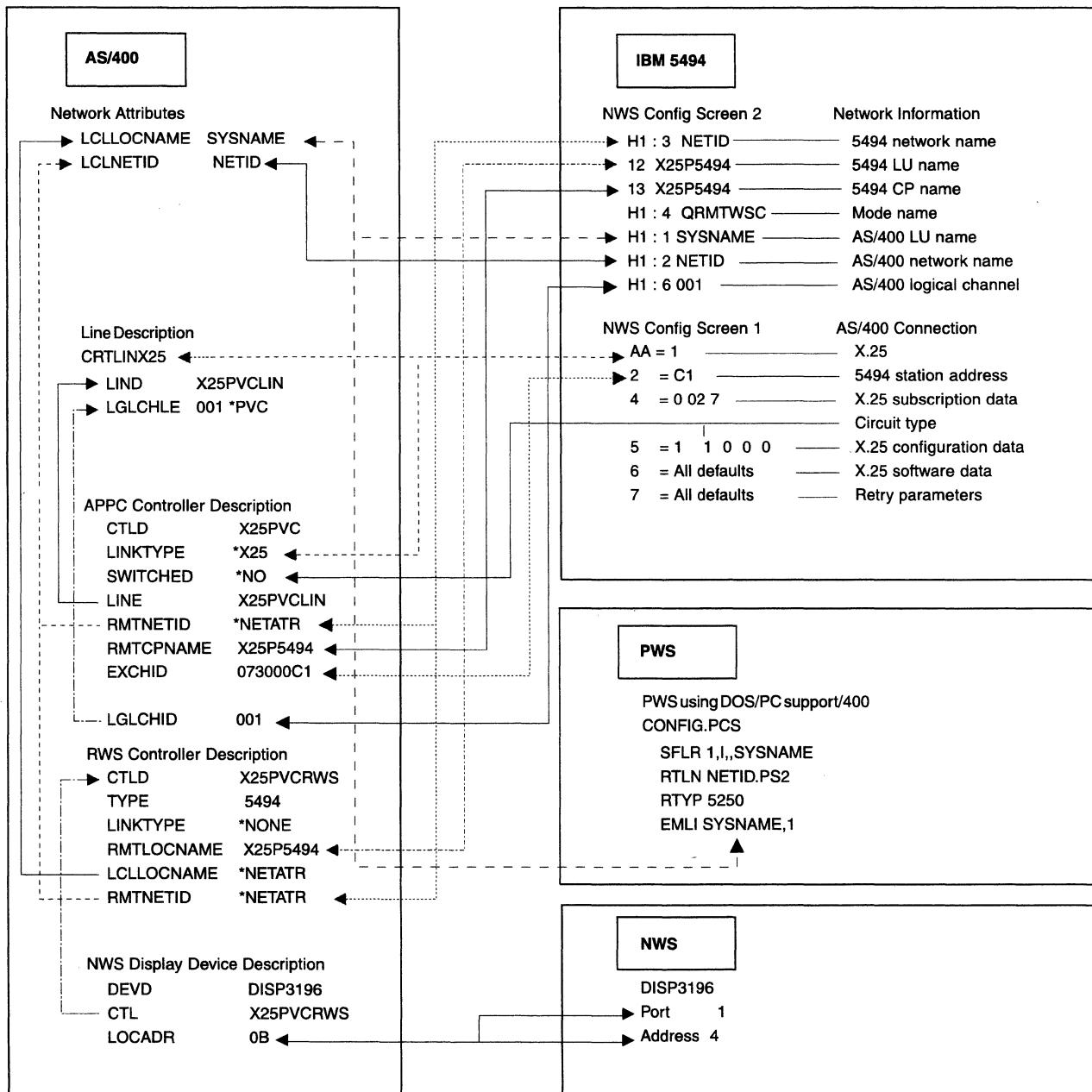


This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

X.25 PVC Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Station address	A ¹	2	C1	
Packet level sequence number	B ¹	4	modulo 8 (0)	MODULUS
Packet size	E ¹	5	128 (1)	DFTPKTSIZE
Circuit type	F ¹	5	PVC (1)	LGLCHLE
Logical link control	K ¹	6	QLLC (0)	LINKPCL
Network subscription	N ¹	6	1988 (0)	NETLVL
5494 LU name	B ²	12	X25P5494	RMTLOCNAME
5494 CP name	C ²	13	X25P5494	RMTCPNAME
5494 connection number	E ²	15	not used	
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ²	H1:2	NETID	LCLNETID
5494 network name	H1:3 ²	H1:3	NETID	RMTNETID
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD
AS/400 connection number	H1:5 ²	H1:5	not used	
Logical channel number	Q ¹	H1:6	001	LGLCHLE

Notes:

¹ Refer to the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.

² Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	X25PVCLIN	
Physical interface	INTERFACE	*RS232V24	
Connection type	CNN	*NONSWTPP	
Logical channel entries	LGLCHLE	001 *PVC	Q ¹ F ¹
X.25 DCE support	X25DCE	*NO	
Exchange identifier	EXCHID	*SYSGEN	
Default packet size	DFTPKTSIZE	128 *TRANSMIT	E ¹
Modulus	MODULUS	8	B ¹
Default window size	DFTWDWSIZE	2 *TRANSMIT	D ¹

Note:

- 1 Refer to the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLNX25** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X25PVC	
Link type	LINKTYPE	*X25	
Switched connection	SWITCHED	*NO	
APPN-capable	APPN	*YES	
Attached nonswitched line	LINE	X25PVCLIN	
Maximum frame size	MAXFRAME	1033	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	X25P5494	C ¹
Exchange identifier	EXCHID	073000C1	A ² , G3 ³
X.25 network level	NETLVL	1988	N ²
X.25 link level protocol	LINKPCL	*QLLC	K ²
X.25 logical channel ID	LGLCHLID	001	Q ²
APPN node type	NODETYPE	*LENNODE	

Notes:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- ² Refer to the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.
- ³ With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- 1 The mode name QRMTWSC is IBM-supplied.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X25PVCRWS	
Controller type	TYPE	5494	
Controller model	MODEL	1 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	X25P5494	B ¹
Local location	LCLLOCNAME	*NETATTR	H1:1 ¹
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter	
	Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	X25PVCRWS

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Type **WRKCFGSTS *DEV** to display AS/400 system device descriptions for displays attached to the 5494.

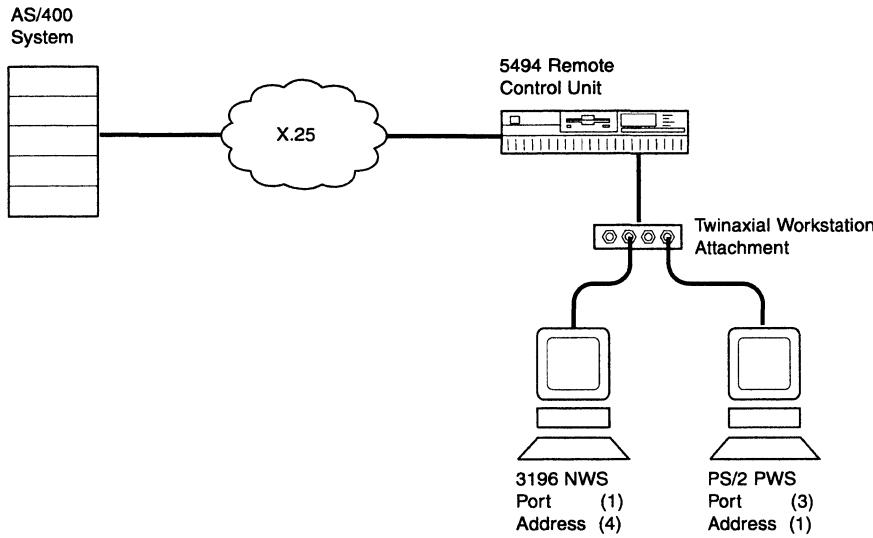
Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter
	Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP 5250	
EMLI SYSNAME, 1	LCLLOCNAME

AS/400 System Connection Using an X.25 SVC

The following example describes an AS/400 system connection to the 5494 using an X.25 SVC.

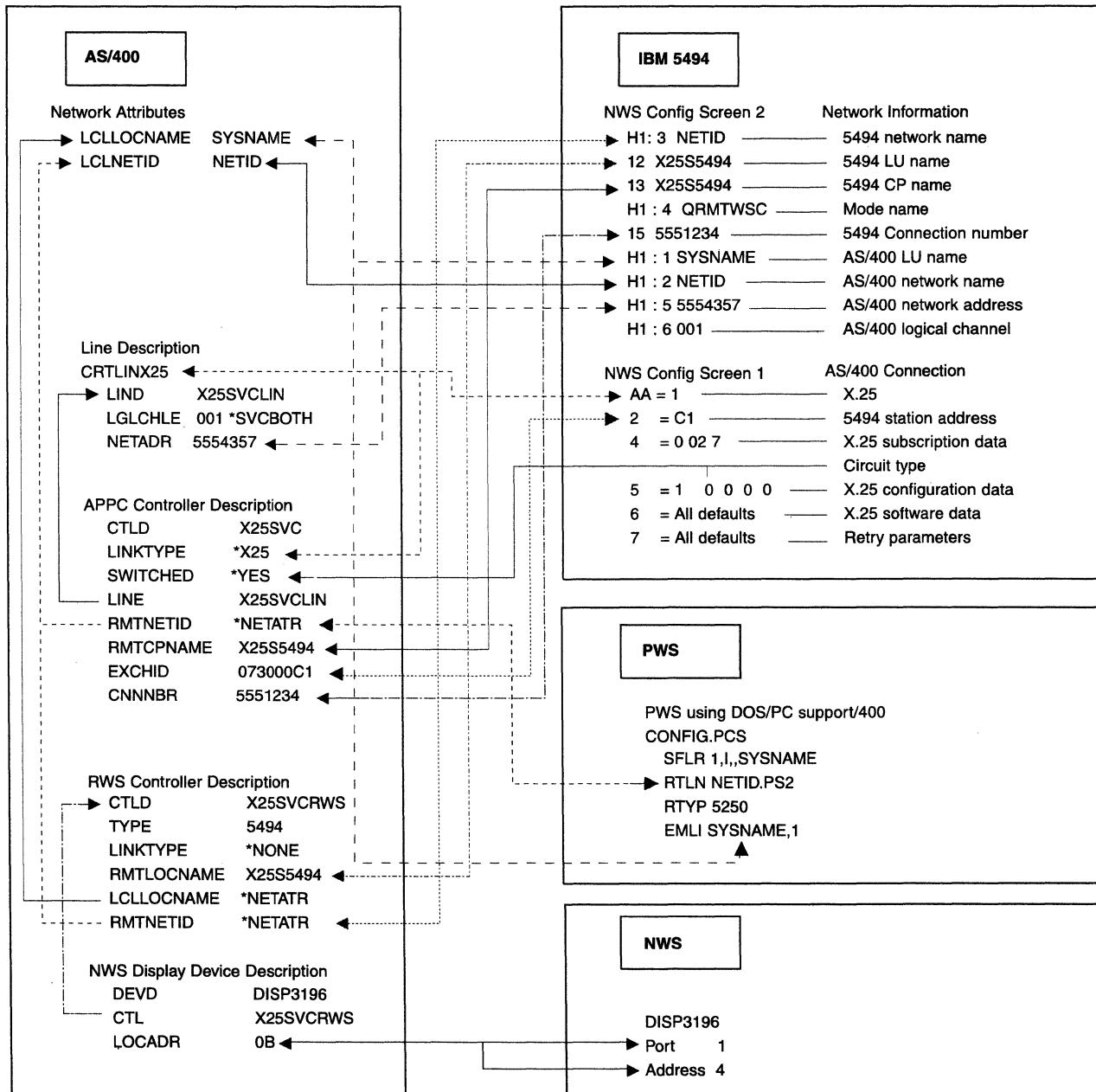


This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

X.25 SVC Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Station address	A ¹	2	C1	
Packet level sequence number	B ¹	4	modulo 8 (0)	MODULUS
Packet window size	C ¹	4	02	DFTWDWSIZE
Link window size	D ¹	4	7	
Packet size	E ¹	5	128 bytes (1)	DFTPKTSIZE
Circuit type	F ¹	5	all others (0)	LGLCHLE
Logical link control	K ¹	6	QLLC	LINKPCL
Network subscription	O ¹	6	1988	NETLVL
5494 LU name	B ²	12	X25S5494	RMTLOCNAME
5494 CP name	C ²	13	X25S5494	RMTCPNAME
5494 connection number	E ²	15	5551234	CNNNBR
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAME	LCLLOCNAME
AS/400 network name	H1:2 ²	H1:2	NETID	LCLNETID
5494 network name	H1:3 ²	H1:3	NETID	RMTNETID
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD
AS/400 connection number	H1:5 ²	H1:5	5554357	NETADR
Logical channel number	Q ¹	H1:6	001	LGLCHLE

Notes:

- ¹ Refer to the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.
- ² Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Network Attributes

The AS/400 system network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAME	
Local network ID	LCLNETID	NETID	H1:2 ¹
Local control point name	LCLCPNAME	SYSNAME	
Default local location	LCLLOCNAME	SYSNAME	H1:1 ¹

Note:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Line description	LIND	X25SVCLIN	
Physical interface	INTERFACE	*RS232V24	
Connection type	CNN	*NONSWTPP	
Logical channel entries	LGLCHLE	001 *SVCBOTH	Q F ¹
Local network address	NETADR	5554357	H1:5 ²
X.25 DCE support	X25DCE	*NO	
Exchange identifier	EXCHID	*SYSGEN	
Default packet size	DFTPKTSIZE	128 *TRANSMIT	E ¹
Modulus	MODULUS	8	B ¹
Default window size	DFTWDWSIZE	2 *TRANSMIT	

Notes:

- ¹ Refer to the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.
- ² Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLNX25** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System APPC Controller Description

The AS/400 system APPC controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X25SVC	
Switched connection	SWITCHED	*YES	
Maximum frame size	MAXFRAME	1033	
Connection number	CNNNBR	5551234	E ¹
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	X25S5494	C ¹
Exchange identifier	EXCHID	073000C1	A ² , G3 ³
Station address	STNADR	C1	A ²
APPN-capable	APPN	*YES	
APPN node type	NODETYPE	*LENNODE	
X.25 network level	NETLVL	1988	N ²
X.25 link level protocol	LINKCPL	*QLLC	K ²

Notes:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- ² Refer to the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.
- ³ With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the AS/400 Communication Worksheet—X.25 in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- ¹ The mode name QRMTWSC is IBM-supplied.
- ² Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	X25SVCRWS	
Controller type	TYPE	5494	
Controller model	MODEL	1 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	X25S5494	B ¹
Local location	LCLLOCNAME	*NETATR	H1:1 ¹
Remote network identifier	RMTNETID	*NETATR	H1:3 ¹

Notes:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- ² Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

Note: In this example, the 5494 remote location name and the 5494 remote control point are the same. If the names had been chosen such that they were different, an entry in the Remote Configuration List to correlate the remote location name and the remote control point would be necessary. These names must correlate in order to associate the APPC controller with an RWS controller.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Local location address	LOCADR	0B1
Attached controller	CTL	X25SVCWRWS

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Type **WRKCFGSTS *DEV** to display AS/400 system device descriptions for displays attached to the 5494.

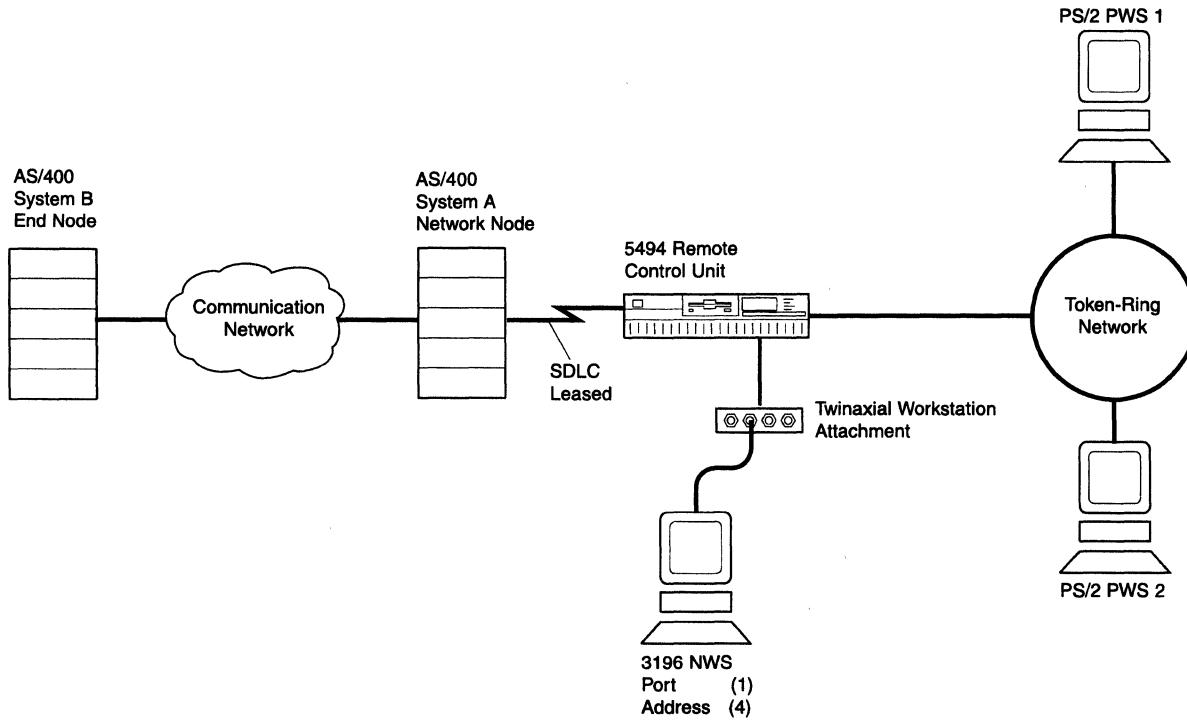
Programmable Workstation Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAME	LCLLOCNAME
RTLN NETID.PS2	
RTYP 5250	
EMLI SYSNAME, 1	LCLLOCNAME

AS/400 System Connection Using an SDLC Leased Line with Token-Ring Gateway Through an APPN Network Node

The following example describes an AS/400 system connection to the 5494 using an SDLC leased line.



