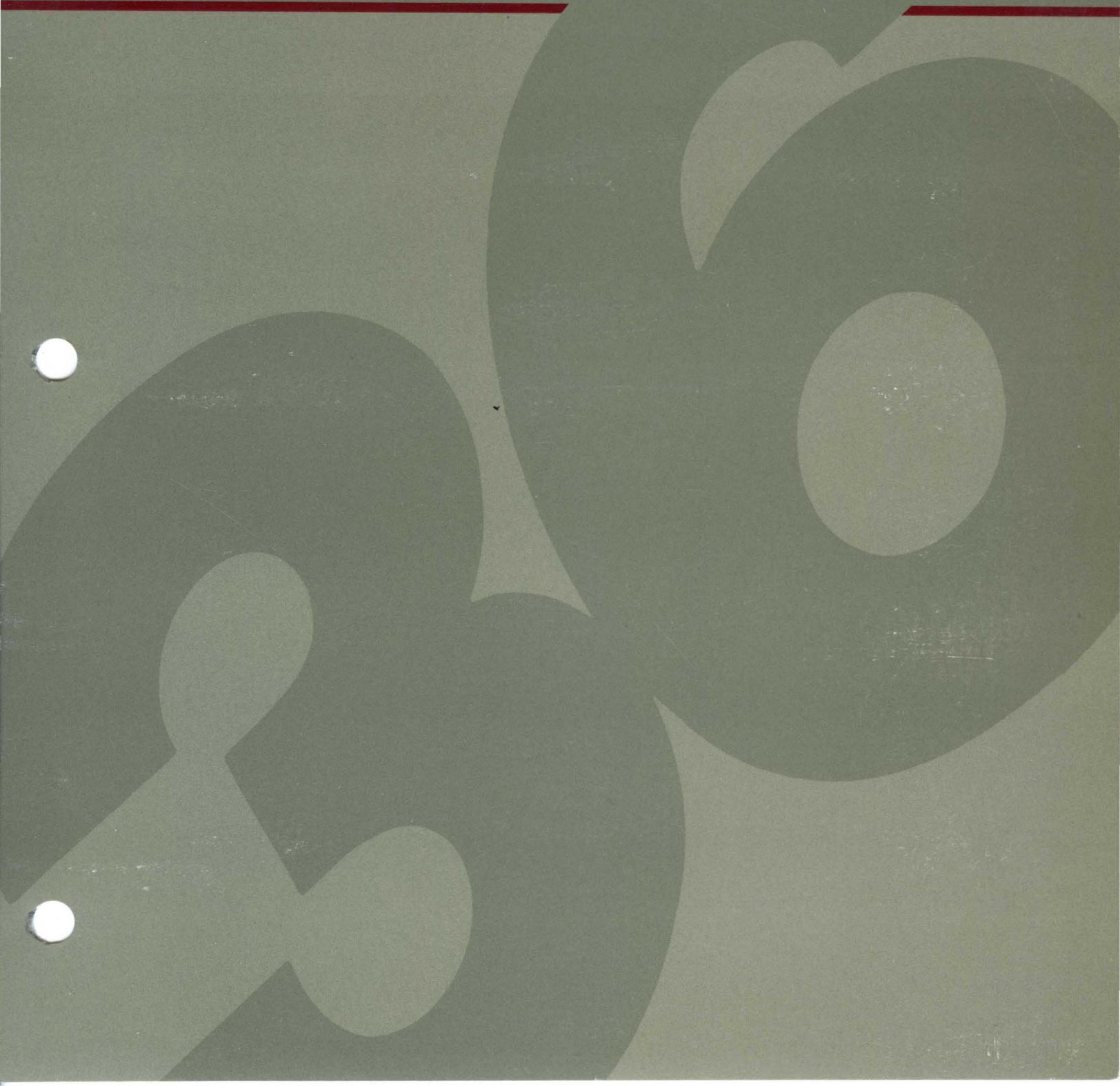


 System/36

# Using System/36 Communications



**IBM** System/36

**Using System/36 Communications**

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This major revision makes obsolete SC21-9082-2. See "About This Manual" for a summary of major changes to this edition. Changes or additions to the text are indicated by a vertical line to the left of the change or addition.

This edition applies to Release 5, Modification Level 1, of IBM System/36 System Support Program Product (Program 5727-SS1, Feature 6001), and to IBM System/36 System Support Program Product (Program 5727-SS6, Feature 6047), and to all subsequent releases and modifications until otherwise indicated.

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## About This Manual

### Who should use this manual . . .

This guide is intended for the System/36 programmer responsible for defining or using the System/36 for communications.

Using this manual, the System/36 programmer will be able to:

- Change the system communications values (SETCOMM)
- Change display station communications values (ALTERCOM)
- Define a systems network architecture (SNA) X.25, synchronous data link control (SDLC), or Token-Ring Network line member configuration
- Define a binary synchronous communications (BSC) line member configuration
- Define an X.25 configuration
  - Define an X.25 network and logical channel configuration
  - Define an X.25 virtual circuit configuration
- Get the status of an X.25 virtual circuit
- Change active X.25 virtual circuit values
- Define an advanced program-to-program communications (APPC) subsystem for:
  - Advanced Peer-to-Peer Networking (APPN)
  - Distributed Data Management (DDM)
  - Personal Services/36
  - Communications and Systems Management (C & SM) alerts
  - Display Station Pass-Through (DSPT)

- Define asynchronous and asynchronous/X.25 line member configurations
- Define a subsystem member for PC Support/36

## How this manual is arranged . . .

- Chapter 1 introduces the topics covered in this manual and provides an overview of the System/36 communications support.
- Chapter 2 describes how the SETCOMM and ALTERCOM procedure commands can be used to define the communications environment.
- Chapter 3 describes using the CNFIGICF procedure to define line member configurations for BSC, SNA/SDLC, and SNA/X.25 communications.
- Chapter 4 describes using the CNFIGX25 and MAINTX25 procedures to define and maintain a configuration for an X.25 packet-switching network.
- Chapter 5 describes defining lists for autocall, BSCEL, X.25, and X.21.
- Chapter 6 describes using the ENABLE and DISABLE procedure commands to start and stop communications subsystems.
- Chapter 7 discusses problem determination and link verification procedures for communications.
- Chapter 8 discusses requesting an X.21 network facility.
- Chapter 9 describes configuring an APPC subsystem for use by DDM, C & SM alert support, DSPT, and Personal Services/36.
- Chapter 10 describes APPC session groups.
- Chapter 11 describes the asynchronous communications support.
- Chapter 12 describes file transfer subroutines.
- Chapter 13 describes configuring PC Support/36.

- Appendix A shows a chart of the X.25 network types by country.
- Appendix B discusses CICS/VS and System/38 considerations.
- Appendix C describes APPC security.
- Appendix D contains the syntax diagrams for the procedures discussed in this book.
- Appendix E describes the connection values for subsystem configurations on switched lines.
- Appendix F contains the LU6.2 verbs.
- Appendix G contains information about Display Station Pass-Through.
- Appendix H contains information about X.21 short hold mode.
- Appendix I contains forms for configuring APPC.
- Appendix J describes 3270 and 5250 keyboard and display differences.
- Appendix K describes 3270-to-5250 keyboard mapping.
- The Glossary defines the data processing, data communications, and System/36 terms used in this manual.

## What you should know . . .

The reader is assumed to have read the following manual or have the equivalent knowledge:

- *IBM System/36 Learning about Your Computer*, SC21-9018
- *Data Communications Concepts*, GC21-5169, Chapters 1 through 4

## If you need more information . . .

The IBM publications listed here provide additional information about topics described or referred to in this guide.

## System/36 Publications

- *Operating Your System (5360 and 5362)*, SC21-9452
- *Operating Your System (5364)*, SC21-9453
- *System Problem Determination*, SC21-7919 for the 5360 System Unit, or SC21-9063 for the 5362 System Unit
- *System Reference*, SC21-9020
- *Multiple Session Remote Job Entry Guide*, SC21-7909
- *Multiple Session Remote Job Entry Messages*, SC21-7944
- *3270 Device Emulation Guide*, SC21-7912
- *3270 Device Emulation Messages*, SC21-7945
- *Interactive Communications Feature: Programming for Subsystems and Intra Subsystem Reference*, SC21-9533
- *Interactive Communications Feature: Upline Subsystems Reference*, SC21-9532
- *Interactive Communications Feature: Finance Subsystem Reference*, SC21-9531
- *Interactive Communications Feature: Base Subsystems Reference*, SC21-9530
- *Interactive Communications Feature: Guide and Examples*, SC21-7911
- *Communications and Systems Management Guide*, SC21-8010
- *Concepts and Programmer's Guide*, SC21-9019
- *System Security Guide*, SC21-9042
- *Performing the First System Configuration for Your System (5360)*, SC21-9022
- *Performing the First System Configuration for Your System (5362)*, SC21-9067
- *Performing the First System Configuration for Your System (5364)*, SC21-9115
- *Changing Your System Configuration*, SC21-9052
- *Converting from System/34 to System/36*, SC21-9053
- *Distributed Data Management Guide*, SC21-8011

- *Source Entry Utility Guide*, SC21-7901
- *Development Support Utility Guide*, SC09-1085
- *Programming with RPG II*, SC21-9006
- *Programming with Assembler*, SC21-7908
- *Planning for Data Communications*, SA21-9441 (Workbook 4 of *What to Do before Your Computer Arrives [5360]*, SBOF-4773)
- *Planning for Data Communications*, SA21-9482 (Workbook 4 of *What to Do before Your Computer Arrives [5362]*, SBOF-4778)
- *Preparing for Data Communications (5364)*, SA21-9844
- *Using the Asynchronous Communications Support*, SC21-9143
- *Advanced Peer-to-Peer Networking Guide*, SC21-9471

## **System/38 Communications**

- *Data Communications Programmer's Guide*, GC21-7825
- *Communications Administrator's Guide*, GC21-8035

## **General Communications**

- *Data Communications Concepts*, GC21-5169

## **Data Link Control**

- *IBM Synchronous Data Link Control General Information*, GA27-3093
- *General Information – Binary Synchronous Communications*, GA27-3004

## **Systems Network Architecture (SNA)**

- *Systems Network Architecture Reference Summary*, GA27-3136
- *Systems Network Architecture 3650 RSS Administrator's and Operator's Guide*, GA27-3134
- *Systems Network Architecture Concepts and Products*, GC30-3072
- *Systems Network Architecture Format and Protocol Reference: Architectural Logic*, SC30-3112
- *Systems Network Architecture Format and Protocol Reference Manual: Architectural Logic for LU Type 6.2*, SC30-3269
- *Systems Network Architecture Technical Overview*, SC30-3073

- *Systems Network Architecture – Sessions between Logical Units*, GC20-1868
- *Systems Network Architecture Transaction Programmer's Reference Manual for SNA LU6.2*, GC30-3084

## **Communications Controllers**

- *IBM 3704 and 3705 Program Reference Handbook*, GY30-3012
- *Guide to Using the IBM 3704 Communications Controller Control Panel*, GA27-3086
- *Guide to Using the IBM 3705 Communications Controller Control Panel*, GA27-3087
- *IBM 3704 and 3705 Control Program Generation and Utilities Guide and Reference Manual*, GC30-3008
- *Introduction to the IBM 3704 and 3705 Communications Controllers*, GA27-3051
- *3725 Model 1 Communication Controller, Introduction*, GA33-0010
- *3725 Model 2 Communication Controller, Introduction*, GA33-0021
- *3725 Communication Controller, Principles of Operation*, GA33-0013
- *The X.25 Interface for Attaching IBM SNA Nodes to Packet-Switched Data Networks – General Information Manual*, GA27-3345
- *IBM Implementation of X.21 Interface General Information Manual*, GA27-3287

## **VTAM**

- *Advanced Communications Function for VTAM (ACF|VTAM) General Information*, GC38-0254
- *VTAM Systems Programmer's Guide*, SC38-0258

## **IBM Personal Computer**

- *IBM System/36 PC Support/36 Messages Guide*, SC21-9525
- *IBM System/36 PC Support/36 Quick Reference Card*, SX21-9846
- *IBM System/36 PC Support/36 Organizer*, SC21-9563
- *IBM System/36 PC Support/36 User's Guide*, SC21-9088
- *IBM System/36 PC Support/36 Technical Reference*, SC21-9097
- *IBM System/36 PC Guide to Operations*, SC21-9525

## **How this manual has changed . . .**

The following are the major changes made to this manual since the previous edition:

- The APPC information in Chapter 2 has been updated to include APPN.
- Information about the Token-Ring Network Manager (TRNMGR) has been added to Chapter 7.
- Chapter 13 has been added to describe configuring a subsystem member for PC Support/36.
- Miscellaneous technical changes have been made throughout the manual.



# Chapter 1. Introduction

System/36 supports a wide range of communications types. This support is packaged as follows:

- Base SSP:
  - Remote work station support (RWS)

*Note: Remote work station support is defined during system configuration. See the manual **Performing the First System Configuration for Your System** or the manual **Changing Your System Configuration** for the information needed to configure System/36 for RWS. Once the communications link is established with a remote work station, that work station operates the same as a local work station. In certain instances, a line used for RWS can also be used by an SSP-ICF subsystem.*

- Batch binary synchronous communications (batch BSC)

*Note: For instructions on defining a communications line that will be used by batch BSC, see the SETCOMM and ALTERCOM procedure commands. For information on programming for batch BSC, see the language manual (**Programming with Assembler** for assembler and **Programming with RPG II** for RPG II.)*

- Communications feature:
  - SLCA support
  - MLCA support
  - ELCA support
  - X.21 switched support
  - X.25 support
  - Autocall support
  - Base support for all communications features
  - Advanced program-to-program-communications (APPC) basic conversation support

- Asynchronous communications support
- Intra subsystem
- File transfer subroutines (FTS)
- Separately priced features:
  - Interactive Communications Feature (SSP-ICF): Binary Synchronous Communications Equivalence Link (BSCEL), SNA Peer, SNA APPC (mapped conversation support), and the BSC CCP subsystems
  - Interactive Communications Feature (SSP-ICF): BSC CICS and BSC IMS/IRSS, and SNA Upline Facility (SNUF) subsystems
  - Interactive Communications Feature (SSP-ICF): SNA Finance subsystem
  - 3270 Device Emulation
  - Multiple Session Remote Job Entry (MSRJE)
  - Distributed Disk File Facility PRPQ (DDFF)
  - Communications and Systems Management (C & SM)
  - Distributed Data Management (DDM)
  - Display Station Pass-Through (DSPT)
  - Advanced Peer-to-Peer Networking (APPN)
  - Local Area Networking (LAN)
  - PC Support/36

Much of the information needed to use the different types of communications is common to more than one type of communications. Within this manual is information needed to:

- Configure an SNA line member needed by SNA MSRJE, DDM, C & SM, SNA 3270, Personal Services/36, DSPT, and the SSP-ICF SNA subsystems.
- Configure a BSC line member to be used by BSC MSRJE, BSC 3270, or the SSP-ICF BSCSEL, CCP, CICS subsystems.
- Configure an asynchronous line member to be used by asynchronous and asynchronous/X.25 communications.
- Configure an APPC subsystem required by Personal Services/36 (for document distribution), C & SM alerts, DSPT, and DDM.
- Call the file transfer subroutines used by asynchronous communications, APPC, BSCSEL, and Peer subsystems.

In addition, many of the procedures, such as ENABLE and DISABLE, are used by all subsystem users.



## Chapter 2. Setting and Changing System Values

### SETCOMM Procedure

You use the SETCOMM procedure to set certain communications items in the communications configuration record. You can use the STATUS COMCNFIG (D H) control command to display the current settings.

The changes you make using the SETCOMM procedure remain in effect until changed by a subsequent SETCOMM procedure.

You may need to use the SETCOMM procedure command to change one or more of the communications values that were set by IBM when your system was manufactured. For example, when you ordered the system, you may have specified a switched communications line. During the planning process, you determined that you actually need a nonswitched line. Since the order specified switched, that is how the machine is defined. So, you use the SETCOMM procedure command to change the definition for the appropriate communications line.

After you run the SETCOMM procedure, you **must** IPL the system to make the changes effective. See the manual *Operating Your System* for information about how to IPL.

The SETCOMM procedure runs the \$SETCP utility program.

Following are the SETCOMM procedure prompt display and an explanation of the parameters:

```

                                SETCOMM PROCEDURE                                Optional-*
                                Sets the communications configuration parameters

Line number . . . . . 1-10 1 *
Line type . . . . . SHM, MULTCONT, MULTTRIB, NONSWTCH, SWITCHED *
Use system clocking facility . . . . . CLOCK, NOCLOCK *
NRZI data encoding . . . . . NRZI, NONRZI *
Use continuous carrier feature . . . . . CONCAR, NOCONCAR *
Use non-U.S. answer tone . . . . . TONE, NOTONE *
Use autocall separator characters . . . . . SEP, NOSEP *
Use autocall end-of-number characters . . . . . EON, NOEON *
Primary SDLC time-out value . . . . . 05-80 *
Number of primary SDLC error retries . . . . . 1-5 *
Modem . . . . . IBMLPDA, IBMWRAP, NONIBM *
X.25 support . . . . . X25, NOX25 *
DDSA line speed . . . . . 2400BPS, 4800BPS, 9600BPS, 56KBPS *
Secondary SDLC inactivity time-out value . . . . . 0-20 *
IBM Token-Ring Network adapter address *
  override . . . . . 400000000000 - 7FFFFFFFFFFF,R *

Cmd3-Previous menu                                COPR IBM Corp. 1986

```

Although each parameter is optional, at least one parameter must be specified. If a parameter is not specified, its current value is not changed.

**Line number**

Specify the number of the communications line for which the settings are to be changed. Lines 9 and 10 are used only for the *IBM Token-Ring Network inactivity time-out value* and *IBM Token-Ring Network adapter address override* parameters. If no parameter is specified, 1 is assumed.

**Line type**

Specify the type of communications line to be used. Allowed entries for this field are:

*SHM* specifies that the line uses X.21 short hold mode, which helps reduce line usage by disconnecting the circuit switched line when there is no line activity.

*MULTCONT* specifies that the System/36 is the control station on a multipoint line. This parameter cannot be used with BSC.

*MULTTRIB* specifies that the System/36 is a tributary station on a multipoint line.

*NONSWTCH* specifies that the line is a nonswitched line. Also, specify *NONSWTCH* if an X.25 network is used.

*SWITCHED* specifies that the line is a point-to-point switched line.

### **Use system clocking facility**

Specify whether internal or external clocking is done for communications. Allowed entries are:

*CLOCK* specifies that the system must provide business machine clocking for data communications.

*NOLOCK* specifies that the modem or another external source supplies the clocking facility.

*Note: If the internal clock is already assigned to a line, this parameter will not disable it.*

### **NRZI data encoding**

Specify the type of data encoding to be used for the line. Allowed entries are:

*NRZI* specifies that non-return-to-zero-inverted (NRZI) data encoding is to be used with SDLC protocol for modems that are sensitive to certain bit patterns in the data stream. On the System/36, this is a method of transmitting data in which the signal is changed to transmit a 0 bit. For the 1 bit, the signal stays the same; this ensures that the signal does not stay the same for an extended period of time. NRZI can only be used if the System/36 modem, the remote system modem, and the remote system or device are also using NRZI.

*NONRZI* specifies that the line will not use NRZI.

### **Use continuous carrier feature**

Specify whether the continuous carrier feature is to be used. Allowed entries are:

*CONCAR* specifies continuous carrier. This is a feature that holds the 'request-to-send' signal active. Specify CONCAR when modems or modem eliminators are used and the multipoint control station is on a four-wire nonswitched communications facility, or when the interface is a four-wire nonswitched point-to-point communications facility and the modem does not support switched network backup. Also, specify CONCAR if an X.25 network is used.

*NOCONCAR* specifies that the continuous carrier feature will not be used. Specify NOCONCAR for a multipoint tributary station, for two-wire point-to-point networks, for a switched public telephone line, or for an interface that uses a Digital Data Service Adapter (DDSA) or uses an X.21 interface adapter on a switched network.

#### **Use non-U.S. answer tone**

Specify whether a non-U.S. answer tone is required. Allowed entries are:

*TONE* specifies that a non-United States answer tone is required for manual answer and autoanswer communications. This setting is modem-dependent.

*NOTONE* specifies that a non-United States answer tone is not required.

#### **Use autocal separator characters**

Specify whether your autocal unit supports separator characters. Allowed entries are:

*SEP* specifies that your autocal unit supports separator characters. When the system attempts to dial a phone number containing a separator character, the character is sent to the autocal unit to do the separation delay.

See the “DEFINEPN Display Description” in Chapter 5 for a description of the use of separator characters.

*NOSEP* specifies that your autocal unit does not support separator characters. When the system attempts to dial a phone number containing a separator character, the character is not sent to the autocal unit. Instead, the system does a 3-second separation delay.

#### **Use autocal end-of-number characters**

Specify whether your autocal unit has answer tone detection. Allowed entries are:

*EON* specifies that your autocal unit does not have answer tone detection capability. If your autocal unit does not have answer tone detection capability, you should use an end-of-number character in the phone numbers you specify with the DEFINEPN procedure. The end-of-number character will be sent from the system to the autocal unit.

See the “DEFINEPN Display Description” in Chapter 5 for a description of the use of end-of-number characters.

*NOEON* specifies that your autocal unit has answer tone detection capability. If you use an end-of-number character in the phone numbers you specify with the DEFINEPN procedure, the character will not be sent from the system to the autocal unit.

**Primary SDLC time-out value**

Specify the number of seconds the System/36 waits before a SDLC time-out error is detected. You can enter any number from 05 through 80, where the first digit indicates the seconds and the second digit represents the tenths of seconds and must be 0 or 5. For example, 25 specifies 2.5 seconds.

*Note: Low speed links may require a greater value.*

**Number of primary SDLC error retries**

Specify the number of primary SDLC error retries to be attempted when an error occurs. You can enter any value from 1 through 5. That value multiplied by 7 is the number of retries that will be attempted.

**Modem**

Specify if an IBM external modem or non-IBM modem is used. Allowed entries are:

*IBMLPDA* specifies that an IBM modem with Link Problem Determination Aid (LPDA) functions is being used on the communications line. This includes IBM external modems such as the 3833, 3834, 3863, 3864, 3865, 3868, 5812, 5865, 5866, and 5868.

*IBMWRAP* specifies that an IBM modem with wrap test capabilities is being used on the communications line. This includes IBM external modems such as the 3872, 3874, 3875, 5811, 5841, or 5842.

*NONIBM* specifies that a non-IBM modem is being used.

**X.25 support**

Specify whether the line is to be dedicated for X.25 usage. Allowed entries are:

*X25* specifies that the line uses X.25 support.

*NOX25* specifies that the line does not use X.25 support.

**DDSA line speed**

Allowed entries are:

*2400BPS* specifies a DDSA line with a line speed of 2400 bps.

*4800BPS* specifies a DDSA line with a line speed of 4800 bps.

*9600BPS* specifies a DDSA line with a line speed of 9600 bps.

*56KBPS* specifies a DDSA line with a line speed of 56 000 bps.

**Secondary SDLC inactivity time-out value**

Specify the time period that determines how long a secondary SDLC nonswitched line waits before it considers the primary system inactive. Allowed entries are:

A number from *1 to 20* in 32 second increments. For example, a *2* indicates 64 seconds.

The system default of *0* indicates that no timer is used.

**IBM Token-Ring Network adapter address override**

This prompt allows you to replace the IBM Token-Ring Adapter preset address (the universally administered adapter address) with an address controlled by you (locally administered address) or to reset the address specified by you with the preset address. The address that you specify must be unique within the network. Allowed entries are:

*40000000000-7FFFFFFFFFFFFF* to replace the preset address with the hexadecimal address that you specify.