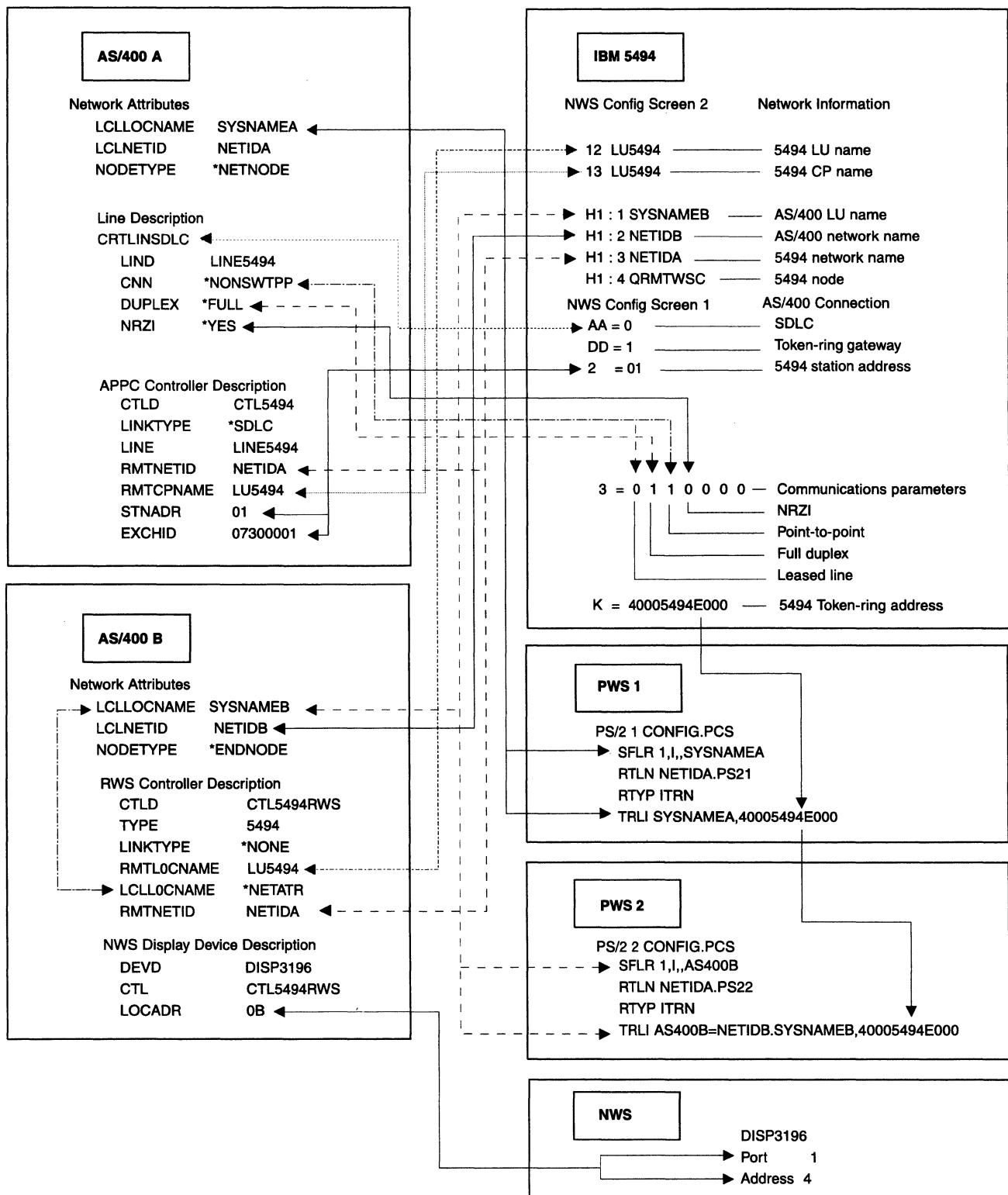
- In this example, the 5494 and the 3196 attach to AS/400 System B. PWS 2 is also in session with AS/400 System B. PWS 1 is in session with AS/400 System A.

This example includes a matching parameters diagram and tables that show the configuration parameters for the following items:

- The 5494
- AS/400 system network attributes
- Line description
- APPC controller description
- Mode description
- Remote workstation controller description
- Display device description
- The PWS.

Only those parameters that are relevant to the connection between the 5494 and the AS/400 system are included. Refer to your AS/400 system documentation for a complete list of configuration parameters.

SDLC Leased Line with Token-Ring Gateway Through an APPN Network Matching Parameters



5494 Configuration

The 5494 configuration values are as follows:

5494 Parameter	5494 Configuration Worksheet Field	NWS Field Name	Value	AS/400 Parameter Keyword
Communication mode	title of worksheet	AA	SDLC (0)	CRTLINSDLC
Token-Ring Gateway support	D1 ¹	DD	Token-Ring (1)	N/A
Station address	A ¹	2	01	STNADR
Line type	B1 ¹	3	leased line (0)	CNN
Line facility	B2 ¹	3	full-duplex (1)	DUPLEX
Connection type	B3 ¹	3	point-to-point (1)	CNN
Data encoding	B4 ¹	3	NRZI (0)	NRZI
5494 LU name	B ²	12	LU5494	RMTLOCNAME ³
5494 CP name	C ²	13	LU5494	RMTCPNAME
5494 ID number	G3 ²	19	*	EXCHID
H1 AS/400 system 1				
AS/400 LU name	H1:1 ²	H1:1	SYSNAMEB	LCLLOCNAME ³
AS/400 network name	H1:2 ²	H1:2	NETIDB	LCLNETID ³
5494 network name	H1:3 ²	H1:3	NETIDA	RMTNETID ³
Mode name	H1:4 ²	H1:4	QRMTWSC	MODD ⁴

Notes:

- 1 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 3 These parameters are found on the target AS/400.
- 4 The mode exists on all AS/400s through which the connection exists.

AS/400 System A Network Attributes

The AS/400 system A network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAMEA	
Local network ID	LCLNETID	NETIDA	
Local control point name	LCLCPNAME	SYSNAMEA	
Default local location	LCLLOCNAME	SYSNAMEA	
Node type	NODETYPE	*NETNODE	

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System B Network Attributes

The AS/400 system B network attributes are as follows:

AS/400 Parameter	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Current system name		SYSNAMEB	
Local network ID	LCLNETID	NETIDB	H1:21
Local control point name	LCLCPNAME	SYSNAMEB	
Default local location	LCLLOCNAME	SYSNAMEB	H1:11
Node type	NODETYPE	*ENDNODE	

Note:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPNETA** to display AS/400 system network attributes.

AS/400 System A Line Description

The AS/400 system line description parameters are as follows:

AS/400 Field	AS/400 Parameter	Value	5494 Configuration Worksheet Field
Line description	LIND	LINE5494	
Category of line		*SDLC	
Resource names	RSRCNAME	LIN041	
Physical interface	INTERFACE	*RS232V24	
Connection type	CNN	*NONSWTPP	B1 1 B3 1
Exchange identifier	EXCHID	*SYSGEN	
NRZI data encoding	NRZI	*YES	B4 1
Maximum controllers	MAXCTL	1	B3 1
Maximum frame size	MAXFRAME	1033	
Duplex	DUPLEX	*FULL	B2 1

Note:

- 1 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.

Type **CRTLINSDLC** to create AS/400 system line descriptions.

Type **WRKCFGSTS *LIN** to display AS/400 system line descriptions.

Type **WRKHDWPRD** to determine the location of the AS/400 system line or hardware.

AS/400 System A APPC Controller Description

The AS/400 system communication controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	CTL5494	
Link type	LINKTYPE	*SDLC	
Switched connection	SWITCHED	*NO	
Attached nonswitched line	LINE	LINE5494	
Maximum frame size	MAXFRAME	1033	
Remote network identifier	RMTNETID	*NETATTR	H1:3 ¹
Remote control point	RMTCPNAME	LU5494	C ¹
Data link role	ROLE	*NEG	
Station address	STNADR	01	A ²
Exchange identifier	EXCHID	07300001	A ² , G3 ³
APPN-capable	APPN	*YES	
APPN node type	NODETYPE	*LENNODE	

Notes:

- 1 Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- 2 Refer to the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.
- 3 With field G3 set to *, the format for the EXCHID parameter is 073000xx, where X'073' is the block number assigned to the 5494 and xx is the station address from the AS/400 Communication Worksheet—SDLC in the *5494 Remote Control Unit Planning Guide*.

Type **CRTCTLAPPC** to create AS/400 system APPC controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system APPC controller descriptions.

AS/400 System Mode Description

The mode used for the 5494 must be defined in the target AS/400 and all AS/400s through which the connection is made. The AS/400 system mode description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Mode description	MODD	QRMTWSC ¹	H1:4 ²

Notes:

- ¹ The mode name QRMTWSC is IBM-supplied.
- ² Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.

Type **DSPMODD** to display the mode name on your AS/400 system.

AS/400 System B Remote Workstation Controller Description

The AS/400 system remote workstation controller description parameters are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value	5494 Configuration Worksheet Field
Controller description	CTLD	CTL5494RWS	
Controller type	TYPE	5494	
Controller model	MODEL	2 ²	
Link type	LINKTYPE	*NONE	
Remote location	RMTLOCNAME	LU5494	B ¹
Local location	LCLLOCNAME	SYSNAMEB	H1:1 ¹
Remote network identifier	RMTNETID	NETIDA	H1:3 ¹

Notes:

- ¹ Refer to the Network Information Worksheet in the *5494 Remote Control Unit Planning Guide*.
- ² Select 2 if your 5494 contains a 5494 LAN adapter. Otherwise, select 1.

Type **CRTCTRLRWS** to create AS/400 system remote workstation controller descriptions.

Type **WRKCFGSTS *CTL** to display AS/400 system remote workstation controller descriptions.

AS/400 System Device Description for Displays Attached to the 5494

The AS/400 system device descriptions for displays attached to the 5494 are as follows:

AS/400 Field	AS/400 Parameter Keyword	Value
Device description	DEVD	DISP3196
Device class	DEVCLS	*RMT
Device type	TYPE	3196
Attached controller	CTL	CTL5494RWS
Local location address	LOCADR	0B ¹

Note:

- 1 To determine the local location address, see "Assigning Local Location Addresses" in the *5494 Remote Control Unit Planning Guide*.

Type **CRTDEVDSP** to create AS/400 system device descriptions for displays attached to the 5494.

Type **WRKCFGSTS *DEV** to display AS/400 system device descriptions for displays attached to the 5494.

Programmable Workstation 1 Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter Keyword
SFLR 1,I,,SYSNAMEA	LCLLOCNAME
RTLN NETIDA.PS21	
RTYP ITRN	
TRLI SYSNAMEA, 40005494E000 ¹	LCLLOCNAME

Note:

- 1 The destination Token-Ring address in the PS/2 computer configuration is the 5494 Token-Ring address. Refer to the Token-Ring Gateway Worksheet in the *5494 Remote Control Unit Planning Guide*.

Programmable Workstation 2 Using DOS PC Support/400

The PS/2 computer configuration file contents are as follows:

File Contents	AS/400 Parameter Keyword
SFLR 1,I,,AS400B	
RTLN NETIDA.PS22	
RTYP ITRN	
TRLI AS400B=NETIDB.SYSNAMEB, 40005494E000 ¹	LCLLOCNAME

Note:

- | 1 The destination Token-Ring address in the PS/2 computer configuration is
- | the 5494 Token-Ring address. Refer to the Token-Ring Gateway Worksheet
- | in the *5494 Remote Control Unit Planning Guide*.

AS/400 System Connection Using an SDLC Leased Line through an SNA Subarea Network

This example describes the system parameters required to connect an AS/400 system and a 5494 to an IBM 3745 Communication Controller. Values in this example shown in bold are mandatory for correct operation. This example assumes the following software levels:

IBM Equipment	Software Level
AS/400 system	OS/400 Version 2 Release 1.1
5494 Remote Control Unit	IBM 5494 Release 3
3745 Communication Controller	NCP Version 5 Release 3
S/370*	VTAM Version 3 Release 2
Personal computer (PWS)	DOS and PC Support/400

In this example, both the AS/400 system and the 5494 are attached to the IBM 3745 Communication Controller over a leased line connection. The hardware layout and key configuration parameters are shown in Figure C-1.

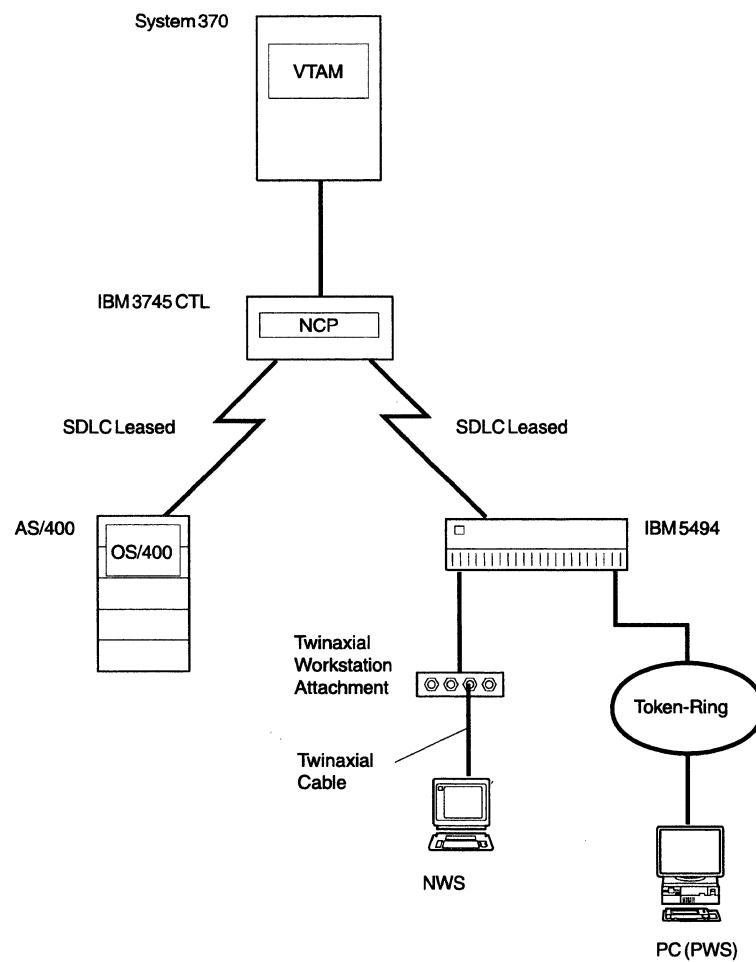


Figure C-1. Example of Physical Attachment of an AS/400 System, IBM 3745, and IBM 5494

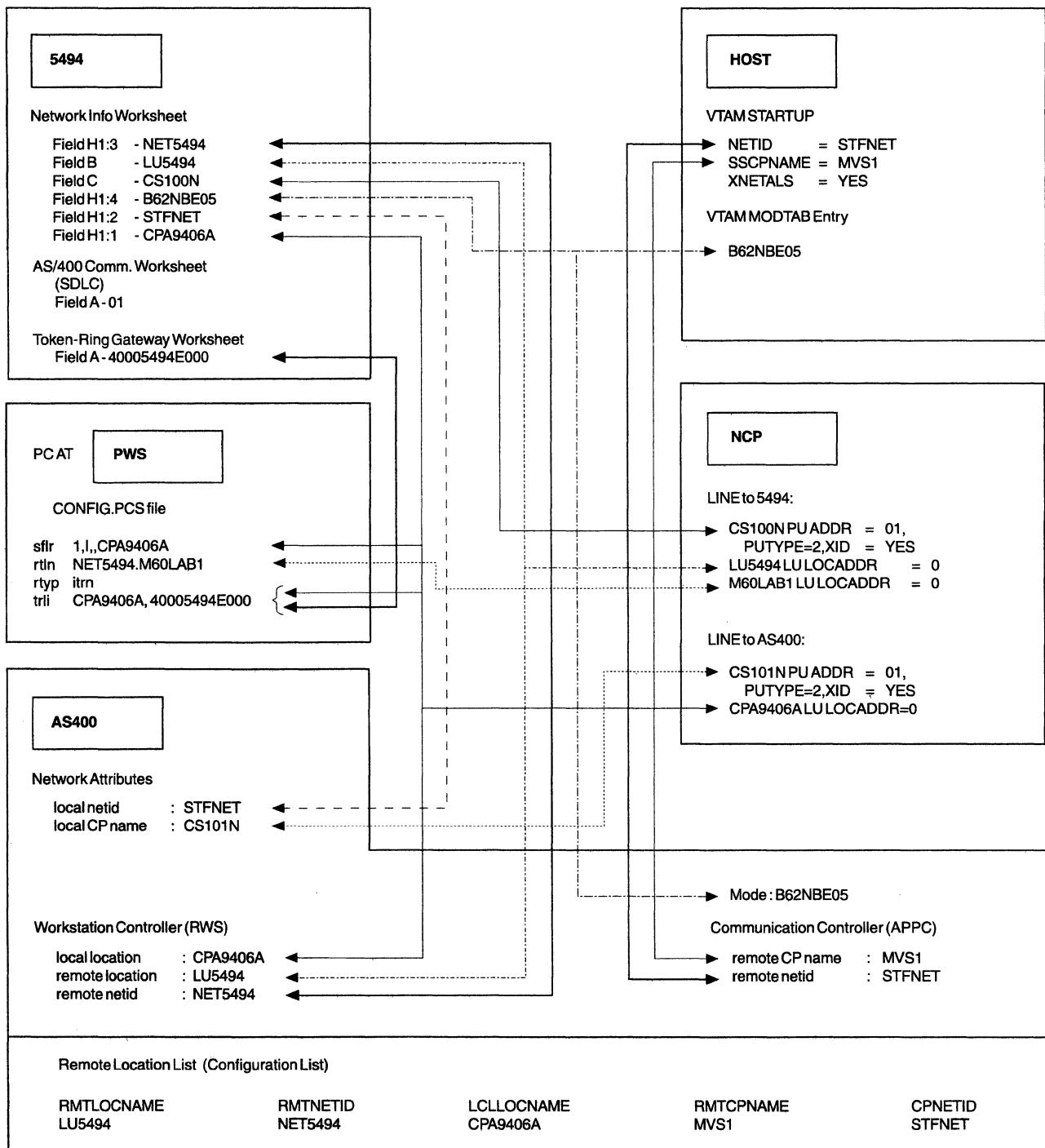
Matching Parameters

In the following example, the 5494 has a different network name than the AS/400 system, the VTAM, and the NCP.