*R* to reset your address with the preset address.

If you want to use the syntax diagram for the SETCOMM procedure, see Appendix D.

# ALTERCOM Procedure

You use the ALTERCOM procedure to change communications items for a specified communications line. Changes only apply to programs run from the same display station as the ALTERCOM procedure. To change items so that all the display stations are affected, see the topic on the “SETCOMM Procedure” earlier in this chapter.

You can use the STATUS COMM (D C) command to display the current status of the communications items that you can change with the ALTERCOM procedure.

Following is a chart that indicates the ALTERCOM prompts that can be used for the named subsystems and lines.

ALTERCOM	BSC Subsystems	SNA Subsystems	RWS	Asynchronous	Batch BSC	LAN
Line type	X	X	X	X	X	
Switch type	X	X	X	X	X	
Remote switched line ID					X	
Local switched line ID					X	
Tributary address					X	
Compress/truncate blanks					X	
BSC wait time					X	
3740 multiple file mode					X	
Record separator					X	
Modem speed	X	X	X		X	
Switched network backup	X	X	X		X	
BSC error retries					X	
Primary SDLC time-out		X	X			
SDLC error retries		X	X			
Secondary SDLC time-out		X				

If you do not specify a parameter, its current value is not changed.

If a communications subsystem is to be enabled and the ALTERCOM procedure is required, you must run the ALTERCOM procedure from the same display station as the ENABLE procedure. If you run ALTERCOM while a subsystem is enabled, the subsystem must be disabled and enabled again before the new values will be used.

The ALTERCOM procedure can be run from any display station. Any changes you make using this procedure remain in effect until:

- The items are changed again by the ALTERCOM procedure or the \$SETCF utility program.
- The system is configured again.
- An IPL from diskette restores the system library.
- An IPL after the SETCOMM procedure was run.

The ALTERCOM procedure runs the \$SETCF utility program.

Following are the ALTERCOM procedure prompt displays and an explanation of the parameters:

ALTERCOM PROCEDURE		Optional-*
Updates communications line, batch BSC, SDLC, or LAN parameters		
Line number . . . . .	.1-10	1
Line type . . . . .	SHM,MULTCONT,MULTTRIB,NONSWTCH,SWITCHED	*
Switch type . . . . .	.AA,MA,MC	*
Hexadecimal equivalent of remote switched line ID . . . . .		*
Hexadecimal equivalent of local switched line ID . . . . .		*
Hexadecimal equivalent of one of tributary station addressing characters . . . . .		*
Blank compression or truncation . . . . .	.NONE,COMPRESS,TRUNCATE	*
BSC wait time in seconds . . . . .	1-999,R	*
Cmd3-Previous menu	Cmd14-More prompts	COPR IBM Corp. 1986

Although each parameter is optional, you must specify at least one parameter. If you omit a parameter, its current value is not changed.

**Line number**

Specify the identifying number of the communications line that is to have one or more of its characteristics changed. The default is line 1. Lines 9 and 10 are used only for changing the *IBM Token-Ring Network inactivity time-out value*.

**Line type**

Specify the type of communications line to be used. Allowed entries are:

*SHM* specifies that the line uses X.21 short hold mode, which helps reduce line usage by disconnecting the circuit-switched line when there is no line activity.

*MULTCONT* specifies that the System/36 is the control station on a multipoint line. This parameter cannot be used with BSC.

*MULTTRIB* specifies that the System/36 is a tributary station on a multipoint line.

*NONSWTCH* specifies that the line is a nonswitched line.

*SWITCHED* specifies that the line is a point-to-point switched line.

**Switch type**

Specify the type of switched line used. Allowed entries are:

*AA* specifies that if the modem is in automatic answer mode, the system is to automatically answer the call.

*MA* specifies that the system operator is to manually answer the call.

*MC* specifies that the system operator is to manually place the call to the remote device.

*Note:* For autocal, specify *MC*. You must also specify the phone list to be used in the subsystem's configuration.

**Hexadecimal equivalent of remote switched line ID**

Specify the hexadecimal value of the remote station ID. Specify 2, 4, 6, or 8 hexadecimal digits. If the ID of the remote station is longer than 8 hexadecimal digits, the ID must be specified in the program. If you specify an R, the remote ID is reset to hex 0.

**Hexadecimal equivalent of local switched line ID**

Specify the hexadecimal value of the local station ID. Specify 2, 4, 6, or 8 hexadecimal digits. If the ID of the local station is longer than 8 hexadecimal digits, the ID must be specified in the program. If you specify an R, the local ID is reset to hex 00.

**Hexadecimal equivalent of one of tributary station addressing characters**

Specify the address of the system on the multipoint communications line. The tributary address is the hexadecimal value of one of the pair of tributary station addressing characters. For example, to indicate the EBCDIC addressing characters SS, enter E2 (E2 is the hexadecimal equivalent of the EBCDIC letter S). If no address is specified, the value in the program is used. If you specify an R, the tributary address is reset to hex 00.

See the topic on "Tributary Station Addressing and Polling Characters" later in this chapter for the tributary addressing and polling characters.

**Blank compression or truncation**

Specify compression and truncation values. Allowed entries are:

*NONE* specifies that neither blank compression nor truncation is to be performed.

*COMPRESS* specifies that embedded blanks are to be compressed.

*TRUNCATE* specifies that trailing blanks are to be truncated (that is, cut off).

### BSC wait time in seconds

Specify the number of seconds that BSC is to wait for the System/36 user program to issue a BSC request before it indicates that an error has occurred. You can specify any decimal number from 1 through 999. If you specify R, the BSC wait time is reset to 0.

```
ALTERCOM PROCEDURE                                Optional-*
ALTERCOM 1, , , , , , , , , , , , , , , , , , ,
Transmit or receive
  multiple 3740-type files . . . . . NONMULT,MULTFILE      *
Record separator . . . . .                                     *
Modem speed . . . . . FULL,HALF                             *
Use a switched network backup line . . . . . NOSNBU,SNBU   *
Number of batch BSC error retries . . . . . 1-255,R         *
Primary SDLC time-out value . . . . . 05-80                 *
Number of primary SDLC error retries . . . . . 1-5          *
Secondary SDLC inactivity time-out value . . . . . 0-20     *
```

Cmd2-Page back                      Cmd3-Previous menu                      COPR IBM Corp. 1986

### Transmit or receive multiple 3740-type files

Specify whether more than one 3740-type file can be used. Allowed entries are:

*NONMULT* specifies that multiple files cannot be transmitted or received.

*MULTFILE* specifies that more than one (3740-type) file can be transmitted or received.

### Record separator

Specify the record separator. See the appropriate programming language manual for more information about record separator characters. If you specify R, the record separator is reset to hex 00. The default is hex 1E.

### Modem speed

Specify the speed used by the modem. Allowed entries are:

*FULL* specifies that the full rated speed of the modem is to be used.

*HALF* specifies that half of the full rated speed of the modem is to be used. This is only valid if the modem supports half rate.

**Use a switched network backup line**

Specify whether a switched network backup line is used. Allowed entries are:

*NOSNBU* specifies that no switched network backup line is to be used.

*SNBU* specifies that the switched network backup line is to be used if a failure occurs on the nonswitched primary line.

This is only valid if the modem and the remote system support switched network backup.

If *SNBU* is specified for BSC, and manual call, manual answer, or automatic answer is not specified, the connection either becomes manual call or manual answer depending on the first communications line operation done by the program. If the first line operation is a transmit operation, manual call is assumed. If the first line operation is a receive operation, manual answer is assumed.

**Number of batch BSC error retries**

Specify the number of times a transmission is to be attempted if an error occurs. You can specify any decimal number from 1 through 255.

If you specify 255, you are indicating that there is no limit on the number of retries to be attempted when waiting for data from the remote system.

If you specify an R, the BSC retry count is reset to hex 00.

**Primary SDLC time-out value**

Specify the SDLC time-out value. You can specify a number from 05 through 80, where the first digit indicates the seconds and the second digit represents tenths of seconds and must be 0 or 5.

**Number of primary SDLC error retries**

Specify the number of retries of a transmission that are to be attempted when an error occurs. You can specify a number from 1 through 5. The number indicates the multiple of seven retries that are attempted; for example, 2 means 14 retries.

### Secondary SDLC inactivity time-out value

Specify the time period that determines how long a secondary SDLC nonswitched line waits before it considers the primary system inactive. Allowed entries are:

A number from 1 to 20 in 32 second increments. For example, a 2 indicates 64 seconds.

The system default of 0 indicates that no timer is used.

Examples 1, 2, and 3 use the ALTERCOM procedure command. Refer to Appendix D for the format of this command.

#### Example 1

This example shows how to specify that line 1 is to be switched and automatic answer.

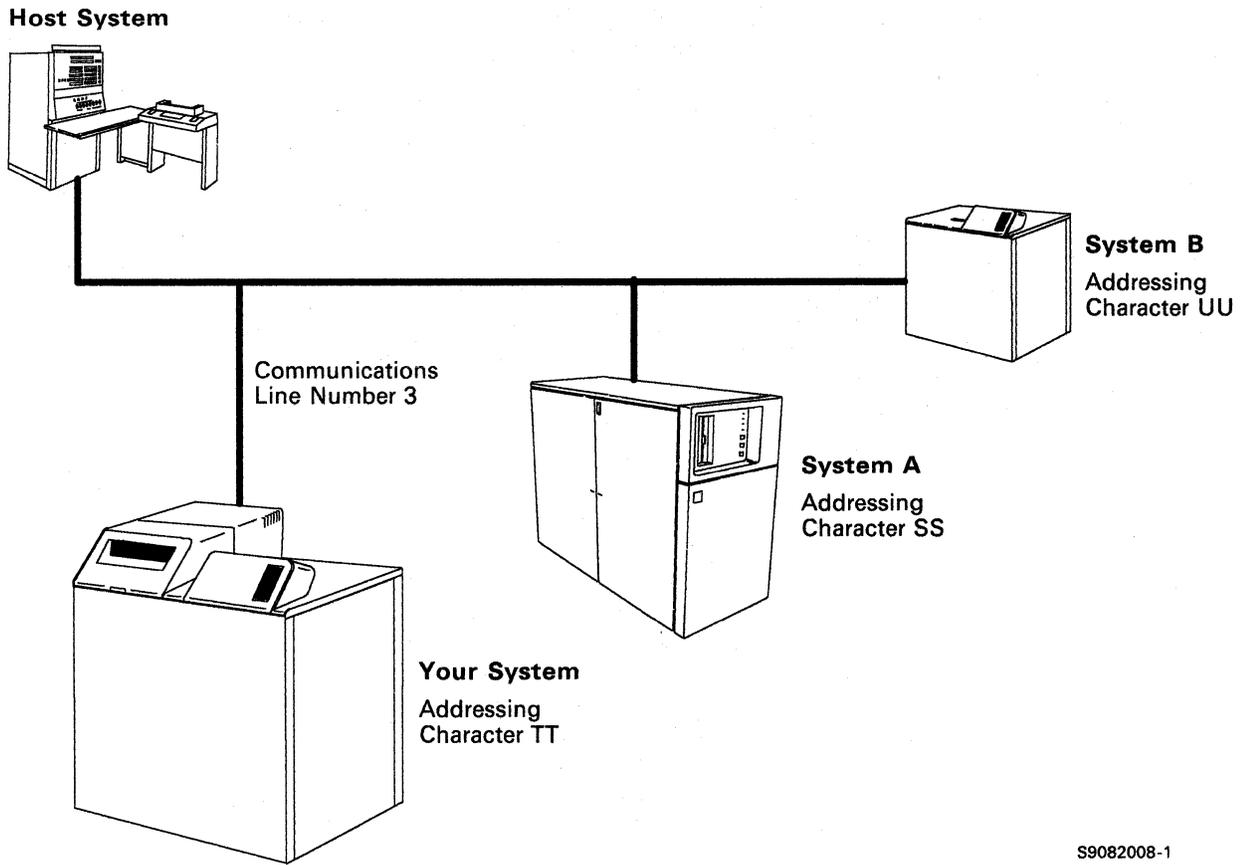
```
ALTERCOM 1,SWITCHED,AA
```

#### Example 2

This example shows how to change line 3 to a tributary station in a multipoint line. The tributary address is TT (hex value of EBCDIC E3).

```
ALTERCOM 3,MULTTRIB,,,,E3
```

The multipoint communications network could be viewed as the following:



S9082008-1

### Example 3

You have a display station that needs to use a switched line for part of the day and a nonswitched line for the remainder. The value in the system communications configuration record is nonswitched. To change to switched, you could:

1. Physically connect a switched line to the correct system port.
2. Use the ALTERCOM procedure command (from the display station that will use the line) to change the line type to switched.
3. Use the line as switched from the display station.
4. When complete, physically disconnect the switched line and reconnect the nonswitched line.