The PWS is attached to the 5494 using a token-ring gateway.

The following names (network qualified names) are used:

- SSCP name: STFNET.MVS1
- AS/400 LU name: STFNET.CPA9406A
- AS/400 CP name: STFNET.CS101N
- 5494 CP name: NET5494.CS100N
- 5494 LU name: NET5494.LU5494
- PWS (Personal Computer AT* [PC AT*]) LU name: NET5494.M60LAB1
- PWS Partner (AS/400) LU name CPA9406A.



3745 System Generation File Entries

This section shows 3745 system generation file entries for the NCP and mode table entries.

NCP File Entries

```
NCPN1    BUILD  CATRACE=(YES,100),  
          AUXADDR=500,  
          ADDSESS=500,  
          ENABLTO=120,  
          LOADLIB=NCPOLOAD,  
          MAXSSCP=4,  
          MAXSUBA=31,  
          MODEL=3745,  
          NETID=STFNET,  
          NEWNAME=NCPN1,  
          NUMHSAS=4,  
          OLT=YES,  
          PATHEXT=0,  
          PRTGEN=NOGEN,  
          SLODOWN=12,  
          SUBAREA=29,  
          TGBXTRA=0,  
          TRACE=(YES,100),  
          TYPGEN=NCP,  
          TYPSYS=MVS,  
          USGTIER=5,  
          VERSION=V5R3,  
          VRPOOL=24
```

```
N043     GROUP  DIAL=NO,LNCTL=SDLC,TYPE=NCP,MODETAB=LMT3270,  
          ISTATUS=INACTIVE,DUPLEX=FULL,CLOCKNG=EXT,  
          MAXDATA=265,MAXOUT=7,PUTYPE=2,PASSLIM=16,PACING=0,  
          VPACING=(5,3),RETRIES=(7,4,3),PAUSE=0,RNRLIMT=20
```

* CONFIGURATION FOR 5494

```
NS100N   LINE   ADDRESS=(100,FULL),CLOCKNG=EXT,DUPLEX=FULL,SPEED=19200  
          SPACE  
CS100N   PU     ADDR=01,DATMODE=FULL,PUTYPE=2,XID=YES  
          SPACE  
LU5494   LU     LOCADDR=0,RESSCB=32
```

* CONFIGURATION FOR PC ATTACHED TO THE 5494

```
M60LAB1  LU     LOCADDR=0,RESSCB=32  
          SPACE
```

* CONFIGURATION FOR AS/400 SYSTEM

```
NS101N   LINE   ADDRESS=101  
          SPACE  
CS101N   PU     ADDR=01,ISTATUS=ACTIVE,XID=YES,PUTYPE=2  
          SPACE  
CPA9406A LU     LOCADDR=0,RESSCB=256  
          SPACE
```

Mode Table Entries:

LMT3270 MODETAB

```
*****
* B62NBE05                               *
*   LU 6.2                                *
*   NO ENCRYPTION                          *
*   INBOUND, OUTBOUND PACING               *
*   EBCDIC, RU=1024                         *
*   SRCVPAC=4                             *
*****
B62NBE05  MODEENT LOGMODE=B62NBE05,
           FMPROF=X'13',
           TSPROF=X'07',
           PRIPROT=X'B0',
           SECPROT=X'B0',
           COMPROT=X'50A1',
           RUSIZES=X'8787',
           SSNDPAC=X'02',
           ENCR=B'0000'
           PSNDPAC=X'00',
           SRCVPAC=X'04',
           TYPE=0,
           PSERVIC=X'060200000000000000002400'
```

Note: If you use PC Support/400 (DOS version), your mode table must include a mode of QPCSUPP in order to communicate through the SNA network.

VTAM Startup Procedure

```
SSCPID=01,NOPROMPT,I0INT=600,
CONFIG=01,LIST=00,MAXSUBA=31,SUPP=NOSUP,
HOSTSA=1,
GWSSCP=NO,
NETID=STFNET,
SSCPNAME=MVS1,
XNETALS=YES,
CRPLBUF=(208,,15,,1,16),
IOBUF=(600,280,19,,33,20),
LFBUF=(104,,0,,1,1),
LPBUF=(64,,0,,1,1),
SFBUF=(163,,0,,1,1),
BSBUF=(300,,,25,60)
```

AS/400 System Configuration

Note: The fields shown in these examples do not necessarily appear on the screen during the CREATE process.

These examples are based on output from the PRINT function of the remote hardware configuration lists, and some fields may appear differently when viewed using the DISPLAY function.

In order to provide input for those fields that do not appear during the basic CREATE process, you must press **F9—All Fields** before completing the CREATE process.

Many of the fields represent the system defaults and may not require operator input.

Most of these fields cannot be changed using the CHANGE function.

Communications Line Description:

Line description	LIND	NCP664
Option	OPTION	*ALL
Category of line		*SDLC
Resource names	RSRCNAME	LIN041
Online at IPL	ONLINE	*NO
Data link role	ROLE	*SEC
Physical interface	INTERFACE	*RS232V24
Connection type.	CNN	*NONSWTPP
Switched network backup	SNBU	*NO
Exchange identifier.	EXCHID	*SYSGEN
NRZI data encoding	NRZI	*YES
Maximum controllers	MAXCTL	1
Clocking	CLOCK	*MODEM
Line speed	LINESPEED	19200
Modem type supported	MODEM	*NORMAL
Modem data rate select	MODEMRATE	*FULL
Autoanswer type	AUTOANTYP	*DTR
Maximum frame size	MAXFRAME	1033
Error threshold level	THRESHOLD	*OFF
Duplex	DUPLEX	*FULL
Modulus	MODULUS	8
Text	TEXT	*BLANK

Attached nonswitched controllers . . CTL

-----Attached Nonswitched Controllers-----

CLT664

Link speed	LINKSPEED	19200
Cost/connect time	COSTCNN	0
Cost/byte	COSTBYTE	0
Security for line	SECURITY	*NONSECURE
Propagation delay	PRPDLY	*TELEPHONE
User-defined 1	USRDFN1	128
User-defined 2	USRDFN2	128
User-defined 3	USRDFN3	128
Maximum outstanding frames	MAXOUT	7
Inactivity timer	INACTTMR	300
Poll response delay	POLLRSPDLY	0
Data Set Ready drop timer	DSRDRPTMR	6
Clear To Send timer	CTSTMR	25
Remote answer timer	RMTANSTMR	60
Recovery limits	CMNRCYLMT	
Count limit		2
Time interval		5

SDLC Leased Line

- | **Communication Controller Description:** The communication controller description should not be confused with the workstation controller description that is used for the 5494. Configure a HOST controller description if the next node in the network is a System/370* host or configure an APPC controller description if the next node is some other system capable of performing SNA subarea network node support.

Controller description	CTLD	CLT664
Option	OPTION	*ALL
Category of controller		*APPC
Link Type.	LINKTYPE	*SDLC
Online at IPL	ONLINE	*NO
Switched connection	SWITCHED	*NO
Switched network backup	SNBU	*NO
Attached Nonswitched Line.	LINE	NCP664
Character code	CODE	*EBCDIC
Maximum frame size	MAXFRAME	1033
Remote network identifier.	RMTNETID	STFNET
Remote control point	RMTCPNAME	MVS1
Data link role	ROLE	*NEG
Station address.	STNADR	01
Text	TEXT	*BLANK

Attached devices DEV

-----Attached Devices-----

LU5494

APPN-capable	APPN	*YES
APPN CP session support.	CPSSN	*NO
APPN node type	NODETYPE	*LENNODE
APPN transmission group number . .	TMSGPNBR	1
SDLC poll priority	POLLPTY	*NO
SDLC poll limit	POLLLMT	0
SDLC out limit	OUTLMT	*POLLLMT
SDLC connect poll retry	CNNPOLLRTY	*NOMAX
SDLC NDM poll timer	NDMPOLLTMR	*CALC
Recovery limits	CMNRCYLMT	
Count limit		2
Time interval		5

Communication Device Description

Note: This configuration will be generated automatically by the system and should not be entered by the operator.:

Device description	DEVD	LU5494
Option	OPTION	*ALL
Category of device		*APPC
Remote location name	RMTLOCNAME	LU5494
Online at IPL	ONLINE	*NO
Local location	LCLLOCNAME	CPA9406A
Remote network identifier	RMTNETID	*NETATTR
Attached controller.	CTL	CLT664
Message queue	MSGQ	QSYSOPR
Library		*LIBL
Local location address	LOCADR	00
APPN-capable	APPN	*YES
Single session	SNGSSN	
Single session capable		*NO
Text	TEXT	AUTOMATICALLY CREATED BY QLUS

Mode MODE

-----Mode-----

*NETATTR

Mode Description:

Mode description	MODD	B62NBE05
Class-of-service	COS	#CONNECT
Maximum sessions	MAXSSN	57
Maximum conversations.	MAXCNV	57
Locally controlled sessions. . . .	LCLCTLSSN	56
Preestablished sessions.	PREESTSSN	0
Inbound pacing value	INPACING	7
Outbound pacing value.	OUTPACING	7
Maximum length of request unit . .	MAXLENRU	*CALC
Text	TEXT	*BLANK

SDLC Leased Line

Workstation Controller Description:

Controller description	CTLD	RTP5494
Option	OPTION	*ALL
Category of controller		*RWS
Controller type.	TYPE	5494
Link type.	LINKTYPE	*NONE
Online at IPL	ONLINE	*NO
Remote location	RMTLOCNAME	LU5494
Local location	LCLLOCNAME	CPA9406A
Remote network identifier	RMTNETID	NET5494
Text	TEXT	*BLANK

Attached devices DEV

-----Attached Devices-----

D3477BB00	D3477BB01	D3476BB04	D3477BB05
:			

Device wait timer	DEWAITTMR	120
Allocation retry timer	ALCRTYTMR	5
Recovery limits	CMNRCYLMT	
Count limit		2
Time interval		5

Advanced Peer-to-Peer Networking* (APPN*) Configuration List

Configuration list: QAPPNRMT

Configuration list type: *APPNRMT

Text:

APPN Remote Locations

Remote Location	Remote Network ID	Local Location	Remote Control Point	Control Point Net ID	Secure Loc
LU5494	NET5494	CPA9406A	MVS1	STFNET	*NO

APPN Remote Locations

Remote Location	Remote Network ID	Local Location	Single Session	Number of Conversations	Local Control Point	Pre-established Session
LU5494	NET5494	CPA9406A	*NO	10	*NO	*NO

APPN Remote Locations

Remote Location	Remote Network ID	Local Location	Text
LU5494	NET5494	CPA9406A	

AS/400 System Connection Using Token-Ring Through an SNA Subarea Network

This example describes the system parameters required to connect an AS/400 system and a 5494 to an IBM 3745 Communication Controller. Values in this example shown in bold are mandatory for correct operation. This example assumes the following software levels:

IBM Equipment	Software Level
AS/400 system	OS/400 Version 2 Release 1.1
5494 Remote Control Unit	IBM 5494 Release 3.0
3745 Communication Controller	NCP Version 5 Release 3
S/370	VTAM Version 3 Release 2
Personal computer (PWS)	DOS and PC Support/400

In this example, the AS/400 system is attached to the IBM 3745 Communication Controller over a leased line connection and the 5494 is attached to the IBM 3745 through a Token-Ring network. The hardware layout and key configuration parameters are shown in Figure C-2.

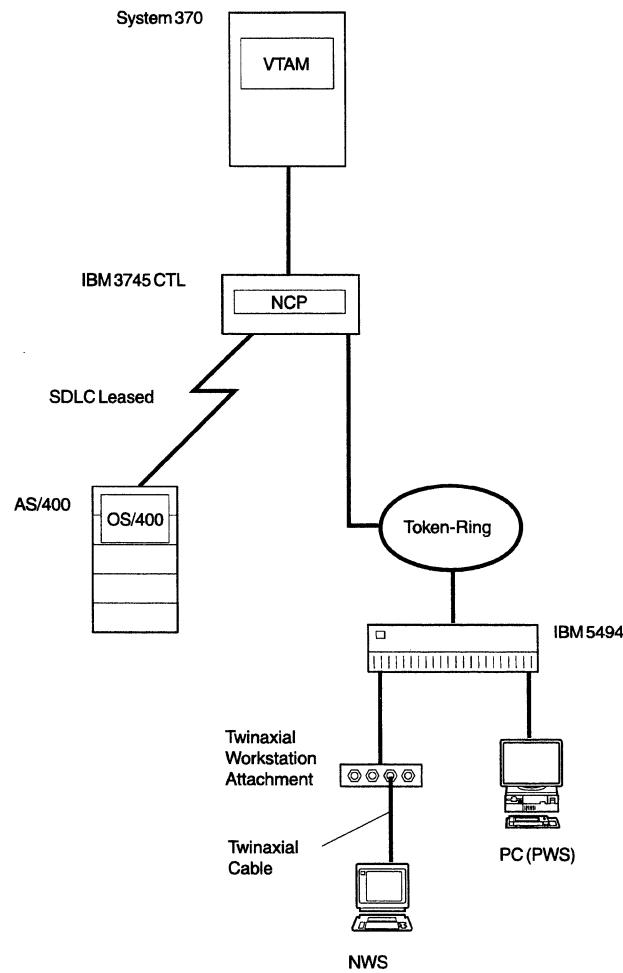


Figure C-2. Example of Physical Attachment of an AS/400 System, IBM 3745, and IBM 5494

Matching Parameters

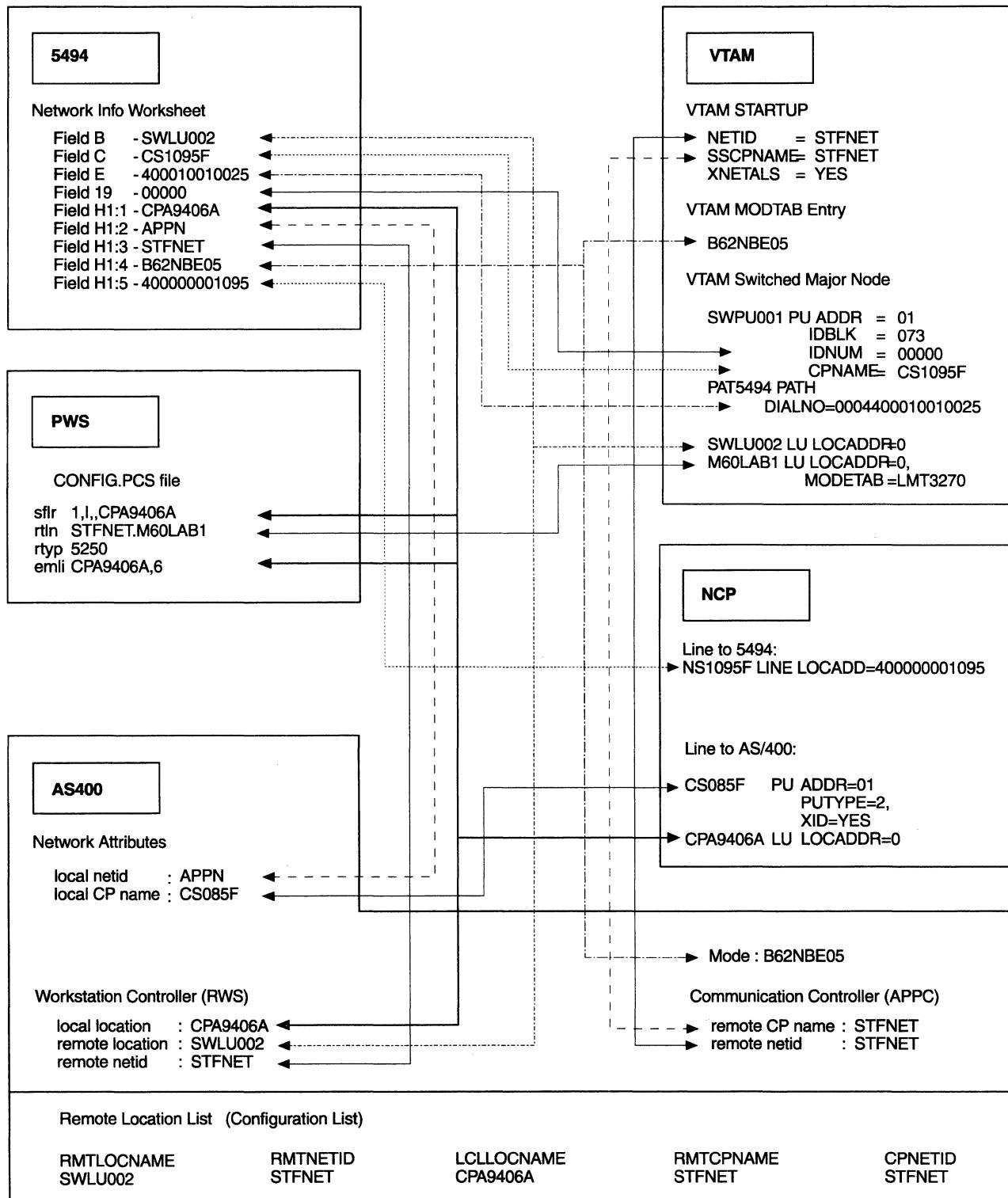
In the following example, the 5494 has a different network name from the AS/400 system.

The PWS is attached to the 5494 by way of the twinaxial cable.

The following names (network qualified names) are used:

- SSCP name: STFNET.STFNET
- AS/400 LU name: APPN.CPA9406A
- AS/400 CP name: APPN.CS085F
- 5494 CP name: STFNET.CS1095F
- 5494 LU name: STFNET.SWLU002
- PWS PC AT LU name: STFNET.M60LAB1
- PWS Partner (AS/400) LU name CPA9406A.

Token-Ring through SNA Subarea Network



3745 System Generation File Entries

This section shows 3745 system generation file entries for the NCP and mode table entries.

NCP File Entries

```
NCPN1    BUILD  CATRACE=(YES,100),  
          AUXADDR=500,  
          ADDSESS=500,  
          ENABLTO=120,  
          LOADLIB=NCPOLOAD,  
          MAXSSCP=4,  
          MAXSUBA=31,  
          MODEL=3745,  
          NETID=STFNET,  
          NEWNAME=NCPN1,  
          NUMHSAS=4,  
          OLT=YES,  
          PATHEXT=0,  
          PRTGEN=NOGEN,  
          SLODOWN=12,  
          SUBAREA=29,  
          TGBXTRA=0,  
          TRACE=(YES,100),  
          TYPGEN=NCP,  
          TYPSYS=MVS,  
          USGTIER=5,  
          VERSION=V5R3,  
          VRPOOL=24
```

```
N043      GROUP  DIAL=NO,LNCTL=SDLC,TYPE=NCP,MODETAB=LMT3270,  
          ISTATUS=INACTIVE,DUPLEX=FULL,CLOCKNG=EXT,  
          MAXDATA=265,MAXOUT=7,PUTYPE=2,PASSLIM=16,PACING=0,  
          VPACING=(5,3),RETRIES=(7,4,3),PAUSE=0,RNRLIMT=20
```

* CONFIGURATION FOR AS/400 SYSTEM

```
NS101N   LINE   ADDRESS=101  
          SPACE  
CS101N   PU     ADDR=01,ISTATUS=ACTIVE,XID=YES  
          SPACE  
CPA9406A LU     LOCADDR=0,RESSCB=256  
          SPACE
```

```
*****
*          TOKEN RING
*
*      PHYSICAL LINE - TIC CONNECTION
*****
F002    GROUP ECLTYPE=PHYSICAL,
        TYPE=NCP,
        DIAL=NO,
        LNCTL=SDLC,
        LEVEL2=ECLNARL2,
        LEVEL3=ECLNARL3,
        LEVEL5=NCP,
        TIMER=(ECLNART1,,ECLNART2,ECLNART3),
        XIO=(ECLNARXL,ECLNARXS,ECLNARXI,ECLNARXK),
        USERID=(5668854,ECLRBDT,NORECMS,,ECLNMVT),
        MAXPU=1,
        SPEED=9600,
        NPACOLL=NO,
        PUTYPE=1,
        PUDR=NO,
        COMPTAD=YES,
        COMPSWP=YES,
        COMPOWN=YES

* CONFIGURATION FOR 5494 ASN LINE

NS1095F  LINE ADDRESS=(1095,FULL),PORTADD=4,RCVBUFC=4095,MAXTSL=4096,
         LOCADD=400000001095,TRSPEED=16,ADAPTER=TIC2,
         UACB=(X$P4AX,X$P4AR)

*****
*          LOGICAL LINES
*
*      CONTROLLER CONNECTIONS
*****
FGW3    GROUP ECLTYPE=LOGICAL,AUTGEN=08,PHYPORT=1,CALL=INOUT.
        TYPE=NCP,
        DIAL=YES,
        LNCTL=SDLC,
        LEVEL2=ECLNAVL2,
        LEVEL3=ECLNAVL3,
        LEVEL5=NCP,
        TIMER=(ECLNAVT1,,ECLNAVT2,ECLNAVT3),
        XIO=(ECLNAVXL,ECLNAVXS,ECLNAVXI,ECLNAVXK),
        USERID=(5668854,ECLVBDT,NORECMS,,ECLNMVT),
        LINEADD=NONE,
        LINEAUT=YES,
        MAXPU=1,
        NPACOLL=NO,
        PUTYPE=2,
        XMITDLY=NONE,
        COMPOWN=YES,
        RETRIES=(6,0,0,6)

* GENERATED BY ECL
```

Token-Ring through SNA Subarea Network

Mode Table Entries:

LMT3270 MODETAB

```
*****
* B62NBE05                                *
*   LU 6.2                                  *
*   NO ENCRYPTION                           *
*   INBOUND, OUTBOUND PACING                *
*   EBCDIC, RU=1024                          *
*   SRCVPAC=4                               *
*****
```

B62NBE05 MODEENT LOGMODE=B62NBE05,
 FMPROF=X'13',
 TSPROF=X'07',
 PRIPROT=X'B0',
 SECPROT=X'B0',
 COMPROT=X'50A1',
 RUSIZES=X'8787'
 SSNDPAC=X'02',
 ENCR=B'0000'
 PSNDPAC=X'00',
 SRCVPAC=X'04',
 TYPE=0,
 PSERVIC=X'060200000000000000002400'

Note: If you use PC Support/400 (DOS version), your mode table must include a mode of QPCSUPP in order to communicate through the SNA network.

VTAM Startup Procedure

```
SSCPID=01,NOPROMPT,IPOINT=600,  
CONFIG=01,LIST=00,MAXSUBA=31,SUPP=NOSUP,  
HOSTSA=1,  
GWSSCP=NO,  
NETID=STFNET,  
SSCPNAME=MVS1,  
XNETALS=YES,  
CRPLBUF=(208,,15,,1,16),  
IOBUF=(600,280,19,,33,20),  
LFBUF=(104,,0,,1,1),  
LPBUF=(64,,0,,1,1),  
SFBUF=(163,,0,,1,1),  
BSBUF=(300,,,25,60)
```

VTAM Switched Major Node

```

SWNTRGW VBUILD TYPE=SWNET,MAXNO=5,MAXGRP=12
SWP001 PU    ADDR=01,                                X
             DISCNT=NO,                                X
             ENCR=OPT,                                X
             ISTATUS=ACTIVE,                            X
             CPNAME=CS1095F,                            X
             IDBLK=073,                                X
             IDNUM=00000,                                X
             PACING=0,                                 X
             MAXPATH=4,                                X
             PUTYPE=2, VPACING=0
PAT5494  PATH DIALNO=0004400010010025,                X
             GRPNM=FGW18,                                X
             GID=1,                                     X
             PID=1,                                     X
             USE=YES,                                   X
SWLU002  LU    LOCADDR=0, ISTATUS=ACTIVE, MODETAB=LMT3270
M60LAB1  LU    LOCADDR=0, MODETAB=LMT3270

```

AS/400 System Configuration

Note: The fields shown in these examples do not necessarily appear on the screen during the CREATE process.

These examples are based on output from the PRINT function of the remote hardware configuration lists, and some fields may appear differently when viewed using the DISPLAY function.

In order to provide input for those fields that do not appear during the basic CREATE process, you must press **F9—All Fields** before completing the CREATE process.

Many of the fields represent the system defaults and may not require operator input.

Most of these fields cannot be changed using the CHANGE function.

Token-Ring through SNA Subarea Network

Communications Line Description:

Line description	LIND	NCP664
Option	OPTION	*ALL
Category of line		*SDLC
Resource names	RSRCNAME	LIN011
Online at IPL	ONLINE	*NO
Data link role	ROLE	*SEC
Physical interface	INTERFACE	*RS232V24
Connection type.	CNN	*NONSWTPP
Switched network backup	SNBU	*NO
Exchange identifier.	EXCHID	05629383
NRZI data encoding	NRZI	*YES
Maximum controllers	MAXCTL	1
Clocking	CLOCK	*MODEM
Line speed	LINESPEED	19200
Modem type supported	MODEM	*NORMAL
Modem data rate select	MODEMRATE	*FULL
Autoanswer type	AUTOANSTYP	*DTR
Maximum frame size	MAXFRAME	1033
Error threshold level	THRESHOLD	*OFF
Duplex	DUPLEX	*FULL
Modulus	MODULUS	8
Text	TEXT	*BLANK

Attached nonswitched controllers . . CTL

-----Attached Nonswitched Controllers-----

CLT664

Link speed	LINKSPEED	9600
Cost/connect time	COSTCNN	0
Cost/byte	COSTBYTE	0
Security for line	SECURITY	*NONSECURE
Propagation delay	PRPDLY	*TELEPHONE
User-defined 1	USRDFN1	128
User-defined 2	USRDFN2	128
User-defined 3	USRDFN3	128
Maximum outstanding frames	MAXOUT	7
Inactivity timer	INACTTMR	300
Poll response delay	POLLRSPDLY	0
Data Set Ready drop timer	DSRDRPTMR	6
Clear To Send timer	CTSTMNR	25
Remote answer timer	RMTANSTMR	60
Recovery limits	CMNRCYLMNT	
Count limit		2
Time interval		5

| **Communication Controller Description:** The communication controller description should not
 | be confused with the workstation controller description that is used for the 5494. Configure a HOST
 | controller description if the next node in the network is a System/370, host or configure an APPC controller
 | description if the next node is some other system capable of performing SNA subarea network node
 | support.

Controller description	CTL0	CLT664
Option	OPTION	*ALL
Category of controller		*APPC
Link Type.	LINKTYPE	*SDLC
Online at IPL	ONLINE	*NO
Switched connection	SWITCHED	*NO
Switched network backup	SNBU	*NO
Attached Nonswitched Line.	LINE	NCP664
Character code	CODE	*EBCDIC
Maximum frame size	MAXFRAME	1033
Remote network identifier.	RMTNETID	STFNET
Remote control point	RMTCPNAME	STFNET
Data link role	ROLE	*NEG
Station address.	STNADR	01
Text	TEXT	*BLANK
Attached devices	DEV	
-----Attached Devices-----		

SWLU002

APPN-capable	APPN	*YES
APPN CP session support.	CPSSN	*NO
APPN node type	NODETYPE	*LENNODE
APPN transmission group number . .	TMSGPNBR	1
SDLC poll priority	POLLPTY	*NO
SDLC poll limit	POLLLMT	0
SDLC out limit	OUTLMT	*POLLLMT
SDLC connect poll retry	CNNPOLLRTY	*NOMAX
SDLC NDM poll timer	NDMPOLLTM	*CALC
Recovery limits	CMNRCYLMT	
Count limit		2
Time interval		5

Communication Device Description

Note: This configuration will be generated automatically by the system and should not be entered by the operator.:

Device description	DEVD	SWLU002
Option	OPTION	*ALL
Category of device		*APPC
Remote location name	RMTLOCNAME	SWLU002
Online at IPL	ONLINE	*NO
Local location	LCLLOCNAME	CPA9406A
Remote network identifier	RMTNETID	STFNET
Attached controller.	CTL	CLT664
Message queue	MSGQ	QSYSOPR
Library		*LIBL
Local location address	LOCADR	00
APPN-capable	APPN	*YES
Single session	SNGSSN	
Single session capable		*NO
Text	TEXT	AUTOMATICALLY CREATED BY QLUS
Mode	MODE	

-----Mode-----

*NETATR

Mode Description:

Mode description	MODD	B62NBE05
Class-of-service	COS	#CONNECT
Maximum sessions	MAXSSN	57
Maximum conversations.	MAXCNV	57
Locally controlled sessions.	LCLCTLSSN	56
Preestablished sessions.	PREESTSSN	0
Inbound pacing value	INPACING	7
Outbound pacing value.	OUTPACING	7
Maximum length of request unit . .	MAXLENRU	*CALC
Text	TEXT	*BLANK

Workstation Controller Description:

Controller description	CTLD	RTP5494
Option	OPTION	*ALL
Category of controller		*RWS
Controller type.	TYPE	5494
Link type.	LINKTYPE	*NONE
Online at IPL	ONLINE	*NO
Remote location	RMTLOCNAME	SWLU002
Local location	LCLLOCNAME	CPA9406A
Remote network identifier	RMTNETID	STFNET
Text	TEXT	*BLANK

Attached devices DEV

-----Attached Devices-----

D3477BB00	D3477BB01	D3476BB04	D3477BB05
:			

Device wait timer	DEVWAITTMR	120
Allocation retry timer	ALCRTYTMR	5
Recovery limits	CMNRCYLMT	
Count limit		2
Time interval		5

APPN Configuration List

Configuration list:	QAPPNRMT
Configuration list type:	*APPNRMT
Text:	

APPN Remote Locations

Remote Location	Remote Network ID	Local Location	Remote Control Point	Control Point Net ID	Secure Loc
SWLU002	STFNET	CPA9406A	STFNET	STFNET	*NO

APPN Remote Locations

Remote Location	Remote Network ID	Local Location	Single Session	Number of Conversations	Local Control Point	Pre-established Session
SWLU002	STFNET	CPA9406A	*NO	10	*NO	*NO

APPN Remote Locations

Remote Location	Remote Network ID	Local Location	Text
SWLU002	STFNET	CPA9406A	

Token-Ring through SNA Subarea Network

Appendix D. Local Area Network Addressing Considerations

Every system, controller, or personal computer that is attached to a local area network has a physical address for its attachment adapter. This physical level is called the medium access control (MAC). The 48-bit (or 6-byte) MAC address formats are defined by the following standards:

IEEE 802.3 Ethernet LAN

IEEE 802.5 Token-ring LAN

This appendix describes:

- Physical address formats used by token-ring and Ethernet networks
- Considerations for specifying adapter addresses in bridged environments connecting token-ring networks to Ethernet networks.

Token-Ring Physical Address Format Considerations

Figure D-1 and Figure D-2 show the format of MAC addresses used for token-ring LANs. The order of bit transmission on the medium starts with byte 0, bit 0 and ends with byte 5, bit 7. This order of transmission is called most significant bit transmission because the most significant bit of each byte is transmitted first.

MAC Destination Address Format:

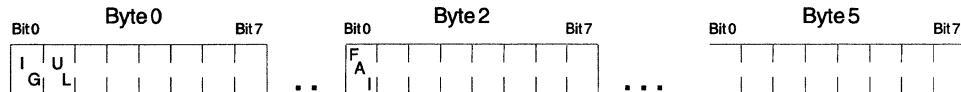


Figure D-1. Token-Ring MAC Destination Address Format

- Bit 0 of byte 0 (called the I/G bit) indicates whether the destination address is an individual address (B'0') or group address (B'1').
- Bit 1 of byte 0 (called the U/L bit) indicates whether the destination address is universally administered ('B'0') or locally administered (B'1').
- Bit 0 of byte 2 (called the functional address indicator (FAI)) indicates whether a locally administered group address is a functional address (B'0') or a group address (B'1').

MAC Source Address Format

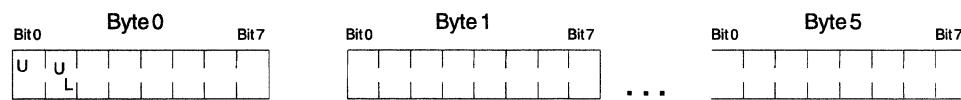


Figure D-2. Token-Ring MAC Source Address Format

- Because source addresses are always individual addresses, bit 0 of byte 0 is used to indicate whether or not the frame contains a routing information field (B'1' if the frame contains a routing information field).
- Bit 1 of byte 0 indicates whether the source address is universally (B'0') or locally administered (B'1').

Also note the following:

Local Area Network Addressing

- Byte 0, bit 0 = 0. This assignment limits the values of the local adapter address to hex 7FFFFFFFFF and below. The remaining addresses (when byte 0, bit 1 = 1) are group addresses.
- Locally assigned addresses with byte 0, bit 1 = 1, are further restricted to values in the range hex 400000000000 to hex 7FFFFFFFFF. IEEE restrictions preclude the use of adapter preset addresses with values in the range of hex 000000000000 to hex 3FFFFFFFFF.

Ethernet Physical Address Format Considerations

Figure D-3 shows the format of MAC addresses used for Ethernet LANs. The order of bit transmission on the medium starts with byte 0 from bit 7 to bit 0, then byte 1, from bit 7 to bit 0 until byte 5, bit 0 is reached. This order of transmission is called least significant bit because the least significant bit is transmitted first. This ordering for Ethernet differs from the ordering for token ring, described in "Token-Ring Physical Address Format Considerations" on page D-1.

Figure D-3 shows the physical address format specified by IEEE 802.3.

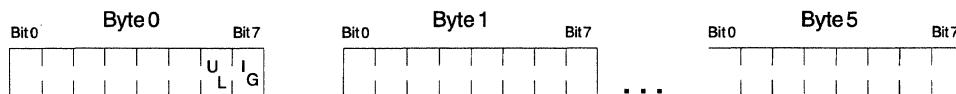


Figure D-3. Ethernet Physical Address Format

- Bit 7 of byte 0 (called the I/G bit) indicates whether the destination address is an individual address (B'0') or group address (B'1').
- Bit 6 of byte 0 (called the U/L bit) indicates whether the address is universally administered (B'0') or locally administered (B'1').

Also note the following:

- Byte 0, bit 7 = 0. This assignment limits the values of the local adapter address to the range of individual addresses where byte 0 must be an even number.
- Byte 0, bit 6 = 1 further restricts locally assigned addresses resulting in the address range of hex 020000000000 through hex FFFFFFFFFF. The second digit must be 2, 6, A, or E.
- IEEE standards reserve a range of adapter addresses for use as preset addresses. This results in byte 0, bit 6 = 0 occupying the remaining even values in the range of hex 000000000000 to FFFFFFFFFF.