To reset the line type to nonswitched, use the ALTERCOM procedure.

If any other display station attempts to use the line as nonswitched while it is physically a switched line, the attempt will fail.

*Note: ALTERCOM does not change the values specified for a communications line member. A line member is defined and changed by using the CNFIGICF procedure command.*

# Tributary Station Addressing and Polling Characters

The following charts show the addressing and polling characters that you can use for System/36 BSC tributary stations. Addressing and polling characters must be used together in certain pairs. That is, once an addressing character is selected, the complementary polling character must be used. The addressing and polling characters are assigned by the host system.

## EBCDIC Addressing and Polling Characters

Addressing Character	Hex Code	Polling Character	Hex Code
SS	E2	BB	C2
TT	E3	CC	C3
UU	E4	DD	C4
VV	E5	EE	C5
WW	E6	FF	C6
XX	E7	GG	C7
YY	E8	HH	C8
ZZ	E9	II	C9
11	F1	JJ	D1
22	F2	KK	D2
33	F3	LL	D3
44	F4	MM	D4
55	F5	NN	D5
66	F6	OO	D6
77	F7	PP	D7
88	F8	QQ	D8
99	F9	RR	D9

## ASCII Addressing and Polling Characters

Addressing Character	Hex Code	Polling Character	Hex Code
aa	61	AA	41
bb	62	BB	42
cc	63	CC	43
dd	64	DD	44
ee	65	EE	45
ff	66	FF	46
gg	67	GG	47
hh	68	HH	48
ii	69	II	49
jj	6A	JJ	4A
kk	6B	KK	4B
ll	6C	LL	4C
mm	6D	MM	4D
nn	6E	NN	4E
oo	6F	OO	4F
pp	70	PP	50
qq	71	QQ	51
rr	72	RR	52
ss	73	SS	53
tt	74	TT	54
uu	75	UU	55
vv	76	VV	56
ww	77	WW	57
xx	78	XX	58
yy	79	YY	59
zz	7A	ZZ	5A



## Chapter 3. Configuring for Communications

Defining a configuration for System/36 communications subsystems consists of defining a line member and a subsystem member.

Many of the values specified during System/36 communications configuration must match values specified at the remote system. For example:

- If System/36 is communicating with an SNA host, the local station address specified during System/36 configuration must match the value specified for the System/36 at the host.
- If System/36 is communicating with a BSC system, the buffer lengths specified at both locations must match.
- If System/36 is communicating with an APPC or APPN system, the location names must match.

It is suggested that you work closely with the remote system personnel to obtain the needed information.

You define the System/36 line and subsystem members by entering the CNFIGICF procedure command from any command-capable display station. The command has no parameters. The CNFIGICF procedure then presents a series of displays that prompt you for the needed configuration information.

# System/36 Communications Line Members

A line member describes the physical characteristics of the communications line that will be used by System/36 communications and also describes one or more remote systems with which System/36 will communicate. The information in the line description is needed to establish the connection with the remote system; it does not describe any specifics of the remote system or of System/36.

The physical characteristics of the line that are defined in the line member are:

- The line type (switched or nonswitched) and, if the line type is switched, whether it is a manual call, manual answer, or autoanswer switch type
- The error retry count (BSC only)
- The data link protocol (SNA only)
- The source service access point (SSAP) (IBM Token-Ring Network only)

The line member also describes the characteristics of the remote system(s) with which System/36 can communicate using the line member.

There are three types of SNA line members:

- SNA/SDLC line members, which you define if you are going to use SNA on an SDLC line
- SNA/X.25 line members, which you define if you are going to use SNA on an X.25 line
- SNA/IBM Token-Ring Network line members, which you define if you are going to use SNA on a Token-Ring Network line

For SNA, you define the following for a remote system:

- The name to be used by System/36 to refer to the remote system
- Whether the remote system is a host system, a terminal, or a Peer system
- If the remote system is an SNA host, the logical units (LUs) that are to be used by each type of SNA communications subsystem (SSP-ICF SNUF, SNA 3270 Device Emulation, SNA MSRJE, or secondary APPC)

- For a switched line, you also specify:
  - The switch type to be used when a session is initiated (call, autoanswer, or manual answer) if the switch type at ENABLE is inactive or autoanswer
  - The name of the phone list load member to be used if the line is an X.21 switched line or if the autocal feature is used
- For an SNA/X.25 line member, you also specify the name of a corresponding X.25 configuration member that contains X.25 information for each remote system that you configure. You must define this X.25 configuration member using the CNFIGX25 procedure after you define the SNA/X.25 line member. Refer to Chapter 4 for a description of the CNFIGX25 procedure.
- For an asynchronous line member, you also should specify the name of the subsystem member. For an asynchronous/X.25 line member, also specify the name of the X.25 virtual circuit configuration member, the number of remote systems the line can communicate with, and the names of these remote systems. Asynchronous line members are discussed in Chapter 11.
- For an SNA/IBM Token-Ring Network line member, you also specify the remote adapter address and the destination service access point (DSAP).

For BSC MSRJE, you define the following for a remote system:

- The name to be used by System/36 to refer to the remote system
- The size of the buffers to be used for communications
- The name of the phone list load member if the line is an X.21 switched line or an autocal switched line

One remote system can be defined within a line member for a nonswitched line; 1 to 32 remote systems can be defined within a line member for a switched line or for a primary multipoint nonswitched line. In general, the remote system definition describes the characteristics of one remote system. However, if the remote system is a host system, it could contain several subsystems, such as JES2, JES3, IMS, CICS, or RES. The remote system definition in the line member describes the characteristics of the remote system itself when System/36 is communicating with any of the subsystems at the remote system.

The number of remote systems you define depends entirely on your communications environment. For example, if you will be using a nonswitched line, or a switched line to communicate with only one remote system, you would define only that system. If you will be using a switched line and will be communicating with more than one remote system, you would define each remote system.

Note that the same remote system definition can be used by secondary APPC, APPN, SNA MSRJE, SNA 3270 Device Emulation, or SSP-ICF SNA Upline Facility (SSP-ICF SNUF) for application programs or for the Distributed Systems Node Executive (DSNX) and Distributed Host Command Facility (DHCF) of Communications and Systems Management (C & SM).

## System/36 Communications Subsystem Members

A subsystem member contains the information necessary for System/36 to communicate with one or more remote locations. For example, for MSRJE, a remote location definition describes the characteristics of one RJE subsystem (such as JES2 or RES) in a remote system (a remote system in the line member). Actually, since the remote system can have many RJE work stations defined, an MSRJE remote location describes one work station for one host system.

When you define a subsystem member, you must specify the name of the line member that is to be used by the subsystem member. You then define the remote location for remote systems within the line member. When defining a subsystem member, you are shown the names of the remote systems that are defined within the associated line member. You then specify the name of the remote system for which you are defining a remote location.

Many other items are defined for a subsystem member. Refer to the appropriate manual for a discussion of configuring a subsystem member.

## Defining an SNA Line Member

The displays in this section illustrate the definition of an SNA line member named SNALINE1. The remote system, within the line member, is called SNAHOST1. The current library is SNALIB.

You define the environment using the CNFIGICF procedure, which is run by entering the CNFIGICF procedure command (it has no parameters) on the command line from a display station. You are then prompted with a series of displays that allow you to define the communications environment.

SNA subsystems can share the same line, with the following restrictions:

- For an SNA/SDLC line:
  - The Peer primary, APPC or APPN primary, and Finance subsystems can share a line if they are configured for a nonswitched multipoint line; however, the APPC or APPN subsystem cannot share the same line member with the Finance subsystem. A line member that the APPC or APPN and Peer subsystems are sharing can run concurrently with a line member used by the Finance subsystem. In addition, remote work station support (RWS) can share this same line member.
  - A Peer secondary subsystem cannot share a line with any other subsystem.
  - The SNA 3270 Device Emulation, SNA MSRJE, APPC or APPN secondary, and SNUF subsystems can share a line if all the subsystems use the same line member. In addition, a SNUF subsystem used for C & SM change management and an APPC or APPN subsystem used for C & SM alert support can also share the line, if they use the same line member.

- For an SNA/X.25 line:
  - All SNA subsystems, including RWS, can share a line, but only one configuration of each may be enabled at one time on the line. You cannot enable Peer primary and Peer secondary or APPC or APPN primary and APPC or APPN secondary on the same line. Also, SNA/MSRJE, SNUF, 3270 Device Emulation, and APPC or APPN can share a line only if they use the same line member. Therefore, you cannot enable APPC primary and any of the other three on the same line.
  - The SNA 3270 Device Emulation, SNA MSRJE, APPC or APPN secondary, and SNUF subsystems can share a line if all the subsystems use the same line member. In addition, a SNUF subsystem used for Communications and Systems Management change management and an APPC subsystem used for Communications and Systems Management alert support can also share the line, if they use the same line member.

*Note: 3270 Device Emulation, MSRJE, SSP-ICF, and C & SM are separate features.*

- For an X.25 line, MSRJE, SNUF, 3270 Device Emulation, and APPC or APPN can run simultaneously on the same line. The System/36 can communicate with multiple remote systems at the same time and on the same line. At the remote end, these remote systems can be configured as primary, secondary, or negotiable. At the local end, the System/36 line member must be specified as negotiable.
- For an SNA/Token-Ring Network line:

PC Support/36 and SNA subsystems (APPC or APPN, SNA 3270 Device Emulation, SNUF, and SNA/MSRJE) can all share a line, but only one configuration of each can be enabled at one time on the line. MSRJE, SNUF, 3270 Device Emulation, and APPC or APPN can share a line only if they use the same line member. The System/36 can communicate with multiple remote systems at the same time and on the same line.

## Display 1.0 SSP-ICF Configuration Member Definition

Display 1.0 is the first display you see after you enter the CNFIGICF procedure command:

```
1.0                      SSP-ICF CONFIGURATION MEMBER DEFINITION                      W1

1. Configuration member name . . . . . SNALINE1
2. Library name . . . . . SNALIB
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
   Option . . . . . 1-5 1

Cmd7-End      Cmd19-Cancel

Help text available throughout CNFIGICF by pressing the Help key
```

*Note: On this display and all displays that follow, you can press command key 7 to end the CNFIGICF procedure or press command key 19 to cancel the CNFIGICF procedure.*

*Pressing command key 7 saves any valid definitions you have performed and, if you are not on display 1.0, returns you to the SSP-ICF Configuration Member Definition display (1.0). If you press command key 7 while on display 1.0, CNFIGICF ends.*

*Pressing command key 19 immediately ends CNFIGICF. You lose any definitions you have performed since you last entered values for display 1.0.*

*Help text is available throughout CNFIGICF by pressing the Help key.*

### 1. Configuration member name

Specify the name for this configuration of the line. The name is used to store the member in a library, and is referenced in the subsystem configuration. SNALINE1 is used for this discussion.

### 2. Library name

Specify the name of the library in which you want this member stored. The default library is the current user library (SNALIB in the example). It is recommended that you do not store the member in the system library (#LIBRARY) since members you store in #LIBRARY may be lost if a release update is later performed.

**3. Select one of the following:**

Specify the number (1 through 5) that corresponds to the operation you want to perform. The options are:

1. *Create new member* allows you to specify the configuration values for a new line member.
2. *Edit existing member* allows you to view and/or change the values previously specified for a line member.
3. *Create new member from existing member* allows you to use an existing line member as the basis for a new line member. You need change only those values necessary. The existing line member is unchanged by this option.
4. *Remove a member* allows you to remove a line member from the library. Note that the definition is no longer available once it is removed. If any subsystem members reference the removed line member, an error will occur when you attempt to use the subsystem member.

*Note: If you press command key 7 after you specify this option, the member is **not** deleted, and CNFIGICF ends.*

5. *Review a member* allows you to view the values specified for a line member. No changes can be made.

If you select option 3 for prompt 3, display 1.0 is updated with two additional prompts when you press the Enter key. If you select any other option, display 2.0 is presented.

## Creating a New Member from an Existing Member

Because a new line member is being created in the example, the next display would be display 2.0. However, to illustrate how display 1.0 is updated when option 3 is selected for prompt 3, the following display is the updated version of display 1.0:

```
1.0                      SSP-ICF CONFIGURATION MEMBER DEFINITION                      W1

1. Configuration member name . . . . . SNALINE1
2. Library name . . . . . SNALIB
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
   Option . . . . . 1-5 3
4. Existing member name . . . . .
5. Existing member library name . . . . . SNALIB

Cmd7-End      Cmd19-Cancel
```

### 4. Existing member name

This prompt appears only if option 3 was selected for prompt 3. Specify the name of the existing line member that you want to use as the basis for a new line member.

### 5. Existing member library name

This prompt appears only if option 3 was selected for prompt 3. Specify the name of the library in which the member named in prompt 4 is stored. The default library is the library specified for prompt 2.

## Display 2.0 SSP-ICF Configuration Member Type

```
2.0                      SSP-ICF CONFIGURATION MEMBER TYPE          SNALINE1  W1
Select one of the following options:
  1. INTRA
  2. BSC
  3. SNA
  4. Async
  5. PC Support/36
Option: 3

Cmd3-Previous display          Cmd19-cancel
                                COPR IBM Corp. 1986
```

*Note: On this display and all displays that follow for the line member configuration, the member name (SNALINE1 in the example), as specified for prompt 1 on display 1.0, is shown in the upper right corner. Pressing command key 3 returns you to the previous display.*

Specify option 3 for an SNA line or subsystem member.

When you press the Enter key, display 4.0 is presented so that you can specify the subsystem or line member you want to work with.

## Display 4.0 SNA Configuration Member Type

```
4.0          SNA CONFIGURATION MEMBER TYPE          SNALINE1  W1
1. SNA member type . . . . . 1-4  2
   1. SNA subsystem member
   2. SNA/SDLC line member
   3. SNA/X.25 line member
   4. SNA/IBM Token-Ring Network line member

2. Will APPC or APPN be used? . . . . . Y,N  N

                                Cmd5-Restart CNFIGICF
                                Cmd19-Cancel          COPR IBM Corp. 1985
```

### 1. SNA member type

Specify the type of member you are defining. Specify option 2 (*SNA/SDLC line member*) if you are using an SDLC line. Specify option 3 (*SNA/X.25 line member*) if you are using an X.25 line. Specify option 4 (*SNA/IBM Token-Ring Network line member*) if you are using a LAN communication line. When you press the Enter key, prompt 2 is added to this display.

*Note: The member type that you enter here determines which display you see next.*

### 2. Will APPC or APPN be used?

Specify Y (yes) if this line member will be used for APPC or APPN communications. You must specify (Y) if this line member will be used for C & SM alerts, DDM, SSP-ICF APPC, DSPT, APPN, or by Personal Services/36 for document distribution. Note that the same line member can be used for both APPC and non-APPC communications.

N (no) specifies that the line member will not be used for APPC.

When you press the Enter key, display 12.0 is presented so that you can define the attributes of the line.

## Display 12.0 SNA Line Member Attributes

12.0	SNA LINE MEMBER ATTRIBUTES	SNALINE1	W1
1. Data link protocol . . . . .		1	
1-Primary           2-Secondary           3-Negotiated			
2. Line type . . . . .		1	
1-Nonswitched    2-Switched           3-X.21 Short Hold Mode			
3. Switch type at ENABLE . . . . .		2	
1-Inactive           3-Manual answer			
2-Autoanswer        4-Manual call			
4. X.25 configuration member name . . . . .		X2506	
5. Local system's station address . . . . .		01-FE	
6. Local system's station XID in hexadecimal. . . . .		00000	
7. Source service access point (SSAP) value . . . . .			

Cmd5-Restart CNFIGICF  
Cmd19-Cancel

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### 1. Data link protocol

Specify whether this is a primary or secondary system in the network, or whether the system will dynamically negotiate the primary and secondary roles.

- If the line member is to be used by the Finance subsystem, by a primary Peer subsystem, or by an APPC or APPN primary subsystem, select option 1 (*Primary*).
- If the line member is to be used by SNA MSRJE, SNA 3270 Device Emulation, SNUF, DSNX, DHCF, a secondary Peer subsystem, or a secondary APPC subsystem, select option 2 (*Secondary*).
- If the line member is to be used by X.25, SNA MSRJE, SNA 3270 Device Emulation, SNUF, DHCF, or the APPC subsystem, select option 3, (*Negotiated*). This option allows the System/36 to communicate with multiple remote systems simultaneously if the line type is nonswitched (regardless of whether the remote systems are primary or secondary). This option also allows the System/36 to have multiple remote systems enabled at one time, whether the remote systems are configured as primary or secondary, if the line type is switched.

*Notes:*

1. *When System/36 uses APPC or APPN to communicate with CICS/VS, System/36 is either secondary or negotiable.*
2. *If System/36 is configured as primary using APPC or APPN, all other remote systems that the System/36 communicates with through the network must be configured as secondary or negotiable.*
3. *A secondary APPC subsystem that communicates with System/38, System/36, Displaywriter, or a 5520 **cannot** share a line member with other secondary subsystems unless the line type is configured as switched in which case multiple remote systems can be enabled, but the System/36 can communicate with only one remote system at a time.*

This prompt is not shown for a Token-Ring Network line; the data link protocol for Token-Ring Network is always set to *negotiated*.

## **2. Line type**

Specify the type of communications line. The line can be either option 1 (*Nonswitched*), option 2 (*Switched*), or option 3 (*X.21 Short Hold Mode*).

The value specified here should correctly identify the type of line you are going to use. If the line values do not match, a message is displayed when you enable a subsystem that uses this line member. You will then be given the option of using the values specified for this line member (SNA 3270 Device Emulation, SNA MSRJE, APPC, C & SM, and SSP-ICF SNUF only) or canceling the ENABLE procedure.

For an X.25 line member, this value specifies how you want to use the X.25 line. The actual line will always be nonswitched, but if you select option 2 for this prompt, you can get the functions (like automatic calling) on a switched line.

This prompt is not shown for a Token-Ring Network line; the line type for Token-Ring Network is always set to *nonswitched*.

For an X.21 short hold mode line member, this value allows the line to be disconnected when there is no data traffic; the SNA session remains intact. For more information on X.21 SHM, see Appendix H.

### 3. Switch type at ENABLE

This prompt is only displayed if the line type is switched. Specify one of the following for a switched line using this line member:

The options are:

- 1-Inactive:* The line is not activated when the subsystem is enabled; it is activated when a session is started. Do not specify if using Finance, Peer, DHCF, or DSNX.
- 2-Autoanswer:* System/36 will automatically answer a call from the remote system to establish the data link. This option is only valid if the modem used on the line has the autoanswer feature or if you are defining an X.25 line member.
- 3-Manual answer:* The operator must answer a call from the remote system and place the modem in data mode to establish the connection. This option does not appear if you are defining an X.25 line member.
- 4-Manual call:* The operator must place a call to the remote system to establish the data link. This option does not appear if you are defining an X.25 line member.

Refer to Appendix E for more information about the values to specify when using switched lines.

### 4. X.25 configuration member name

This prompt appears only if you are defining an SNA/X.25 line member (option 3 on display 4.0). Specify the name of the X.25 configuration member that is to be used with the SNA/X.25 line member. This configuration member contains X.25 information for each remote system you configure. You must define this configuration member using the CNFIGX25 procedure after you define the SNA/X.25 line member. Refer to Chapter 4 for a description of the CNFIGX25 procedure.

*Note:* The X.25 configuration member that you specify here must not currently exist.

### 5. Local system's station address

This prompt is only displayed when you select option 2 for the *Data link protocol* prompt. Specify the hexadecimal address by which System/36 is known to the remote system. The value can be any hexadecimal number from 01 to FE.

When using SNA MSRJE, SNA 3270 Device Emulation, SSP-ICF SNUF, APPC, or APPN to communicate with a host, the value specified here must match the value specified for System/36 at the host system for the ADDR parameter of the PU macro during NCP/VTAM generation.

For SSP-ICF Peer, APPC, or APPN communications, this value must be the same as that specified at the remote system.

- If the remote system is a System/36, this value must match the value specified at the remote system as its *Remote system's station address* on display 13.0 during CNFIGICF.
- If the remote system is a System/38, this value must match the value specified as the CTLADR parameter on the CRTAUD (Create Control Unit Description) command.
- If the remote system is a Displaywriter, this value must match the value specified at the Displaywriter for the *SDLC link address* value on the Port, Modem, and Line Description menu during personalization of the Electronic Document Distribution (EDD) diskette.
- If the remote system is a 5520, this value must match the value specified in the *Local address* parameter of the Remote Device Profile.

#### **6. Local system's station XID in hexadecimal**

Specify the 5-hexadecimal character exchange identifier (XID) that is used to identify the System/36. The value can be from 00000 through FFFFF. When you are using SSP-ICF SNUF, SNA MSRJE, SNA 3270 Device Emulation, or APPC communications to a host system, the value specified here must match the value specified for the System/36 by the IDNUM parameter of the PU macro on the switched line network definition during NCP/VTAM generation at the host system.

If you are using APPC for peer communications, this value must match the value specified at the remote system:

- If the remote system is a System/36, this value must match the value specified at the remote system as its *Remote system's stations XID in hexadecimal* on display 13.0 during CNFIGICF.
- If the remote system is a System/38, this value must match the value specified for the last 5 characters of the EXCHID parameter on the CRTAUD (Create Control Unit Description) command. (The first 3 characters of the EXCHID parameter are the block ID).

- If the remote system is a Displaywriter, specify 00000 since Displaywriter does not check the value.
- If the remote system is a 5520, this value must match the value specified in the *Security ID* parameter of the Remote Device Profile. This value is a combined block ID - XID.

The default is 00000.

This prompt is always shown if APPC or APPN is used. If you are not using APPC or APPN, the prompt is only shown for secondary or negotiated data link protocol.

#### **7. Source service access point (SSAP) value**

Specify (for an SNA/IBM Token-Ring Network line member) the hexadecimal logical channel address used for routing to System/36 functions. This value must be non-zero, divisible by 4, and must match the remote system's destination service access point (DSAP) that you specified on display 13.5 during the remote System/36 configuration. It is recommended that you specify values from hex 04 through hex EC. The value specified for the SSAP must be different for each subsystem or function sharing the same line.

If you are configuring SNA on a System/36 to communicate with a System/370, you must enter hex 04 for this prompt.

## Display 12.5 Remote System Selection

```

12.5                                REMOTE SYSTEM SELECTION                                SNALINE1

1. Select from the following options:
   1-Create    3-Create from existing    5-Review
   2-Edit     4-Remove
   Option . . . . . 1
2. Remote system name . . . . .
3. Existing remote system name. . . . .

-----
OPTION  REMOTE SYSTEM    OPTION  REMOTE SYSTEM    OPTION  REMOTE SYSTEM

Cmd7-End      Cmd8-Reset      Cmd19-Cancel

```

On this display, you select the remote systems that this subsystem communicates with. If the line type is nonswitched and the protocol is secondary, only one remote system can be defined. If the protocol is primary or the line type is switched, up to 32 remote systems can be defined.