Bridged LAN Considerations

Address conversion is required when a bridge is used to connect local area networks that use different physical address formats. For example, address conversion is required when a bridge is used to connect token-ring and Ethernet networks.

The AS/400 system uses the ADPTADR parameter on the token-ring or Ethernet line description to specify the adapter address of the local system. The ADPTADR parameter on the controller descriptions specifies the addresses of remote systems in the network. For LAN-attached ASCII printers, the ADPTADR parameter on the printer device descriptions specifies the addresses of the LAN-attached ASCII

printers. When all stations in the network use the same local area network type, the controller description ADPTADR value specified to identify a remote AS/400 system will be the same as the line description ADPTADR value that the remote system specifies to identify itself. For any two systems attached to the same network or to the same type of local area network (for example, two token-ring networks connected by a bridge), no address conversion is required.

However, when a bridge is used to connect unlike local area network types, the line or controller description adapter addresses configured on opposite sides of the bridge must be converted to accommodate the different addressing formats used. Figure D-4 shows an example of a bridged network.

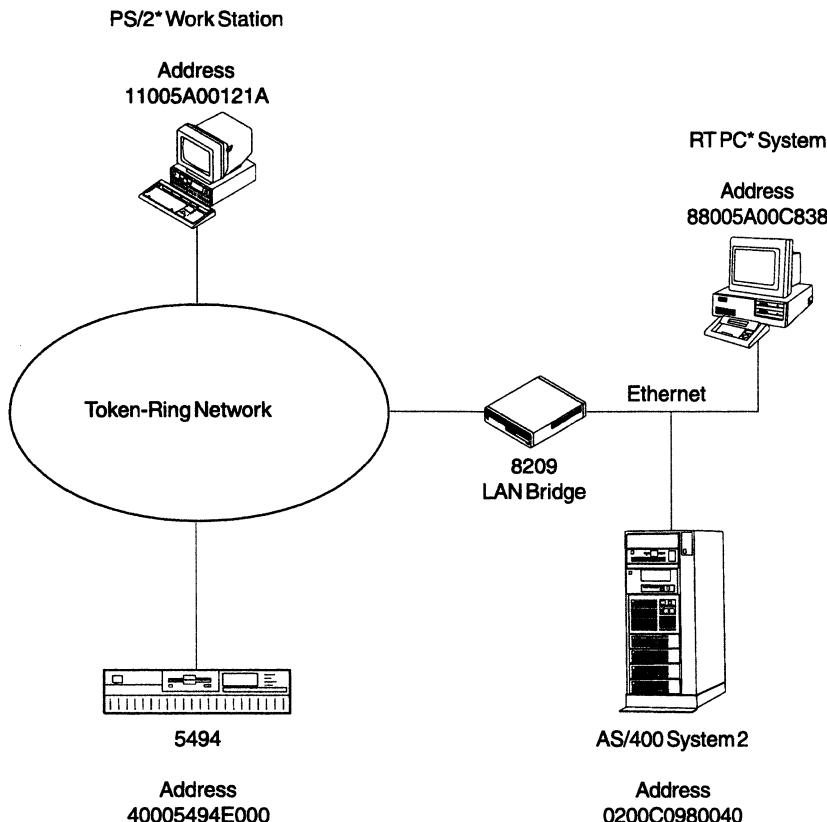


Figure D-4. 8209 LAN Bridge Addressing

Table D-1 shows how the adapter addresses for the bridged environment shown in Figure D-4 would be specified on the AS/400 controller description and how they would appear to the 5494. The controller description adapter addresses (ADPTADR parameters) identify the remote systems in a local area network.

Table D-1. Controller Description (CTLD) Addresses Specified by AS/400 Systems and Addresses As Seen By the 5494.

System	Local Adapter Address	5494 Adapter Addresses	AS/400 System CTLD Adapter Addresses
5494	40005494E000	—	0200C0980080
AS/400 System	0200C0980040	400003190002	—
PS/2* Work Station	11005A00121A	11005A00121A	88005A004858
RS/6000* System	88005A00C838	11005A00131C	88005A00C838

Token-Ring to Ethernet Address Conversion

The bit order of the 48-bit (12-hexadecimal digits) IEEE MAC address is reversed between token-ring and Ethernet LANs. Some protocols that use this MAC address may not adjust for the inverted bits when communicating between LANs.

Therefore, you must manually convert the address bit order. Use the following procedure and Table D-2 to convert an address. For an example of how to convert an address, see "Example of Converting an Address" on page D-5.

1. Write the 12-hexadecimal-digit MAC address.

Note: Separate the 12-hexadecimal digits into pairs. Use the first character of each pair as the row coordinate and the second character as the column coordinate.

2. Locate a bit order inverted pair in Table D-2.

3. Combine the 6 pairs into a 12-hexadecimal-digit address.

Table D-2. Example Conversion Table

2nd Char → (Column) 1st Char ↓ (Row)	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	80	40	C0	20	A0	60	E0	10	90	50	D0	30	B0	70	F0
1	08	88	48	C8	28	A8	68	E8	18	98	58	D8	38	B8	78	F8
2	04	84	44	C4	24	A4	64	E4	14	94	54	D4	34	B4	74	F4
3	0C	8C	4C	CC	2C	AC	6C	EC	1C	9C	5C	DC	3C	BC	7C	FC
4	02	82	42	C2	22	A2	62	E2	12	92	52	D2	32	B2	72	F2
5	0A	8A	4A	CA	2A	AA	6A	EA	1A	9A	5A	DA	3A	BA	7A	FA
6	06	86	46	C6	26	A6	66	E6	16	96	56	D6	36	B6	76	F6
7	0E	8E	4E	CE	2E	AE	6E	EE	1E	9E	5E	DE	3E	BE	7E	FE
8	01	81	41	C1	21	A1	61	E1	11	91	51	D1	31	B1	71	F1
9	09	89	49	C9	29	A9	69	E9	19	99	59	D9	39	B9	79	F9
A	05	85	45	C5	25	A5	65	E5	15	95	55	D5	35	B5	75	F5
B	0D	8D	4D	CD	2D	AD	6D	ED	1D	9D	5D	DD	3D	BD	7D	FD
C	03	83	43	C3	23	A3	63	E3	13	93	53	D3	33	B3	73	F3
D	0B	8B	4B	CB	2B	AB	6B	EB	1B	9B	5B	DB	3B	BB	7B	FB
E	07	87	47	C7	27	A7	67	E7	17	97	57	D7	37	B7	77	F7
F	0F	8F	4F	CF	2F	AF	6F	EF	1F	9F	5F	DF	3F	BF	7F	FF

Example of Converting an Address

Figure D-5 shows how token-ring address 10005A4DBC96 is converted into a bit-inverted Ethernet address of 08005AB23D69.

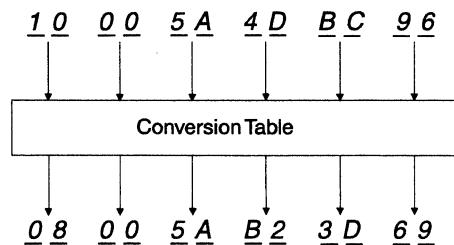


Figure D-5. An Example of Token-Ring Address Conversion

Local Area Network Addressing

Appendix E. Key Sequences

IBM Typewriter Keyboard	E-3
Test Request Key Sequence	E-3
System Request Key Sequence	E-3
Local Copy Key Sequence	E-3
IBM Typewriter Data Entry Keyboard	E-4
Test Request Key Sequence	E-4
System Request Key Sequence	E-4
Local Copy Key Sequence	E-4
IBM 122-Key Keyboard	E-5
Test Request Key Sequence	E-5
System Request Key Sequence	E-5
Local Copy Key Sequence	E-5
IBM Enhanced (102-Key) Keyboard	E-6
Test Request Key Sequence	E-6
System Request Key Sequence	E-6
Local Copy Key Sequence	E-6
IBM PC, PC XT, and Portable PC Keyboard	E-7
Test Request Key Sequence	E-7
System Request Key Sequence	E-7
Local Copy Key Sequence	E-7
IBM Personal Computer AT Keyboard	E-8
Test Request Key Sequence	E-8
System Request Key Sequence	E-8
Local Copy Key Sequence	E-8
IBM Personal System/2 Computer Keyboard	E-9
Test Request Key Sequence	E-9
System Request Key Sequence	E-9
Local Copy Key Sequence	E-9

Key Sequences

The illustrations on the following pages show the 5250 workstation keyboards supported by the 5494. All keys used in this book are labeled.

The following key sequences are used in this book:

- Test Request key sequence

The Test Request key sequence displays the configuration screen.

- System Request key sequence

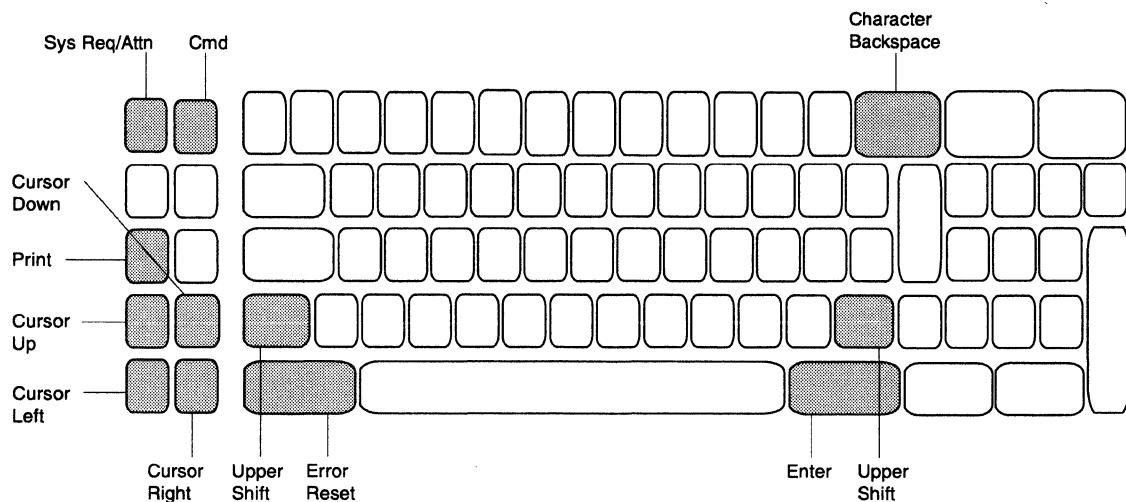
The System Request key sequence displays the screen to establish or end communication with the AS/400 system.

- Local Copy key sequence

The Local Copy key sequence allows you to print a currently displayed screen.

These sequences are different for each keyboard. All key sequences are defined after each illustration. Find your personal computer or display station keyboard, and note the keys you will be using.

IBM Typewriter Keyboard



Test Request Key Sequence

- 1** Press the **Error Reset** key.
- 2** Press the Command (**Cmd**) key.
- 3** Press the Character Backspace (\leftarrow) key.

System Request Key Sequence

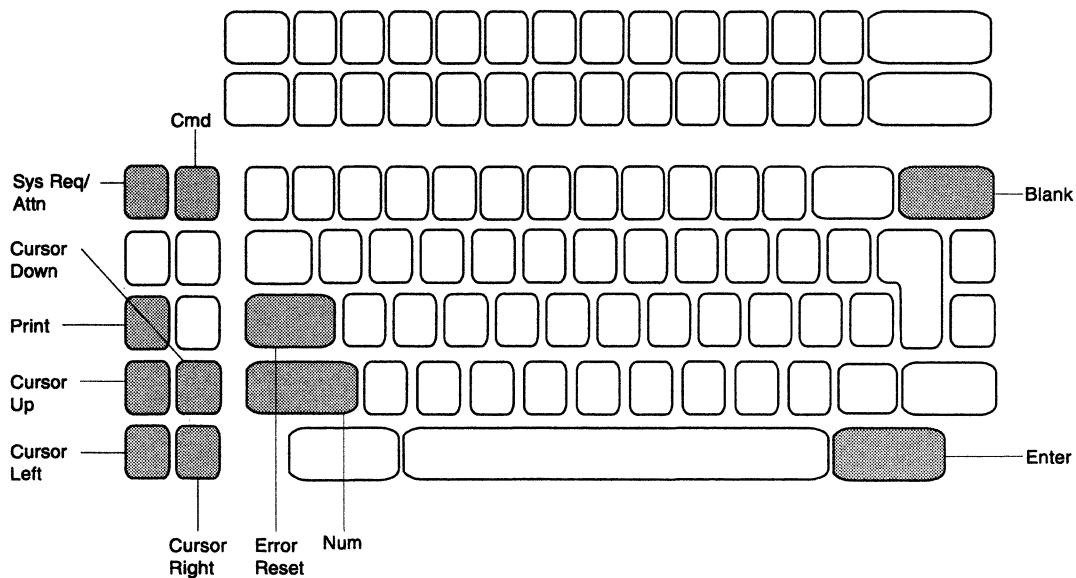
- 1** Press the **Error Reset** key.
- 2** Press and hold the **Upper Shift** key.
- 3** Continue to hold the Upper Shift key and press the **Sys Req/Attn** key.

Local Copy Key Sequence

- 1** Press the **Print** key.

IBM Typewriter Data Entry Keyboard

IBM Typewriter Data Entry Keyboard



Test Request Key Sequence

- 1 Press the **Error Reset** key.
- 2 Press the Command (**Cmd**) key.
- 3 Press the blank key in the upper-right corner.

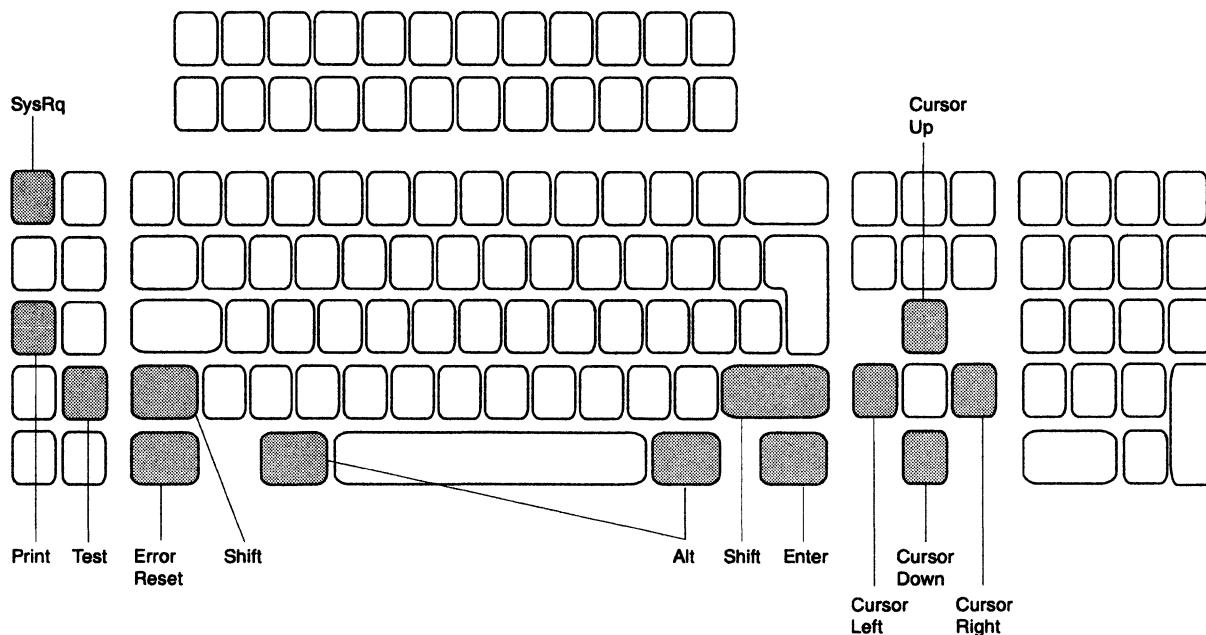
System Request Key Sequence

- 1 Press the **Error Reset** key.
- 2 Press and hold the **Num** key.
- 3 Continue to hold the Num key and press the **Sys Req/Attn** key.

Local Copy Key Sequence

- 1 Press the **Print** key.

IBM 122-Key Keyboard



Test Request Key Sequence

- 1** Press the **Error Reset** key.
- 2** Press and hold the **Alt** key.
- 3** Continue to hold the **Alt** key and press the **Test** key.

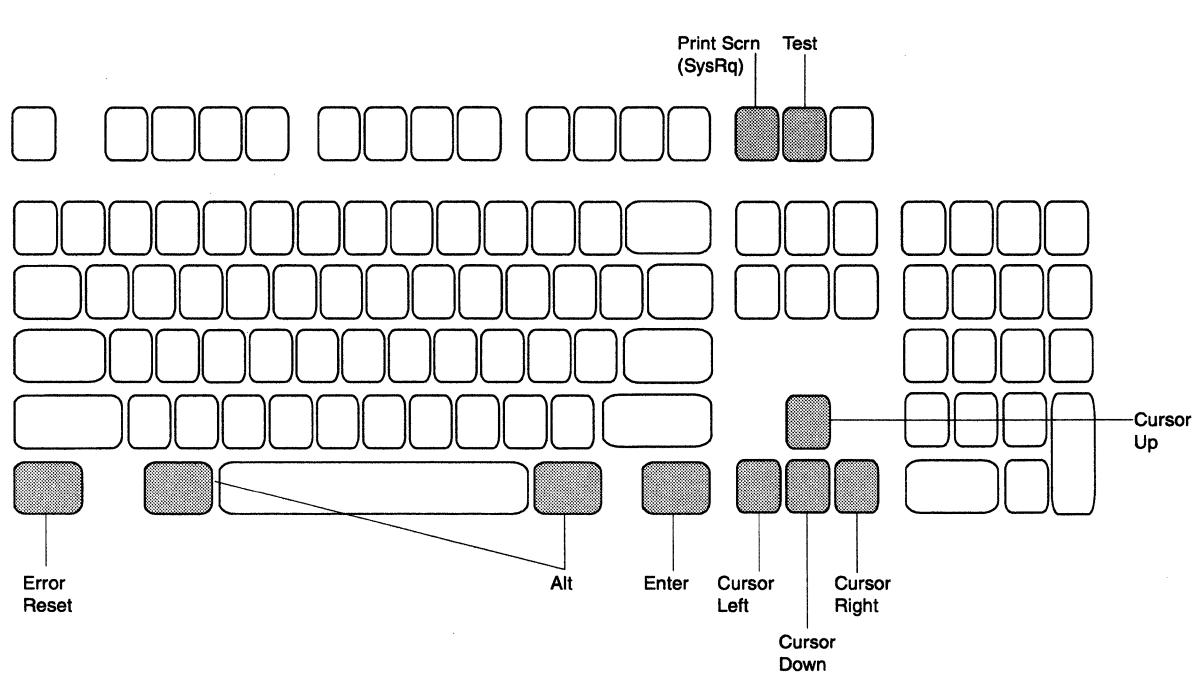
System Request Key Sequence

- 1** Press the **Error Reset** key.
- 2** Press and hold the **Shift** key.
- 3** Continue to hold the **Shift** key and press the **SysRq** key.