All previously defined remote systems are listed. You may edit, remove, or review any of these remote systems by entering the correct option number in the column to the left of the remote system with which you want to work.

If no remote systems have been defined, the only option shown on this display is *1-Create* and prompt 3 is not shown.

### 1. Select from the following options:

Specify which of the available options you want to use:

*1-Create* defines a new remote system.

*2-Edit* changes an existing remote system.

*3-Create from existing* defines a new remote system using an existing remote system as a base.

*4-Remove* removes a remote system. It will no longer exist in this member.

*5-Review* displays an existing remote system. The configuration member cannot be changed.

## **2. Remote system name**

Specify the name (up to 8 characters) by which the remote system is to be known in the line member. You will later use and refer to this name during subsystem configuration on display 29.0.

For APPN, this name must match the control point name at the remote system. If the remote system is a System/36, the name entered here must be the same as the local location name specified at the remote system.

## **3. Existing remote system name**

Specify the name of the existing remote system that is to be used as a base when creating a new remote system if you selected option 3.

## Display 13.0 Remote System Attributes

Display 13.0 lets you define the characteristics for a remote system selected on display 12.5.

```
13.0          REMOTE SYSTEM ATTRIBUTES          SNALINE1    W1
      Remote system SNAHOST1
1. Remote system type . . . . .
  1-Host          2-Peer          3-Terminal
2. Remote system's station address. . . . . 01-FE
3. Remote system's block ID in hexadecimal. . . . . 03E
4. Remote system's station XID in hexadecimal . . . . . 00012
5. Switch type for session initiation . . . . . 3
  1-Call          2-Autoanswer      3-Manual answer
6. Phone list name . . . . .
7. Automatic disconnect? . . . . . Y,N
8. SSCP identification . . . . . 0-65535
Cmd7-End  Cmd19-Cancel
```

*Note: If you press command key 7 on display 13.0, you return to display 12.5.*

### 1. Remote system type

Specify the type of system with which this line member will communicate. The allowed options are:

*1-Host* which must be selected for SNA MSRJE, SSP-ICF SNUF, SNA 3270 Device Emulation, or when the line member will be used for APPC communications with a host system (such as CICS/VS).

*2-Peer* which must be selected when the line member is being defined for use by the SSP-ICF Peer subsystem or for use by APPC communications with a peer (APPC) system.

*3-Terminal* which is valid only when the line member is being defined for the SSP-ICF Finance subsystem.

## 2. Remote system's station address

This prompt is only shown when the data link protocol is primary. Specify the hexadecimal address by which the remote system is known to the System/36. The value can be any hexadecimal value from 01 to FE.

If you are configuring APPC or APPN on a switched line, this prompt is not shown. Instead, the system finds out the remote system's station address during XID exchange. If you are using APPC or APPN for peer communications on a nonswitched line, this value must match the value specified at the remote system:

- If the remote system is a System/36, this value must match the value specified at the remote system as its *Local system's station address* on display 12.0 during CNFIGICF.
- If the remote system is a System/38, this value must match the value specified for the STNADR parameter on the CRTLIND (Create Line Description) command.

For the SSP-ICF Finance subsystem, this address must be the same as the control unit address.

This address must be unique among all remote systems (including Finance terminals, Peer systems, and remote work station controllers) that can be connected to the line at one time.

## 3. Remote system's block ID in hexadecimal

This prompt is only shown when the line member is to be used by APPC or APPN and the remote system type is Peer (option 2 for prompt 1 on this display). Specifies the 3-hexadecimal character block identifier of the remote system. This value can be from 000 to FFF and must be the same as the value assigned to the remote system by SNA. Those values are:

- For System/36: *03E*
- For System/38: *022*
- For Displaywriter: *03A*
- For 5520: *031*
- For Series/1: *021*
- For PC: *050*

#### 4. Remote system's station XID in hexadecimal

Specify the exchange identifier (XID) used to identify the remote system. This identifier is 5 hexadecimal characters from 00000 through FFFFF. This value must match the value specified at the remote system.

- If APPC or APPN is used for this line member, this prompt is shown if the remote system type is Peer.
- If APPC or APPN is not used for this line member, this prompt is only shown if the remote system type is Peer and the data link protocol is primary.
- If TRN is used for this line member, this prompt is always shown and the data line protocol is negotiated.
- If the remote system is a System/36, this value must match the value specified at the remote system as its *Local system's station XID in hexadecimal*.
- If the remote system is a System/38, this value must match the value specified as the last 5 characters of the EXCHID parameter on the CRTLIND (Create Line Description) command. If an EXCHID is not specified at the CRTLIND command, the System/38 automatically generates a value. The System/38 command DSPLIND (Display Line Description) can be used to determine the correct value. The first 3 characters are always 022.
- If the remote system is a Displaywriter, this value must match the value specified at the remote system as its *Physical Unit ID* on the Modem and Line Description menu.
- If the remote system is a 5520, this value must match the value specified in the 5520's *Remote System Security ID* parameter of the Remote System Profile. This value is a combined block ID - XID on a 5520.

## 5. Switch type for session initiation

This prompt appears only if the *Switch type at ENABLE* prompt on display 12.0 was specified as 1 (*Inactive*) or 2 (*Autoanswer*). Specifies, for a switched line, how the data link will be established when a session is started on a switched line using this line member. Allowed responses are:

*1-Call* specifies that System/36 will establish the connection. Either the operator will place a call or, if autocal, X.21 switched, or X.25 is used, System/36 will automatically place the call (if a phone list name is specified for prompt 6).

*2-Autoanswer* indicates that System/36 will automatically answer an incoming call from the remote system to establish the connection.

*3-Manual answer* indicates that the operator must manually answer an incoming call from the remote system to establish the connection (does not appear if you are defining an X.25 line member).

The switch type specified should match the value specified for the line in the configuration record. Refer to Appendix E for more information about the values to specify when using switched lines.

*Note: Because both DHCF and DSNX are started (acquired) by the host system, this prompt has no meaning for an SNA/SDLC line member. However, you must respond to the prompt, so enter a 2 if the line member is used only by DHCF or DSNX (or by both).*

## 6. Phone list name

Enter a value here only if your system has the autocal, X.21 switched, or X.25 support with switched virtual circuits and you want System/36 to automatically attempt to connect to the remote system. The value specified is the name of the phone list load member containing a list of phone numbers (autocal), public data network numbers (X.21 switched), or network addresses (X.25).

The phone list load member is created by the DEFINEPN (autocal), DEFINX21 (X.21), or DEFINX25 (X.25) procedure, as described in Chapter 5. The phone list load member must be stored either in the same library as the line member or in the system library.

This prompt will say *6. Phone number* if the line type is X.21 SHM. You should specify the telephone number of the remote system on an X.21 SHM line.

*Note: If an SNA/SDLC line member is to be used only by DHCF or DSNX (or by both), leave this prompt blank.*

### 7. Automatic disconnect

Specify, for a switched line only, whether you want the line to be automatically disconnected when the last communications session ends. Y (yes) specifies that an attempt will be made to disconnect the line; N (no) specifies that no attempt will be made.

*Note: Specifying N (no) for **Automatic disconnect?** does not prevent the line from being disconnected automatically. If the remote system specifies automatic disconnect, the remote system will attempt to disconnect the line.*

### 8. SSCP identification

Specify the system services control point identifier assigned to the host system. This prompt is only displayed when the remote system is a host. Valid entries are 0 through 65535. If you specify 0, you can communicate with any host, regardless of the SSCP identification of that host.

*Note: If you are using a switched line, you can specify 0 for only one remote system.*

The value specified here must match the value specified in the START procedure for ACF/NCP/VTAM.

If you are defining a secondary protocol line member and the remote system is a host, display 14.0, which allows you to define logical unit sessions, is presented when you press the Enter key. Otherwise, display 12.5 is presented again.

If you are defining an SNA/IBM Token-Ring Network line member, display 13.5 is presented when you press the Enter key.

## Display 13.5 Remote System Attributes

Display 13.5 is shown if you selected option 4 (*IBM Token-Ring Network*) for *SNA member type* on display 4.0.

```
13.5          REMOTE SYSTEM ATTRIBUTES          SNALINE1  W1
          Remote system *****
1. Remote adapter address . . . . .
2. Destination service access point (DSAP) value . . . . . 04
3. Set INACTIVE status at host on disable? . . . . . Y,N N

Cmd5-Restart CNFIGICF          Cmd7-End
Cmd19-Cancel

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```

### 1. Remote adapter address

Specify the hexadecimal adapter address for this remote system for an SNA/IBM Token-Ring Network line member. This address uniquely identifies this node in the network. Valid addresses are hex 000000000001 through hex 7FFFFFFFFFFF.

This address can be specified by the SETCOMM procedure. Refer to Chapter 2 for information about SETCOMM.

### 2. Destination service access point (DSAP) value

Specify the hexadecimal logical channel address used for routing at the remote system for an SNA/IBM Token-Ring Network. This value must be nonzero, divisible by 4, and must match the remote system's source service access point (SSAP). Valid values are hex 04 through hex EC.

### 3. Set INACTIVE status at host on disable?

This prompt is only shown if the remote system type is *host*. If you specify Y (yes), a request for contact is not sent to the remote system on a normal disable of that remote system. This prompt sets the System/36 status at the host to inactive (INACT). You have to (at the host system) vary on the remote system and (at the System/36) enable the location.

If you use the default, N (no), a request for re-contact is sent to the remote system on a normal disable of that remote system. This response sets the System/36 status at the host as a pending connection (PCTD2), allowing the System/36 to resume communications with that remote system without requiring another vary on operation at the host.

## Display 14.0 Remote System Logical Unit Assignments

Display 14.0 is presented after display 13.0 or 13.5 only if the *Remote system type* on display 13.0 is specified as 1 (host).

14.0 REMOTE SYSTEM LOGICAL UNIT ASSIGNMENTS								SNALINE1	WI
Specify the subsystem associated with each LU:									
A-SNUF		B-3270		C-MSRJE		D-APPC or APPN		E-DHCF	
F-DHCF (IDEOGRAPHIC)									
LU Code	LU Code	LU Code	LU Code	LU Code	LU Code	LU Code	LU Code		
1	2	3	4	5	6	7	8		
9	10	11	12	13	14	15	16		
17	18	19	20	21	22	23	24		
25	26	27	28	29	30	31	32		
33	34	35	36	37	38	39	40		
41	42	43	44	45	46	47	48		
49	50	51	52	53	54	55	56		
57	58	59	60	61	62	63	64		
Cmd3-Previous display		Cmd5-Restart		CNFIGICF		Cmd7-End			
Cmd19-Cancel		Roll-Page				COFR IBM Corp. 1986			

Each remote system has up to 255 logical units (LUs) available for communications. These LUs can be used by SNA MSRJE, SSP-ICF SNUF (including DHCF and DSNX), APPC or APPN, or SNA 3270 Device Emulation.

Display 14.0 is a set of displays that allows you to specify which of the possible 255 logical units are to be used by each remote subsystem. This display is used to assign *all* the logical units to be used with this line member configuration. Use the Roll↑ key or the Enter key to advance to the next display of logical sessions, or use the Roll↓ key to go back to the previous display (64 LUs are shown on each display, except the last, which has 63).

You should perform this assignment of LUs in close coordination with the host system personnel. If the host system is a S/370, 30xx, or 43xx, the logical units are defined during NCP/VTAM generation at the host system using LU macros. Each LU is assigned an address with the LOCADDR parameter. You must ask the host system personnel which of these LUs are assigned to each type of communications support.

## Sharing the Line Member

If the line member being defined will be shared by any combination of subsystems, SNA MSRJE, APPC or APPN, SNA 3270 Device Emulation, the SSP-ICF SNA Upline Facility (SNUF) subsystem for application programs, the Distributed Systems Node Executive (DSNX) and remote system management (DHCF) of Communications and Systems Management (C & SM), the LUs assigned here *must match the LU assignments performed at the host system*.

For example, if SNA MSRJE is to use LUs 1 through 10 (as defined by the LOCADDR parameter at the host for the NCP/VTAM generation), you specify C next to those LUs on display 14.0. If SNA 3270 Device Emulation is to use LUs 11 through 20, you specify B next to those LUs on display 14.0. If DSNX is to use LU 21 for C & SM and if SNUF is to use LUs 22 through 30 for application programs, you specify A next to those LUs on display 14.0.

You should work closely with the people responsible for SNA 3270 Device Emulation, SNA MSRJE, SNUF, APPC or APPN, and C & SM at your site and with the person responsible for the NCP/VTAM generation at the host when you assign these LUs.

## Changing LU Assignments

Once you assign an LU to a subsystem on display 14.0, that LU cannot be used by any of the other subsystems. For example, if you assign an LU to MSRJE, it cannot be used by APPC or APPN, SNUF, or SNA 3270 Device Emulation. If you need to change an LU assignment from one subsystem to another, you must edit the line member (option 2 of prompt 3 on display 1.0 of CNFIGICF).

## DHCF and DSNX Assignments

Although both DHCF and DSNX use the SNUF subsystem support, you must enter an *E* for each logical unit that you want assigned as DHCF sessions or enter an *F* for each logical unit that you want assigned as DHCF sessions for an ideographic System/36. (Enter an *A* for the DSNX session.) Only *one* LU should be assigned for DSNX. If multiple LUs are also used for SNUF applications, the first LU of those assigned to SNUF *must* be used by DSNX. These logical units, being assigned for System/36 sessions, should correspond with the LU values that were assigned to this System/36 subsystem during the host system's NCP/VTAM generation.

Because you can specify identical LUs for the bind command parameters for DHCF and DSNX, the SNUF subsystem could initiate the procedure start request for the wrong application. The result will not be what was expected, the user should contact the System/36 operator who can respond to the error message to terminate the session.

Because DHCF and DSNX sessions are always started by the host system, each of the LUs assigned for DHCF or DSNX sessions are *program start* LUs. Program start LUs are defined as such on prompt 2 of display 31.0 during subsystem configuration. The number of LUs assigned to DHCF and DSNX here cannot exceed the maximum specified there.

If this line member is being defined for use only by DHCF and/or DSNX, the LUs assigned as DHCF or DSNX LUs can be from any of the program start LUs.

If this line member is to be shared with other SNUF applications, each LU number assigned here must be an LU number lower than any SNUF logical units used as *acquired logical units*, as described on display 31.0 during subsystem definition. For example, if LUs 1 through 10 are assigned to the SSP-ICF SNUF subsystem on display 14.0 (and prompt 1 specifies 10) and three of those are to be program start LUs (prompt 2 specifies 3), then LUs 1, 2, and 3 are the program start LUs, and LUs 4 through 10 are the acquired LUs. Logical unit 1, 2, or 3, depending on which LU is requested by the host system, will be used for DHCF or DSNX when a program start request is received from the host.

Once you have selected the needed LUs and pressed command key 7 (or the Enter key if you are on the last of the LU displays), you have completed defining a line member, and display 12.5 is presented again to allow you to describe additional remote systems. You can then specify the values for another remote system, or you can press command key 7 to return to display 1.0. Once display 1.0 is presented, you can end the CNFIGICF procedure by pressing command key 7, begin defining another line member, or define a subsystem member.

## Defining a BSC Line Member

The displays in the following sections illustrate the definition of a BSC line member named BSCLINE1. The current library is BSCLIB.

### Display 1.0 SSP-ICF Configuration Member Definition

```
1.0          SSP-ICF CONFIGURATION MEMBER DEFINITION          W1

1. Configuration member name . . . . . BSCLINE1
2. Library name . . . . . BSCLIB
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
Option . . . . . 1-5

Cmd7-End      Cmd19-Cancel

Help text available throughout CNFIGICF by pressing the help key
```

*Note: On this display and all displays that follow, you can press command key 7 to end the CNFIGICF procedure or press command key 19 to cancel the CNFIGICF procedure. Command key 7 saves any valid definitions you have performed and, if you are not on display 1.0, returns you to the SSP-ICF Configuration Member Definition display, display 1.0. If you press command key 7 while on display 1.0, CNFIGICF ends.*

*Pressing command key 19 immediately ends CNFIGICF. You lose any definitions you have performed since you last entered values for display 1.0.*

*Help text is available throughout CNFIGICF by pressing the Help key.*

### 1. Configuration member name

Specify a name for this configuration of the line. The name is used to store the member in a library and is referenced in the subsystem configuration. No default is provided. In this example, the line member name is BSCLINE1.

### 2. Library name

Specify the name of the library in which you want this member stored. The default library is the current user library (BSCLIB for this example). It is recommended that you do not store the member in the system library (#LIBRARY) because members you store in #LIBRARY may be lost if a release update is later performed.

### 3. Select one of the following:

Specify the number (1 through 5) that corresponds to the operation you want to perform. The options are:

1. *Create new member* allows you to specify the configuration values for a new line member.
2. *Edit existing member* allows you to view and/or change the values previously specified for a line member.
3. *Create new member from existing member* allows you to use an existing line member as the basis for a new line member. You need change only those values necessary. The existing line member is not changed.
4. *Remove a member* allows you to remove (delete) a line member from the library. Note that the definition is no longer available once it is removed. If any subsystem members reference the removed line member, an error occurs when you attempt to use the subsystem member.

*Note: If you press command key 7 after you specify this option, the member is **not** deleted, and CNFIGICF ends.*

5. *Review a member* allows you to view the values specified for a line member. No changes can be made.

If you select option 3 for prompt 3, display 1.0 is updated with two additional prompts when you press the Enter key. If you select any other option, display 2.0 is presented.

Because a new line member is being created in the example, the next display would be display 2.0. However, to illustrate how display 1.0 is updated when option 3 is selected for prompt 3, the next display described is the updated version of display 1.0.

```
1.0                SSP-ICF CONFIGURATION MEMBER DEFINITION                W1

1. Configuration member name . . . . . BSCLINE1
2. Library name . . . . . BSCLIB
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
   Option . . . . . 1-5 3
4. Existing member name . . . . .
5. Existing member library name . . . . . BSCLIB

Cmd7-End      Cmd19-Cancel
Help text available throughout CNFIGICF by pressing the help key
```

**4. Existing member name**

This prompt appears only if option 3 is selected for prompt 3. Specify the name of the existing line member that you want to use as the basis for a new line member.

**5. Existing member library name**

This prompt appears only if option 3 is selected for prompt 3. Specify the name of the library in which the member named in prompt 4 is stored. The default library is the library specified for prompt 2.

## Display 2.0 SSP-ICF Configuration Member Type

```
2.0                      SSP-ICF CONFIGURATION MEMBER TYPE          BSCLINE1  W1
Select one of the following options:
  1. INTRA
  2. BSC
  3. SNA
  4. Async
  5. PC Support/36
Option:  _

Cmd3-Previous display          Cmd19-Cancel
                                COPR IBM Corp. 1986
```

*Note: On this display and all displays that follow for the line member configuration, the member name (BSCLINE1 in the example), as specified for prompt 1 on display 1.0, is shown in the upper right corner. Pressing command key 3 returns you to the previous display.*

For BSC, specify option 2.

When you press the Enter key, display 3.0 is presented so that you can specify the subsystem or line member you want to work with.

## Display 3.0 BSC Configuration Member Type

```
3.0          BSC CONFIGURATION MEMBER TYPE          BSCLINE1  W1
1. BSC member type . . . . . 1,2  2
  1. BSC subsystem member
  2. BSC line member

2. Is this for MSRJE? . . . . . Y,N  N

                                         Cmd19-Cancel
                                         COPR IBM Corp. 1986
```

### 1. BSC member type

Specify the type of member that you are defining. Specify option 2 (BSC line member).

### 2. Is this for MSRJE?

Specify Y (yes) if it is for MSRJE.

When you press the Enter key, display 10.0 is presented so that you can define the communications characteristics of the line.

## Display 10.0 BSC Line Member Attributes

10.0	BSC LINE MEMBER ATTRIBUTES	BSCLINE1	W1
1. Line type . . . . .	1-Multipoint . . . . . 2-Nonswitched pt-pt . . . . . 3-Switched pt-pt . . . . .		
2. Error retry count . . . . .		1-255	7
3. Local station address in hexadecimal . . . . .			
4. Switch type at ENABLE . . . . .	1-Inactive . . . . . 2-Answer . . . . .		2
5. Switch type for session initiation . . . . .	1-Manual call . . . . . 2-Autoanswer . . . . . 3-Manual answer . . . . .		1
Cmd7-End	Cmd19-Cancel		

### 1. Line type

Specify the type of communications line. The options are:

*1-Multipoint* if you are using a multipoint communications line.

Specify multipoint for BSC 3270 Device Emulation or the SSP-ICF IMS/IRSS subsystem.

*2-Nonswitched pt-pt* if you are using a nonswitched point-to-point line.

*3-Switched pt-pt* if you are using a switched point-to-point line.

The value specified here should correctly identify the type of line you are going to use. If the line values do not match, a message is displayed when you enable a subsystem that uses this line member. You are then given the options of using the values specified for this line member or of canceling the ENABLE procedure.

### 2. Error retry count

Specify the number of times a receive or transmit operation is to be retried when an error occurs before the error is considered permanent. Any decimal number from 1 through 255 can be entered. The default value is 7.

If numerous errors occur on the communications line, you should increase this value.

### 3. Local station address in hexadecimal

Specify the hexadecimal address by which the System/36 is known to the host system. This prompt is shown only when *Multipoint* is used for prompt 1.

Specify 2 hexadecimal characters from the following ranges:

- For EBCDIC: C2 through C9 and D1 through D9. BSC 3270 Device Emulation also allows 40, 4A through 4F, and 5A through 5F.
- For ASCII: 41 through 5A.

### 4. Switch type at ENABLE

This prompt is only displayed when the line type is switched. The prompt is not displayed if the line member is for MSRJE. For MSRJE, 1 (Inactive) is assumed.

When a subsystem is started using the ENABLE procedure command, you can specify how you want the switched line to operate. The options are:

*1-Inactive:* The line is not activated until the subsystem is started.

*2-Answer:* System/36 automatically answers calls from the remote system.

Refer to Appendix E for more information about the values to specify when using switched lines.

### 5. Switch type for session initiation

Specify the switch type when communications is started on a switched line using this line member. The options are:

*1-Manual call:* The operator must place a call to the remote system to establish the data link. If a phone list is specified later in configuration, System/36 automatically calls.

*2-Autoanswer:* System/36 will automatically answer a call from the remote system to establish the data link. This option is only valid if the modem used on the line has the autoanswer feature.

*3-Manual answer:* The operator must answer a call from the remote system and place the data set in data mode to establish the connection.

Refer to Appendix E for more information about the values to specify when using switched lines.

Once you have completed display 10.0, the line definition is complete. If you are defining a line member for use by MSRJE, display 10.5, which allows you to define the characteristics of the remote system, is shown. If the line member is not for MSRJE, display 1.0 is shown. You can then define another line member, define a subsystem member, or end CNFIGICF.

## Display 10.5 Remote System Selection

This display is shown only if the line member is for MSRJE.

Display 10.5 allows you to define the remote systems with which System/36 can communicate using this line member. If the line member is for a switched line, you can define up to 32 remote systems. If you are defining a line member for a nonswitched line, only one remote system can be defined. System/36 can communicate with only one of those systems at one time.

```

10.5                                REMOTE SYSTEM SELECTION

1. Select from the following options:
   1-Create      3-Create from existing      5-Review
   2-Edit       4-Remove
Option . . . . . 1
2. Remote system name . . . . .
3. Existing remote system name. . . . .