Local Copy Key Sequence

- 1** Press the **Print** key.

IBM Enhanced (102-Key) Keyboard



Test Request Key Sequence

- 1 Press the **Error Reset** key.
- 2 Press and hold the **Alt** key.
- 3 Continue to hold the Alt key and press the **Test** key.

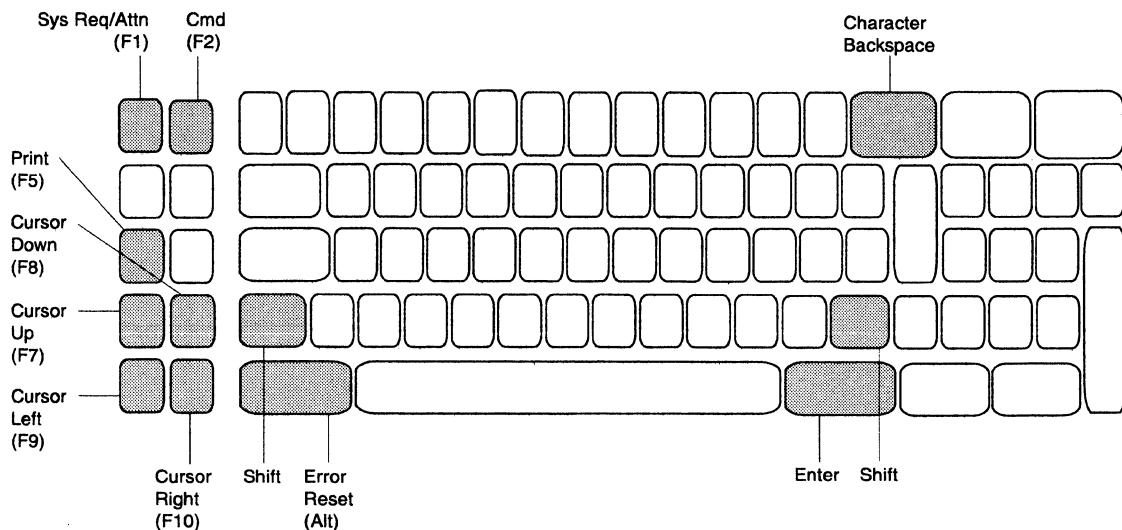
System Request Key Sequence

- 1 Press the **Error Reset** key.
- 2 Press and hold the **Alt** key.
- 3 Continue to hold the Alt key and press the **Print Scrn (SysRq)** key.

Local Copy Key Sequence

- 1 Press the **Print** key.

IBM PC, PC XT, and Portable PC Keyboard



Test Request Key Sequence

- 1** Press the Error Reset (Alt) key.
- 2** Press the Cmd (F2) key.
- 3** Press the Character Backspace (\leftarrow) key.

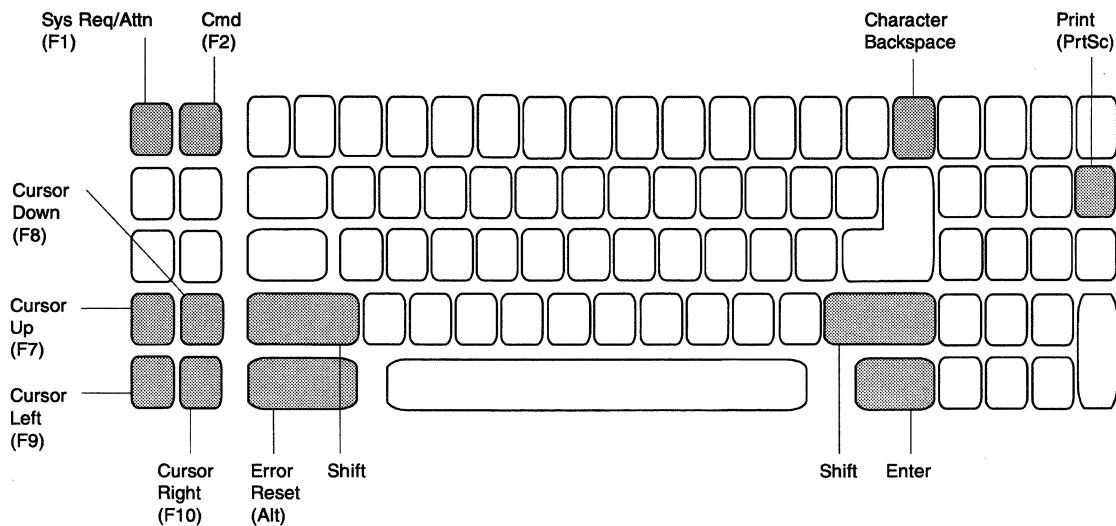
System Request Key Sequence

- 1** Press the Error Reset (Alt) key.
- 2** Press and hold the Shift key.
- 3** Continue to hold the Shift key and press the Sys Req/Attn (F1) key.

Local Copy Key Sequence

- 1** Press the Print key.

IBM Personal Computer AT Keyboard



Test Request Key Sequence

- 1** Press the Error Reset (**Alt**) key.
- 2** Press the Cmd (**F2**) key.
- 3** Press the Character Backspace (**←**) key.

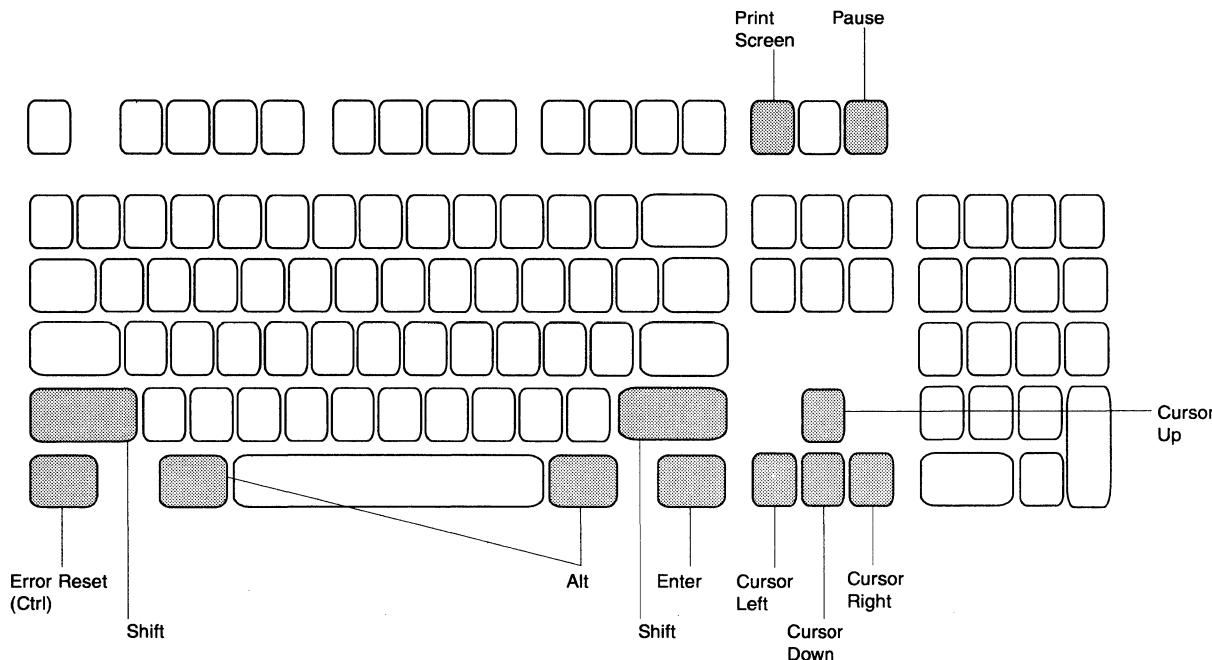
System Request Key Sequence

- 1** Press the Error Reset (**Alt**) key.
- 2** Press and hold the **Shift** key.
- 3** Continue to hold the **Shift** key and press the Sys Req/Attn (**F1**) key.

Local Copy Key Sequence

- 1** Press and hold the **Shift** key.
- 2** Continue to hold the **Shift** key and press the Print (**PrtSc**) key.

IBM Personal System/2 Computer Keyboard



Test Request Key Sequence

- 1 Press the Error Reset (Ctrl) key.
- 2 Press and hold the Alt key.
- 3 Continue to hold the Alt key and press the Pause key.

System Request Key Sequence

- 1 Press the Error Reset (Ctrl) key.
- 2 Press and hold the Alt key.
- 3 Continue to hold the Alt key and press the Print Screen key.

Local Copy Key Sequence

- 1 Press and hold the Shift key.
- 2 Press the Print Screen key.

Note: When running the 5250 Enhanced Emulation Program, if you are using keyboard template KBEPC.PRO, use this key sequence. If you are using keyboard template KB5250.PRO or KBA5250.PRO, use the key sequence for "IBM PC, PC XT, and Portable PC Keyboard" on page E-7.

Appendix F. Ordering Replacement Diskettes

To order replacement diskettes for the 5494:

- Inside the U.S., call 1-800-334-1089.

Make sure that you have the serial number of your 5494 available.

- Outside the U.S.

Make sure that you have the serial number of your 5494 available. Contact your local IBM Branch Office.

Note: Replacement system diskettes can be used immediately with the 5494. You do not need to copy your configuration data to the new diskette.

Glossary

- | This glossary defines local area network terms and abbreviations. It includes terms and definitions from the *IBM Dictionary of Computing* (New York; McGraw-Hill, Inc., 1994).
- | This glossary also includes terms and definitions from:
 - | • The *American National Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI).
 - | • The *Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Committee (ISO/IEC JTC1/SC1).

A

- adjacent link station.** A link station that directly connects to a given node by a link connection, over which network traffic can be carried.
- advanced program-to-program communications (APPc).** Data communications support that allows programs on an AS/400 system to communicate with programs on other systems having compatible communications support. APPC on the AS/400 system provides an application programming interface to the SNA LU type 6.2 and node type 2.1 architectures.

alphanumeric. Pertaining to a character set that contains letters, digits, and usually other characters, such as punctuation marks. Synonymous with alphabetic.

ALS. Adjacent link station.

- American National Standard Code for Information Interchange (ASCII).** The code developed by the American National Standards Institute for information exchange among data processing systems, data communications systems, and associated equipment. The ASCII character set consists of 7-bit control characters and symbolic characters, plus one parity bit.
- American National Standards Institute (ANSI).** An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

analog network. A type of communication network that carries analog signals.

ANSI. American National Standards Institute.

answer command. A command that is entered from a display station keyboard, and when processed, places the control unit in Answer mode.

APPc. Advanced program-to-program communications.

ASCII. American National Standard Code for Information Exchange.

AWG. American Wire Gauge.

automatic answer. In data communications, a line type that does not require operator action to receive a call over a switched line. Contrast with *manual answer*.

automatic call. A feature that permits a station to connect with another station over a switched line without operator action. Contrast with *manual call*.

B

beacon message. A message frame sent repeatedly by an adapter indicating a serious network problem, such as a broken cable. See also *beaconing*.

beaconing. Pertaining to an adapter in a token-ring network that repeatedly sends a frame (beacon message) when it is not receiving a normal signal because of serious error, such as a line break or power failure. The message frame repeats until the error is corrected or bypassed.

BIND command. In SNA, a command used to start a session and define the characteristics of that session.

blank character. A character that does not display but occupies a position on the display screen.

bps. Bits per second.

bridge. A device that connects two or more networks; for example, an Ethernet-to-Ethernet network or Ethernet to token-ring network. A bridge stores and forwards information in packets between the networks. See also *VM/MVS bridge*.

C

cable adapter. A device used to connect two cable ends together. An adapter is used instead of a splice.

cable-thru. A method of cabling that allows multiple workstations to be attached to a single cable path.

cabling system. A system of communication wiring installed in a building to connect computers and communication equipment.

call command. A command that is entered from a display station keyboard, and when processed, places the 5494 in Call mode.

call progress signal (CPS). A signal from the X.21 network providing status information for a link establishment call.

CCITT. International Telegraph and Telephone Consultative Committee.

CDSTL. Connect data set to line.

character location. A location on the display screen at which one character can be displayed.

circuit type. A type of circuit that connects two remote locations. Analog circuits and X.21 circuits can be point-to-point switched, point-to-point nonswitched, or multipoint nonswitched. X.25 circuit types can be either PVC or SVC. Either PVC or SVC can be used on the same 5494 but not at the same time.

closed user group. A group of locations that can communicate among themselves but cannot call to or receive calls from any location outside the group. However, it is possible to define a different closed user group for a different application.

collision. In Ethernet, a condition where two or more stations transmit at the same time, causing the transmission to be unintelligible.

command. An instruction that directs the system to do an operation.

common carrier. In the U.S.A., a government-regulated private company (such as a telephone or telegraph company) that furnishes the general public with telecommunication service facilities.

communication network. The equipment and software required to transmit data signals between an AS/400 system and a remote site.

communications line. The physical link (such as a wire or a telephone circuit) that connects one or more workstations to a communications controller, or connects one controller to another. Contrast with *data link protocol*.

configuration. The arrangement of a computer system or network as defined by the nature, number, and chief characteristics of its functional units. See *system configuration*.

control unit. A device, such as the 5494, that controls the flow of data between workstations and an AS/400 system. Some control units do error checking, error handling, and error recovery procedures, and provide certain editing features to the display station.

CP. Control point.

CPS. Call progress signal.

CSU. Customer setup or Channel Service Unit.

cursor. A movable marker on the screen that can appear as an underscore or as a rectangular block. The cursor indicates where the next character entered from the keyboard will appear.

customer setup (CSU). The unpacking, setup, and checkout of IBM CSU-designated machines by user personnel, according to a sequence of instructions provided by IBM, without the use of tools or help from IBM personnel.

D

data circuit-terminating equipment (DCE). The equipment that does the signal conversion and coding between the data terminal equipment (DTE) and the communication line.

data communication system. A configuration of data processing devices, software, and a communication network connected for information interchange.

data link. The equipment and protocols used for sending and receiving data.

data management. The process of controlling the acquisition, analysis, storage, retrieval, and distribution of data.

data network identification code. A four-digit code added as a prefix to the network address when the receiving DTE is attached to another network or is located in another country.

data packet. The type of data grouping used to send information from one DTE to another DTE attached to an X.25 packet-switched network.

data terminal equipment (DTE). Any machine, such as the 5494 or the AS/400 system, that is connected to a network.

DCE. Data circuit-terminating equipment.

delimiter. A character used to indicate the beginning and end of a character string.

dependent workstation (DWS). See *nonprogrammable workstation (NWS)*.

diacritic. A mark added to a letter to indicate a special phonetic value.

digital data network. A communication network that uses digital transmission (that is, information is transmitted in digital form as a serial stream of pulses).

direct call request. A request that allows an operator to establish communication on an X.21 switched network without using the network address of the AS/400 system. The network subscription must specify direct call request.

disconnect command. An operator command that is entered from a display station keyboard or from the 5494 Utility Program and that, when processed, ends the data link between two data stations when no active sessions are established between the stations.

display screen. The presentation surface of a cathode ray tube used to display graphics or alphanumeric information.

display station. An input/output device containing a display screen and an attached keyboard.

display station operator. A person who uses the keyboard to do operations at a display station.

| **display station pass-through.** A communications function that allows a user to sign on to one system (either an AS/400 system, System/38, or System/36) from another system (either an AS/400 system, System/38, or System/36) and use that system's programs and data. Sometimes called pass-through.

DM. Disconnect mode.

| **double-byte character.** An entity that requires two character bytes.

| **double-byte character set (DBCS).** A set of characters in which each character is represented by 2 bytes. Languages such as Japanese, Chinese, and Korean, which contain more symbols than can be represented by 256 code points, require double-byte character sets. Because each character requires 2 bytes, the typing, displaying, and printing of DBCS characters requires hardware and programs that support DBCS. Four double-byte character sets are supported by the system: Japanese, Korean, Simplified Chinese, and Traditional Chinese. Contrast with *single-byte character set*.

DSR. Data set ready.

DSU. Data Service Unit.

DTE. Data terminal equipment.

DTR. Data terminal ready.

duplex. A method of data transmission in which the data can be transmitted in both directions simultaneously.

DWS. See *NWS*.

E

EBCDIC. Extended binary-coded decimal interchange code.

EIA. Electronics Industries Association.

| **EIA-232.** In data communications, a specification of the Electronic Industries Association (EIA) that defines the interface between data terminal equipment (DTE) and data circuit-termination equipment (DCE) using serial binary data interchange.

ELLC. Enhanced logical link control.

emulation. The imitation of all or part of one system by another, so that the imitating system accepts the same data, runs the same programs, and achieves the same results as the imitated system.

| **end node.** In SNA, a node in an APPN network that can be a source or target node, but does not provide any routing or session services to any other node.

enhanced logical link control. A type of logical link control used in X.25 communication.

| **Ethernet.** A type of local area network that is supported by the Operating System/400 licensed program. OS/400 Ethernet provides support for the Digital Equipment Corporation, Intel Corporation, and Xerox standard (Ethernet Version 2) and the IEEE 802.3 standard. These local area networks use Carrier Sense Multiple Access with Collision Detection (CSMA/CD) as the medium access method.

exclusion key. A key that, if present on the telephone, is located under the handset and is used to establish data communication.

external modem. A modem that is not integrated into the DTE.

F

facility registration. Allows an operator to register for user facilities on an X.21 switched network (for example, the closed user group or redirection of calls).

facility request code. A one- or two-digit number representing a subscription parameter.

fan-in/out modem. A modem that uses a point-to-point line to attach multiple 5494s to the AS/400 system. Each 5494 operates as if it were part of a multipoint line and processes only the data addressed to it.

field. One or more consecutive positions on the display screen set up for a specified type of data.

5250 connection. A method of connecting a workstation to the 5494 using any cable that supports 5250 data stream communication. The cable can be twinaxial, telephone twisted-pair, or IBM Cabling System.

5250 workstation. An NWS (or PWS running 5250 emulation) that is attached to the 5494 using a 5250 connection.

flow control negotiation. The ability to alter packet size and packet window size. These can be changed from call to call if the network subscription allows flow control negotiation.

formatted display. A display screen with fields established for specific information. The mode that the display station is in while signed on to the system.

frame. A single transmission of variable length (32-bit minimum format) that SDLC uses for transmission of data over a communication network.

free key mode. An operating mode that allows displaying of data without control by a system program (unformatted). The mode that the display station is in before logon to the system.

H

half-duplex. A method of data transmission in which data can be transmitted in both directions, but not at the same time.

hexadecimal. Pertains to a numbering system with a base of 16. Valid digits range from 0 through F, where F represents the highest units position, which is equivalent to decimal 15.

home position. The first input position of the first input field.

host system. In a data communication system, the computer that provides end users with services such as computation and databases, and that usually does network control functions. For the 5494, the host system is always an AS/400 system.

I

IBM Cabling System. A system of IBM-manufactured communication wiring that provides a common cable and connector type for a wide variety of wire types (such as coaxial, twinaxial, and telephone twisted-pair). Compare with *twinaxial cable* and *telephone twisted-pair (TTP) cable*.

Note: It is used to pass information between devices separated by up to 1524 m (5000 ft).

IBM Operating System/2 (OS/2). Pertaining to the IBM licensed program that can be used as the operating system for personal computers. The OS/2 licensed program can perform multiple tasks at the same time.

IBM Operating System/400 Version 3 (OS/400). Pertaining to the IBM licensed program that can be used as the operating system for the AS/400 system.

IBM PC Support/400 Version 2. The IBM licensed program that provides system functions to an attached personal computer.

IEEE. Institute of Electrical and Electronics Engineers.

image. The characters or attributes displayed on a display screen.

incoming calls barred. A facility that prevents all incoming calls to a DTE on all logical channels for a period of time.

independent workstation (IWS). See *programmable workstation (PWS)*.

input field. An area on the display in which an operator enters data. Input fields can be blank on the display and can be preceded by a request, issued by a program, that requires information or an action from the operator.

interface. A shared boundary between two functional units, defined by functional characters, common physical interconnections, and signal characteristics.

interface adapter. A device that connects two machines with different physical characteristics.

International Telegraph and Telephone Consultative Committee (CCITT). This committee is an organization of common carriers and other interested

parties who meet periodically to define standards that they will mutually adopt.

IPL. Initial program load.

ISO. International Standards Organization.

IWS. See *programmable workstation*.

K

keyboard translation table (KTT). A translate table downloaded from an AS/400 system during the power-on process of a device. The new table replaces the default keyboard translate table of the device.

KTT. Keyboard Translation Table.

kVA. kilovolt-ampere.

L

LAPB. Link Access Protocol - Balanced.

LCD. Liquid crystal display.

leading pad. A byte inserted into the data stream to synchronize the modem.

leased line. A communication line that is permanently connected, always available, and does not require dialing to establish communication. Synonymous with *nonswitched line*.

link window size. The maximum number of I-frames that can be sent from the control unit without receiving an acknowledgment from the network.

LLC. Logical link control.

local area network (LAN). The physical connection that allows the transfer of information among devices located on the same premises.

local location address. The address used to define each remote workstation. This address must be obtained from the AS/400 system operator.

local loopback. A test procedure done to verify the operation of the modem attached to the 5494.

local network address. The network address of the 5494. Some networks require this to be sent with the AS/400 network address on a call from the 5494 to the AS/400 system.

logical channel. In packet mode operation, one logical channel is used for each PVC or SVC. Several logical

channels can be established on the same data link by interleaving the transmission of packets.

logical channel identifier. A 12-bit number used to identify a logical channel. It consists of a 4-bit logical channel group number and an 8-bit logical channel number.

logical link control. Information included in data packets for X.25 that provides end-to-end link-level type functions to the SNA layers in the AS/400 system and the 5494.

M

MAC. See *medium access control*.

manual answer. In data communications, a line type that requires operator actions to receive a call over a switched line. Contrast with *automatic answer*.

manual call. In data communications, a line type requiring operator actions to place a call over a switched line. Contrast with *automatic call*.

manual options. Options that allow the display station operator to change call parameters from one call to the next.

medium access control (MAC). For local area networks, the method of determining which device has access to the transmission medium at any time.

MGN. Multiground neutral.

modem (modulator-demodulator). A device that converts digital data from a computer to an analog signal that can be transmitted on a telecommunication line, and converts the analog signal received to data for the computer.

multipoint. A data link that connects three or more data stations. A multipoint line is always leased.

N

nearest active upstream neighbor (NAUN). In the IBM Token-Ring Network, the station sending data directly to another station in the ring.

NEC. National Electric Code.

NEMA. National Electrical Manufacturer's Association.

network address. The number that the network uses to identify a DTE.

network node. A node that can define the paths or routes, control route selection, and handle directory services for APPN.

node. (1) One of the systems or devices in a network. (2) A location in a communications network that provides host-processing services. (3) For APPN, see *network node* and *end node*. (4) In OSI, a system that is part of an OSI network. (5) In X.25, a point where packets are received, stored, and forwarded to another location (or data terminal equipment) according to a routing method defined for the network.

non-programmable terminal (NPT). See *nonprogrammable workstation (NWS)*.

nonprogrammable workstation (NWS). A workstation that is incapable of operating independently of the 5494 or AS/400 system. A personal computer or PS/2 computer running a 5250 emulation program is also considered an NWS by the 5494.

nonreturn to zero (NRZ). A data encoding method.

nonreturn to zero inverted (NRZI). A data encoding method.

nonswitched line. Synonym for *leased line*.

NRZ. Nonreturn to zero.

NRZI. Nonreturn to zero inverted.

null. The EBCDIC character that represents X'00'.

NWS. Nonprogrammable Workstation.

O

offline. A condition when the 5494 is not communicating with the AS/400 system.

online. A condition when the 5494 is communicating with the AS/400 system.

open command. A command that is entered from a display station keyboard, and when processed, establishes a permanent virtual circuit (PVC) between two data stations. The control character is alphabetic O.

OS/2. See *IBM Operating System/2 (OS/2)*.

OS/400. See *IBM Operating System/400 Version 3 (OS/400)*

outgoing calls barred. A facility that prevents all outgoing calls from a DTE for a period of time.

P

packet. Information transmitted through a packet-switched network is divided up and inserted into packets. These usually consist of control information fields giving destination, sequence number, optional facilities, and often a user data area. Various kinds of packets are used to transmit system reference codes and supervise the virtual circuit.

packet size. The maximum number of bytes allowed in the user data area of a data packet. A default value, usually 128 bytes, is assigned at subscription time. On some networks, the packet size can be altered from call to call.

packet-switched. The transfer of data by means of address packets that occupy the network channel only during actual transmission. The channel is available for the simultaneous transfer of packets belonging to other network users.

packet window size. The maximum number of packets that can be sent without receiving an acknowledgment.

pass-through. See *display station pass-through*.

PC Support. See *IBM PC Support/400 Version 2*.

password. This parameter is used by the AS/400 system to allow access to the application program.

PDT. Printer Definition Table.

permanent virtual circuit (PVC). The packet-switched equivalent of a leased line. The 5494 and the AS/400 system appear to the user to be permanently connected.

point-to-point line. A data link that connects two DTEs. It can be either switched or leased.

polling. (1) The process whereby stations are invited, one at a time, to transmit. (2) The process whereby a controlling station contacts the attached devices to avoid contention, to determine operational status, or to determine readiness to send or receive data.

port. The hardware coupling used to attach the workstations or communication network to the 5494.

POST. Power-on self test.

Post Telephone and Telegraph Administration (PTT). A name used to describe a government operating agency that controls the transportation of information (postal, voice, or data) within that country.

power cord. A cord that plugs into a wall outlet supplying electrical power.

printer definition table (PDT). A translate table downloaded from an AS/400 system during the power-on process of a 3477, 3486, or 3487 device if the 3477, 3486, or 3487 device is attached to an ASCII printer. The new translate table replaces the 3477, 3486, or 3487 existing translate table used for printers. See *translate table*.

program. A sequence of instructions suitable for processing by a computer.

| **program temporary fix (PTF).** A temporary solution to, or bypass of, a defect in a current release of a licensed program.

programmable terminal (PT). See *programmable workstation (PWS)*.

programmable workstation (PWS). A workstation that can operate independently of an AS/400 system, but can also communicate with the AS/400 system (for example, a personal computer or PS/2 computer running PC Support/400).

protocol. A set of instructions, requests, and responses providing the means of controlling the transfer of data between devices.

PSH. Physical services header.

PSN. Public switched network.

| **PTF.** See *program temporary fix*.

PTT. Post Telephone and Telegraph Administration.

public switched network (PSN). A communication facility owned by a telephone company through which subscribers can be connected by dialing the unique telephone number of another subscriber.

PVC. Permanent virtual circuit.

PWS. Programmable Workstation.

Q

QLLC. Qualified logical link control.

qualified logical link control. A type of logical link control used in X.25 communication.

R

Recognized Private Operating Agency (RPOA). A CCITT term for organizations that provide network services.

Recommendation V.24. A recommendation for interfaces set by the CCITT and amended periodically. V.24 is a specification that defines the list of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE). (Includes, but is not limited to, interchange circuits defined in EIA-232D and EIA-366.)

Recommendation V.28. A recommendation for interfaces set by the CCITT and amended periodically. In data communications, electrical characteristics for unbalanced double-current interchange circuits. (These characteristics are identical to those defined in EIA-232D.)

Recommendation V.25 bis. A recommendation for interfaces set by the CCITT and amended periodically. V series defines standards for interfaces and voice board modem. V.25 bis defines automatic calling/answering for the general switched telephone network using the 100-series interchange circuits.

Recommendation V.35. A recommendation for interfaces set by the CCITT and amended periodically. V.35 defines a communication interface composed of five single-ended interchange lines and separate differential lines for transmit data, transmit clock, receive data, and receive clock signals.

Recommendation X.21. A recommendation for interfaces set by the CCITT and amended periodically. The X series of recommendations defines standards for data transmission interfaces. X.21, specifically, defines the interface between data terminal equipment and public data networks for digital leased and circuit-switched synchronous services.

Recommendation X.25. A recommendation for interfaces set by the CCITT and amended periodically. The X series of recommendations defines standards for data transmission interfaces. X.25, specifically, defines the interface between data terminal equipment and packet-switched networks.

redirection of call. On an X.21 or X.25 switched network, this facility allows an operator to specify if incoming calls should be directed to another number.

remote attachment. Attachment of workstations to the host system through communication lines, and usually through an intermediate control unit.

remote workstation. A workstation that is attached to the host system through communication lines.

reverse charging acceptance. A facility that allows the network to pass reversed-charge calls to the DTE.

reversed charging. A facility that allows virtual calls to be billed to the DTE receiving the calls.

RF. Radio frequency.

RFS. Ready-for-sending.

RPOA. Recognized private operating agency.

RTS. Request-to-send.

RWS. Remote workstation.

S

SABM. Set asynchronous balanced mode.

SABME. Set asynchronous balanced mode extended.

SAP. Service access point.

SDLC. Synchronous data link control.

sense data. The data sent with an SNA negative response or provided with an SRC, indicating the reason for the problem.

service access point (SAP). (1) A logical address that allows a system to route data between a remote device and the appropriate communications support. (2) In OSI, a logical port between two layers, at which the service provider in the lower layer provides services to the service user in the higher level.

set asynchronous balanced mode (SABM). In communications, a data link control command used to establish a data link connection with the destination in asynchronous balanced mode. See also *asynchronous balanced mode (ABM)*.

set asynchronous balanced mode extended (SABME). In communications, a data link control command used to initiate data transfer in the extended asynchronous balanced mode of operation with a remote link station. The SABME command uses modulus 128 sequence numbers. See also *asynchronous balanced mode extended (ABME)*.

Short Hold mode (SHM). An X.21 switched communication option that allows a link between two stations to remain established only when there is data to transfer. The 5494 supports, but does not initiate, an SHM session. The AS/400 system determines and controls SHM sessions.

SHM. Short Hold mode.

SIDH. Session identifier high.

SIDL. Session identifier low.

single-byte character set (SBCS). A character set in which each character is represented by a one-byte code. Contrast with *double-byte character set*.

SNA. Systems Network Architecture.

SNBU. Switched network backing.

station protector. A device used on the system cable to offer protection against lightning for attachments made in different buildings.

subscription. An agreement between a user and a PTT/network supplier for the use of certain network services and optional facilities.

SVC. Switched virtual circuit.

switched line. A connection between computers or devices that is established by dialing.

switched network backup (SNBU). An optional facility that allows a user to specify a switched line to be used as an alternate path if the primary line becomes unavailable or unusable.

switched virtual circuit (SVC). The packet-switched service equivalent of a switched line. It allows communication between the 5494 and one of several possible AS/400 systems. Switched virtual circuits are also known as virtual calls.

synchronous data link control (SDLC). A communication mode for managing synchronous, code-transparent, serial-by-bit information transfer over a data communication channel or line. Transmission exchanges can be duplex or half-duplex, over switched or nonswitched lines. The configuration of the communication line may be point-to-point, multipoint, or loop.

system configuration. A process that determines the devices, programs, and methods that form a data processing system.

system operator. A person who uses a personal computer or a display station that is designated as the system console, to activate certain system functions, and to control and monitor system operation.

system reference code. A four- or six-digit alphanumeric code that identifies a failure or status condition.

systems network architecture (SNA). A set of rules for controlling the transfer of information in a data communication network.

T

telecommunication. The transmission of data between locations by telephone line, telegraph, radio, satellite system, television, or microwave media.

telephone twisted-pair (TTP) cable. An unshielded cable with two or more pairs of insulated copper wire twisted together at a minimum of two twists per foot. This type of cable is commonly used in telephone installations for voice transmission. It can also be used for data transmission. However, twisted-pair cable is subject to interference and line loss, and therefore is limited to lengths of 305.8 meters (1000 feet) when used to interconnect workstations attached to the 5494. Compare with *twinaxial cable* and *IBM Cabling System*.

terminal multiconnector. A device used to connect as many as seven workstations to a single port on the 5494 with telephone twisted-pair cable.

terminator switch. A switch used to terminate the system cable on the last workstation when cable-thru is used and to provide a feed-thru path for other stations on the cable-thru line.

test mode indication. A signal generated by the modem that indicates that the modem is in a test mode, doing a self-test, a remotely requested test, or locally requested test.

throughput class negotiation. The throughput class is the approximate data transmission rate through the virtual circuit under ordinary conditions. (Network congestion could reduce this rate.) Unlike the link access data rate, which is a permanent property of the network connection, the throughput class can be altered by the display station operator if the network subscription allows. The subscription charge may increase with the throughput class selected. Note that choosing a different throughput class may also involve altering packet and window sizes.

token-ring connection. A method of connecting a workstation to the 5494 through a Token-Ring network.

token-ring network. A network using a ring topology to pass data transmission authority (called a *token*) in a unidirectional circuit from one workstation to another so that transmitted data not only reaches the addressed station but also returns to the transmitting station.

translate table. A table that defines the translation of EBCDIC to ASCII and that allows the use of special characters and nonstandard codes. For KTT, it defines what EBCDIC character is displayed for a particular key.

TTPA. Twinaxial-to-telephone twisted-pair adapter.

twinaxial cable. A shielded cable with two conductors. It is used to pass information between devices separated by up to 1524 m (5000 ft). Compare with *telephone twisted-pair (TTP) cable* and *IBM Cabling System*.

Twinaxial Workstation Attachment. A cable that combines four twinaxial connections into one connector for attachment to the 5494.

typematic keys. Keyboard keys that repeat their function when pressed and held down.

U

| **UNBIND command.** In SNA, a command used to | reset the protocols for a session.

unformatted display. Free key mode.

V

V.25 bis. See *Recommendation V.25 bis*.

V.24. See *Recommendation V.24*.

V.28. See *Recommendation V.28*.

V.35. See *Recommendation V.35*.

| **vary off.** To make a device, controller, line, or network | interface unavailable for its normal, intended use.

| **vary on.** To make a device, controller, line, or network | interface available for its normal, intended use.

virtual call. A call placed on a switched virtual circuit.

virtual circuit. A logical connection between two DTEs that enables them to exchange information according to a standard communication procedure with the sequence of information preserved. A virtual circuit occupies transmission capacity only when the data is actually being transmitted.

W

window size. The maximum number of packets that the DTE is authorized to transmit and have outstanding at any given time. It is the basic flow control mechanism in X.25 and protects the network from accepting packets faster than they can be accepted by the remote DTE. The window can also be used by a DTE to prevent transmission of packets from the network if the DTE is unable or unwilling to queue them. A default window size, usually 2, is assigned at subscription time. On some networks, this can be altered for a given virtual call.

workstation. An input or output device that allows either the transmission of data or the reception of data (or both) from the 5494 or AS/400 system, as needed to do a job. A workstation is always a display station, personal computer, or printer.

workstation address. The address set by the operator during setup of the workstation. This address can be set on rocker switches, by keyboard entry, or by control panel entry.

World Trade (WT). Any of the countries in Europe, Asia, Africa, and South America served by IBM.

WT. World Trade.

X

XMIT. Transmit.

X.21. See *Recommendation X.21*.

X.25. See *Recommendation X.25*.

Index

Numerics

- 3745 system generation file entries
 - mode table entries C-71, C-82
 - NCP file entries C-70, C-80
 - VTAM startup procedure C-71, C-82
 - 5250 workstation
 - connection, verifying 8-14
 - display format 8-11
 - 5494
 - configuring from
 - nonprogrammable workstation (NWS) 5-11—5-19
 - programmable workstation (PWS) 5-5
 - connecting to Token-Ring 3-10, 3-12
 - LCD display 3-3, 8-8
 - power-on options 8-7
 - setting up 3-2
 - status information, requesting 8-12
 - transferring configuration data to 5-9—5-11
 - Utility Program
 - 5250 connection for DOS 5-5
 - description 4-2
 - installing 4-2
 - requirements 4-2
 - uses 4-3
 - verifying workstation connection to 8-13
- 8209 LAN Bridge
 - 8209 LAN Bridge addressing D-3
 - addressing considerations D-2
 - addressing example D-3

A

- acknowledgment timer (T2), Token-Ring configuration
 - Field I 5-39, 5-42
 - Field O 5-46, 5-49
- address
 - Field K Token-Ring configuration 5-44, 5-48
 - workstation 5-13
- address conversion
 - token-ring-to-Ethernet example D-5
- alternate AS/400 systems
 - communicating with 7-13
 - configuring 5-59
- answering, manual 7-7
- APPN configuration list C-76, C-87
- AS/400 system
 - alternate systems 5-59
 - communicating 7-2
- AT keyboard E-8

auto-dialing 7-6

B

- bridged LAN
 - addressing considerations D-1

C

- cable, connecting
 - 5250 workstations 3-8
 - communication 3-13
 - Token-Ring network 3-10, 3-12
 - workstations 3-8
- codes
 - installation reference 10-2
 - message 9-2
 - system reference 9-2, 9-4
- communication
 - AS/400 system, with 7-2
 - cable 3-14
 - cable, connecting 3-13
 - establishing, preparation for 7-2
 - Field 3 SDLC configuration 5-20
 - link, ending
 - DWS, from 7-20
 - PWS, from 7-19
 - PWS, from 7-8
- reestablishing
 - DWS, from 7-22
 - PWS, from 7-21
- X.25 7-9—7-13
- configuration
 - 5494
 - nonprogrammable workstation (NWS),
from 5-11—5-19
 - programmable workstation (PWS),
from 5-5—5-11
 - alternate AS/400 systems 5-59
 - communication
 - synchronous data link control (SDLC) 5-20
 - Token-Ring AS/400 Attachment 5-38
 - Token-Ring Gateway 5-44
 - X.21 5-31
 - X.21 leased 5-35
 - X.25 5-24
 - data
 - Field 5 X.25 configuration 5-26
 - printing configuration 5-51, 5-63
 - transferring to the 5494 5-9
 - verify configuration 5-51, 5-63
 - dependent workstation (DWS), saving 5-63

configuration (continued)

examples

- Ethernet network C-9
- SDLC leased line through an SNA Subarea Network C-67
- SDLC leased line with Token-Ring Gateway C-16
- SDLC leased line with token-ring gateway through an APPN network node C-58
- SDLC switched/V.25 bis autodial line with Ethernet Gateway C-23
- token-ring network C-2
- token-ring through an SNA Subarea Network C-77
- X.21 leased line C-37
- X.21 switched line C-30
- X.25 PVC C-44
- X.25 SVC C-51

network information

- Field 11 (network name) 5-55
- Field 12 (logical unit (LU) name) 5-55
- Field 13 (control point (CP) name) 5-55
- Field 14 (mode name) 5-55
- Field 15 (connection number) 5-56
- Field 16 (logical connection retry parameters) 5-57
- Field 17 (serial number) 5-58
- Field 18 (password) 5-58

overview 5-11

printer port and station 5-51

screen

- network information (screen 2) 5-52
- printing configuration data 5-51
- SDLC configuration (screen 1) 5-13
- synchronous data link control (SDLC) Field AA 5-14
- Token-Ring 5-38, 5-41
- X.21 5-31
- X.25 5-24

synchronous data link control (SDLC)

- Field 2 (station address) 5-20
- Field 3 (communication field) 5-20
- Field 8 (V.25 bis parameters) 5-23

Token-Ring

- Field F (local service access point) 5-38, 5-42
- Field G (response timer(T1)) 5-39, 5-42
- Field H (inactive timer(Ti)) 5-39, 5-42
- Field I (acknowledgment timer(T2)) 5-39, 5-42
- Field J (retry count(N2)) 5-40, 5-43
- Field K (Token-Ring address) 5-44, 5-48
- Field L (service access point) 5-45, 5-49
- Field M (response timer(T1)) 5-45, 5-49
- Field N (inactive timer(Ti)) 5-45, 5-49
- Field O (acknowledgment timer(T2)) 5-46, 5-49
- Field Q (retry count(N2)) 5-46, 5-50
- Field R (maximum out(TW)) 5-46, 5-50
- Field S (maximum in(N3)) 5-46, 5-50

configuration (continued)

X.21

- Field B (Short Hold mode retry parameters) 5-32
- Field C (Short Hold mode access code) 5-33
- Field D (Short Hold mode dial digit format) 5-33
- Field E (optional call progress signals) 5-33

X.25

- Field 4 (subscription data) 5-25
- Field 5 (configuration data) 5-26
- Field 6 (software data) 5-27
- Field 7 (retry parameters) 5-29

configuration example

- 8209 LAN Bridge addressing D-3
- connecting to Token-Ring 3-10, 3-12
- connection**
 - 5494
 - Model 002 to Token-Ring 3-10, 3-12
 - communication cable 3-13
 - Field 15 network information configuration 5-56
 - verifying
 - 5250 8-14
 - Token-Ring 8-13
 - control point (CP) name
 - Field 13 network information configuration 5-55
 - control unit physical features 3-2
 - controller description
 - communication C-74, C-85
 - workstation C-76, C-87

D

date and time

- setting 3-6, 8-15, 8-16
- viewing 8-15

dependent workstation (DWS)

- configuring the 5494 from 5-11
- data, saving 5-63
- ending communication using 7-20
- establishing communication using 7-2
- reestablishing communication from 7-22

description

- communication device C-75, C-86
- communications line C-73, C-84
- mode C-75, C-86

diagnostics

- extended, running 8-20
- information 8-19—8-20
- problem determination procedures 8-2—8-6

dialing

- automatic 7-6
- manual 7-5

diskette

- drive 3-2
- ordering replacement system F-1

display

- 5494 LCD 3-3, 8-8

display (continued)
 error log entries 8-17
 message format
 before normal operation 8-9
 during normal operation 8-10
 operation 8-8
DOS systems
 configuring
 remote access function 4-9
DWS (dependent workstation)
 See dependent workstation (DWS)

E

equipment needed 2-2, 2-3
 error log, displaying entries 8-17
Ethernet
 addressing considerations D-1
 configuration
 Ethernet AS/400 attachment 5-41
 Ethernet Gateway 5-48
 connecting the 5494 to 3-12
 physical address format D-2
 examples, system configuration
 Ethernet network C-9
 SDLC leased line through an SNA Subarea Network C-67
 SDLC leased line with Token-Ring Gateway C-16
 SDLC leased line with token-ring gateway through an APPN network node C-58
 SDLC switched/V.25 bis autodial line with Ethernet Gateway C-23
 token-ring network C-2
 token-ring through an SNA Subarea Network C-77
 X.21 leased line C-37
 X.21 switched line C-30
 X.25 PVC C-44
 X.25 SVC C-51

F

Field
 network information
 11 (network name) 5-55
 12 (logical unit (LU) name) 5-55
 13 (control point (CP) name) 5-55
 14 (mode name) 5-55
 15 (connection number) 5-56
 16 (logical connection retry parameters) 5-57
 17 (serial number) 5-58
 18 (password) 5-58
 synchronous data link control (SDLC) configuration
 2 (station address) 5-20
 3 (communication field) 5-20
 8 (V.25 bis parameters) 5-23
Token-Ring
 F (local service access point) 5-38, 5-42

Field (continued)

Token-Ring (continued)
 G (response timer(T1)) 5-39, 5-42
 H (inactive timer(Ti)) 5-39, 5-42
 I (acknowledgment timer(T2)) 5-39, 5-42
 J (retry count(N2)) 5-40, 5-43
 K (Token-Ring address) 5-44, 5-48
 L (service access point) 5-45, 5-49
 M (response timer(T1)) 5-45, 5-49
 N (inactive timer(Ti)) 5-45, 5-49
 O (acknowledgment timer(T2)) 5-46, 5-49
 Q (retry count(N2)) 5-46, 5-50
 R (maximum out(TW)) 5-46, 5-50
 S (maximum in(N3)) 5-46, 5-50

X.21

2 (station address) 5-32
 3 (communication) 5-36
 B (Short Hold mode retry parameters) 5-32
 C (Short Hold mode access code) 5-33
 D (Short Hold mode dial digit format) 5-33
 E (optional call progress signals) 5-33
X.25
 2 (station address) 5-25
 4 (subscription data) 5-25
 5 (configuration data) 5-26
 6 (software data) 5-27
 7 (retry parameters) 5-29

I

inactive timer (Ti), Field N Token-Ring 5-45, 5-49
indicator

Call 5494 Service 8-8
 Ready 8-8
 See PD Guide 8-8
 Test Mode 8-8

installing 5494 Utility Program

DOS and 5250 workstation connection 4-6

DOS and LAN connection 4-7

OS/2 PWS 4-8

remote access function

CM/2 1.1 4-16

DOS 4-9

stand-alone 4-6

K

key sequences E-2

keyboard

122-key E-5

Enhanced (102-key) E-6

PC, PC XT, and portable PC E-7

Personal Computer AT E-8

Personal System/2 computer E-9

typewriter E-3

typewriter data entry E-4

L

line description, communication C-73, C-84
local
 network name, configuring alternate AS/400 systems 5-59
 service access point, Field F Token-Ring configuration 5-38, 5-42
location addresses
logical
 channel, configuring alternate AS/400 systems 5-61
 connection retry parameters
 Field 16 network information configuration 5-57
 unit (LU) name
 configuring alternate AS/400 systems 5-59
 Field 12 network information configuration 5-55

M

manual
 answering 7-7
 dialing 7-5
matching parameters C-68, C-78
maximum in (N3)
 configuration, alternate AS/400 systems 5-62
 Field S Token-Ring configuration 5-46, 5-50
maximum out (TW)
 configuration, alternate AS/400 systems 5-62
 Field R Token-Ring configuration 5-46, 5-50
message
 codes 9-2
 format
 before normal operation 8-9
 during normal operation 8-10
 listing 9-2
 run-time 10-3
mode description C-75, C-86
mode name
 configuration, alternate AS/400 systems 5-60
 Field 14 network information configuration 5-55
mode table entries C-71, C-82

N

NCP file entries C-70, C-80
network information configuration
 Field 11 (default network name) 5-55
 Field 12 (logical unit (LU) name) 5-55
 Field 13 (control point (CP) name) 5-55
 Field 14 (mode name) 5-55
 Field 15 (connection number) 5-56
 Field 16 (logical connection retry parameters) 5-57
 Field 17 (serial number) 5-58
 Field 18 (password) 5-58
 screen (screen 2)
 printing data 5-63
 verifying data 5-63

network name

 configuration, alternate AS/400 systems 5-59
 Field 11 network information configuration 5-55
notices, safety A-2

O

online facility registration
 DWS 7-17
 PWS 7-16
optional call progress signals, Field E X.21
 configuration 5-33

P

panel indicator
 Call 5494 Service 8-8
 Ready 8-8
 See PD Guide 8-8
 Test Mode 8-8
printing
 network information screen (screen 2) 5-63
 SDLC configuration screen (screen 1) 5-51
problem determination
 extended diagnostics, running 8-20
 procedures 8-2—8-6
program, 5494 Utility
 Communications Manager configuration
 installing 4-2
 requirements 4-2
 uses 4-3
programmable workstation (PWS)
 configuring the 5494 from 5-5
 ending communication using 7-19
 establishing communication using 7-8
 reestablishing communication from 7-21
PWS (programmable workstation)
 See programmable workstation (PWS)

R

reference codes, 5494 Utility Program 10-2
registering online facilities
 DWS 7-17
 PWS 7-16
remote access function
 configuring CM/2 4-16
 configuring for DOS systems 4-9
replacement system diskettes, ordering F-1
required equipment 2-2, 2-3
response timer (T1)
 Field G Token-Ring configuration 5-39, 5-42
 Field M Token-Ring configuration 5-45, 5-49
retry count (N2)
 Field J Token-Ring configuration 5-40, 5-43
 Field Q Token-Ring configuration 5-46, 5-50

retry parameters, Field 7 X.25 configuration 5-29

S

safety notices A-2

screen

 network information (screen 2) 5-52

 synchronous data link control (SDLC)

 configuration (screen 1) 5-13

 Field AA configuration 5-14

 Token-Ring

 SDLC configuration 5-38, 5-41

 X.21 leased configuration 5-44, 5-48

 X.21 configuration 5-31

 X.25 configuration 5-24

SDLC (synchronous data link control)

 See synchronous data link control (SDLC)

service access point

 Field F local Token-Ring configuration 5-38, 5-42

 Field L Token-Ring configuration 5-45, 5-49

setting up

 5494 3-2, 3-4

 workstations 2-2

Short Hold mode (SHM)

 access code, Field C X.21 configuration 5-33

 dial digit format, Field D X.21 configuration 5-33

 direct call indication

 configuring multiple AS/400 systems 5-62

 retry parameters, Field B X.21 configuration 5-32

SNA Subarea Network

 AS/400 system connection using an SDLC leased line C-67

 AS/400 system connection using token-ring C-77

software data, Field 6 X.25 configuration 5-27

SRC (system reference code)

 See system reference code (SRC)

stand-alone

 5494 Utility Program 4-4

 description of 4-4

station address

 configuration 5-51

 Field 2 X.21 5-32

status request 8-12

subscription

 data, Field 4 SDLC configuration 5-25

synchronous data link control (SDLC)

 configuration screen (screen 1)

 Field 2 (station address field) 5-20

 Field 3 (communication field) 5-21, 5-36

 Field 8 (V.25 bis parameters) 5-23

 printing data 5-51

 verifying data 5-51

system generation file entries, 3745 C-70, C-80

system reference code (SRC) 9-5

 0000 through 0099 9-5

 100 through 198 9-4

system reference code (SRC) (*continued*)

 100000 through FFFFFF 9-18

 description 9-4

 FFxxxxxxxxx through **xxxxxxxxx 9-55

T

time and date

 setting 3-6, 8-15, 8-16

 viewing 8-15

Token-Ring

 addressing considerations D-1

 configuration

 AS/400 Attachment 5-38

 Field F (local service access point) 5-38, 5-42

 Field G (response timer(T1)) 5-39, 5-42

 Field H (inactive timer(Ti)) 5-39, 5-42

 Field I (acknowledgment timer(T2)) 5-39, 5-42

 Field J (retry count(N2)) 5-40, 5-43

 Field K (Token-Ring address) 5-44, 5-48

 Field L (service access point) 5-45, 5-49

 Field M (response timer(T1)) 5-45, 5-49

 Field N (inactive timer(Ti)) 5-45, 5-49

 Field O (acknowledgment timer(T2)) 5-46, 5-49

 Field Q (retry count(N2)) 5-46, 5-50

 Field R (maximum out(TW)) 5-46, 5-50

 Field S (maximum in(N3)) 5-46, 5-50

 Gateway 5-44, 5-48

 connecting 5494 to 3-10, 3-12

 connection, verifying 8-13

 physical address format D-1

 SAP, configuring alternate AS/400 systems 5-61

 speed, setting 3-6

token-ring network

 Ethernet address conversion D-4

transferring configuration data to the 5494 5-9

typewriter type

 data entry keyboard, IBM E-4

 keyboard, IBM E-3

U

Utility Program

 description of 4-2

installing

 DOS and 5250 workstation connection 4-6

 DOS and Token-Ring connection 4-7

 general 4-4

 OS/2 operating system 4-8

 stand-alone 4-6

reference codes 10-2

requirements 4-2

uses 4-3

V

V.25 bis parameters, Field 8 SDLC 5-23
verifying workstation connection to the 5494 8-13
VTAM startup procedure C-71, C-82

W

workstation
addresses 5-13
setup 2-2, 2-3
verifying connection to the 5494 8-13

X

X.21

configuration
Field 2 (station address) 5-32
Field B (Short Hold mode retry parameters) 5-32
Field C (Short Hold mode access code) 5-33
Field D (Short Hold mode dial digit format) 5-33
Field E (optional call progress signals) 5-33
leased communication, configuration
completion 5-35
switched
establishing communication in 7-5
registering online facilities 7-16

X.25

communication 5-24, 7-2
configuration
Field 2 (station address) 5-25
Field 4 (subscription data) 5-25
Field 5 (configuration data) 5-26
Field 6 (software data) 5-27
Field 7 (retry parameters) 5-29

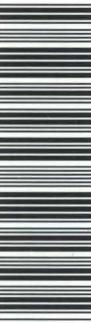


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