-----
OPTION  REMOTE SYSTEM    OPTION  REMOTE SYSTEM    OPTION  REMOTE SYSTEM

Cmd7-End      Cmd8-Reset      Cmd19-Cancel

```

On this display, you select the remote systems this subsystem communicates with.

All previously defined remote systems are listed. You may edit, remove, or review any of these remote systems by entering the correct option number in the column to the left of the remote system with which you want to work.

If no remote systems have been defined, the only option shown is *1-Create* and prompt 3 is not shown.

### 1. Select from the following options:

Specify which of the available options you want to use:

*1-Create* defines a new remote location.

*2-Edit* changes an existing remote location.

3-Create from existing defines a new remote location using an existing remote location as a base.

4-Remove removes a remote location. It will no longer exist in this member.

5-Review displays an existing remote location. The configuration member cannot be changed.

**2. Remote system name**

Specify the name (up to 8 characters) by which the remote system is to be known in the line member. You will later use and refer to this name during subsystem configuration on display 29.0.

**3. Existing remote system name**

Specify the name of the existing remote system that is to be used as a base when creating a new remote system if you selected option 3.

**Display 11.0 Remote System Attributes**

Display 11.0, which is shown only when the line member is for MSRJE, allows you to define or update the characteristics of the remote system selected on display 10.5.

```
11.0                REMOTE SYSTEM ATTRIBUTES                BSCLINE1  W1

1. Phone list name  . . . . .
2. Buffer length    . . . . . 200-4096

Cmd7-End  Cmd19-Cancel
```

**1. Phone list name**

This prompt appears only if you are defining a switched line. You should enter a value here only if the autocal feature or the X.21 switched feature is used for the line. The value to specify is the name of the phone list member that is to be used for the autocal feature or for an X.21 switched line. The phone list is created by the DEFINEPN or DEFINX21 procedure, as described in Chapter 5.

If you specify a *Phone list name*, the *Switch type for session initiation* specified on display 10.0 is used only if the call cannot be completed using the *Phone list name*.

The specified phone list member must be stored in either the same library as the line member or in the system library.

## 2. Buffer length

Specify the size, from 0200 to 4096 characters, of the transmit buffer that is to be used. This value is dependent on the specification made during the host system generation. The values for the supported BSC host systems are:

- JES2 default is 400, specified on the &MLBFSIZ JES2 initialization parameter.
- JES3 default is 400, specified on the B subparameter in the RJPTERM statement during JES3 work station definition.
- RES default is 512, specified on the TPBFSIZ parameter of the RTAM macro during stage 2 of RTAM generation at the host system.
- RSCS default is 400, specified on the B parameter of the START command.

*Note: You must enter a 4-character value. For example, enter 200 as either 0200 or 200 (a blank in front of the value).*

Display 10.5 is displayed again after you have entered your selections. If you want to define another system, select option 1 and enter a remote system name. To end the definition of the remote system characteristics, press command key 7.

The definition of the line member is completed, and display 1.0 is presented. You can specify the values for another line member or begin the definition of a subsystem member.



## Chapter 4. Defining and Maintaining an X.25 Configuration

### Description

With X.25 support, you can use a System/36 to communicate over a packet-switched data network (PSDN) with a compatible host or terminal that also has X.25 support. The X.25 support acts as an interface between System/36 communications subsystems and X.25. X.25 is the interface to the packet-switched data network using the X.25 communications protocol.

For an overview discussion of X.25 communications, see the *Data Communications Concepts* manual.

### Components of X.25 Support

When you use X.25 on System/36, you use these X.25 utilities to define and maintain the X.25 environment:

- **Configuring for X.25:** You use the X.25 configuration (CNFIGX25) utility to define the network configurations, logical channel configurations, and virtual circuit configurations.

The information you define during CNFIGX25 is linked to the associated remote work station (RWS), SNA SSP-ICF, or asynchronous communications configuration. The RWS or SSP-ICF configuration that is to use an X.25 configuration must be defined before an associated virtual circuit configuration is defined (using CNFIGX25). Remote work stations are defined during system configuration (by the CNFIGSSP procedure) and SSP-ICF configuration members are defined using the CNFIGICF procedure.

An SSP-ICF line member or an RWS configuration is linked to an X.25 configuration through a common name. When defining an RWS configuration or an SSP-ICF SNA/X.25 or asynchronous/X.25 line member, you must have specified the name of the associated X.25 configuration member during CNFIGICF. Therefore, you must decide before you define an RWS or SSP-ICF configuration what the X.25 configuration member is to be called.

- **Maintaining an X.25 link:** You use the X.25 maintenance utility (MAINTX25) to display information about the X.25 links or to change certain virtual circuit parameters.
- **Defining a phone list for X.25:** You use the Define X.25 Phone List (DEFINX25) Utility to create, edit, print, or remove a list of remote network addresses. When System/36 initiates the call on a switched virtual circuit, the network addresses in this list are called sequentially until a virtual circuit is established. Each address is called a prescribed number of times (retry). When System/36 is to answer a call on a switched virtual circuit, the call is accepted and the virtual circuit is established if the network address for the calling station is found in the list. If it is not found, the call request is rejected.

## System/36 Requirements

X.25 programming is supported on System/36 with a minimum of 256K bytes of main storage. X.25 support uses 34K bytes of nonswappable storage and 24K bytes of swappable storage.

The X.25 configuration utility, the X.25 maintenance utility, and the define X.25 phone list utility each require 24K bytes of swappable main storage when loaded.

For a System/36 Model 5360 System Unit with the MLCA (multiline communications adapter), X.25 programming support requires that the X.25 feature be installed on either lines 1 and 2 or lines 3 and 4. Note that the X.25 feature requires two MLCA lines. Communications actually occurs on line 1 or line 3.

For a System/36 Model 5360 System Unit with the ELCA (eight line communications adapter), one to three X.25 lines can be configured with the following conditions:

- If one X.25 line is configured, it can be any of the eight lines. The other communications lines are available for use by other protocols (such as asynchronous, BSC, or SNA/SDLC).
- If two X.25 lines are configured, they can be any two lines except line 8, which is reserved. Therefore, only five lines are available for use by other protocols.
- If three X.25 lines are configured, they can be any three lines except lines 7 and 8, which are reserved. This leaves three lines to be used by other protocols.

For a System/36 Model 5362 System Unit, X.25 requires that the MLCA be installed. One to three X.25 lines can be configured. These can be any of the four communications lines. No lines are reserved.

## Remote Systems Supported

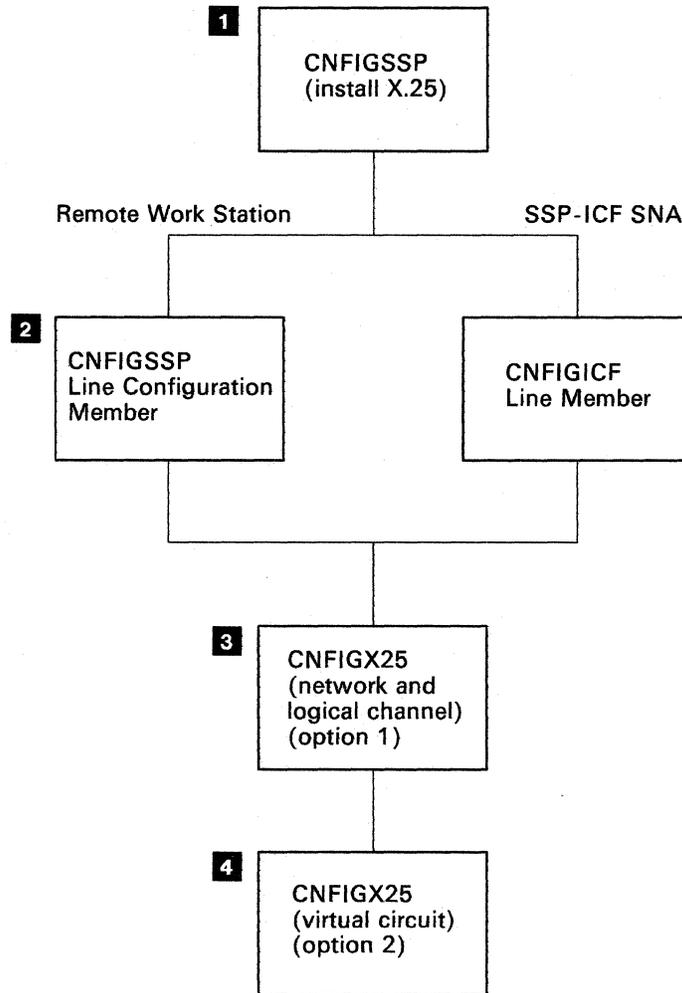
Using the X.25 support (consisting of the X.25 feature and the X.25 programming support), System/36 can communicate with the following devices over a PSDN:

<b>System/36</b>	The other System/36 must be using the X.25 support, unless the System/36 is attached to the PSDN through asynchronous communications support. BSC and SDLC PADs are also available in some PSDNs.
<b>System/34</b>	The System/34 must be attached to the PSDN through an IBM 5973 Network Interface Adapter (NIA).
<b>System/38</b>	The System/38 must be attached to the PSDN through an IBM 5973 Network Interface Adapter (NIA) or use the integrated X.25 adapter.
<b>Remote Work Stations</b>	The controller must be a 5251 Model 12 with an Integrated X.25 Adapter (IXA); or a 5294 Control Unit.
<b>System/370, host</b>	The System/370 host must be using the X.25 support PRPQ/PP in its 370X TP controller.
<b>4331</b>	The 4331 must be using an integrated X.25 adapter (IXA).
<b>4700 Finance System</b>	The 4700 must be using an integrated X.25 adapter (IXA) or an IBM 5973 Network Interface Adapter (NIA).

*Note: Communications between a System/36 with X.25 support and a system that uses an IBM 5973 NIA is supported for migration purposes only. System/36 X.25 is capable of handling the NIA protocol (physical services header [PSH]). However, this does not imply any improvement for error recovery problems associated with an NIA product when attached to a faulty network. Systems such as System/34, when connected to a PSDN through an NIA, have no awareness of the NIA protocol conversion (SDLC to X.25) that occurs in the NIA. Therefore, these products do not specifically support attachment to a PSDN. Consult the documentation for the specific product to determine its level of support.*

## Before Using X.25

Before you can use X.25 to communicate with a remote system or device, you must define a configuration for X.25 support. This is a 4-step process (as shown in Figure 4-1) that must be repeated for each of the X.25 lines.



S9082002-2

Figure 4-1. X.25 Installation and Configuration Process

**1** The X.25 programming support is installed when the SSP features are selected (display 21.0 of CNFIGSSP) during system configuration.

**2** If you are using X.25 support for remote work stations, you define (during system configuration) a configuration member that uses X.25 for remote work station support. The name of the associated X.25 virtual circuit configuration is specified on display 9.0 during CNFIGSSP remote work station definition. You must later use the same name on display 5.0 during X.25 virtual circuit configuration (CNFIGX25 utility). The remote work station configuration and the X.25 virtual circuit configuration must be stored in the same library.

*Note: The default library for system configuration members (as created by CNFIGSSP) is #CNFGLIB.*

*See the manual **Performing the First System Configuration for Your System** or the manual **Changing Your System Configuration** for the description of remote work station configuration.*

If you are using X.25 support for an SSP-ICF subsystem, you define an SNA/X.25 line member using the CNFIGICF procedure. You specify the name of the associated X.25 virtual circuit configuration on display 12.0 during SNA/X.25 line member definition. You must later use the same name on display 5.0 during X.25 virtual circuit configuration (CNFIGX25 utility). The SSP-ICF line member and the X.25 virtual circuit configuration member must be stored in the same library.

**3** You use the X.25 configuration utility (CNFIGX25) to define the network, logical channel, and virtual circuit configurations. One X.25 network and logical channel configuration member must be defined for each of the X.25 lines on your system. The member name can be used for the virtual circuit configuration member name; the member names are stored in #X25LIB.

The network and logical channel part of X.25 configuration defines network subscription information such as the number of logical channels subscribed to, the type of network, the network packet size, and the type of logical channel (switched or permanent).

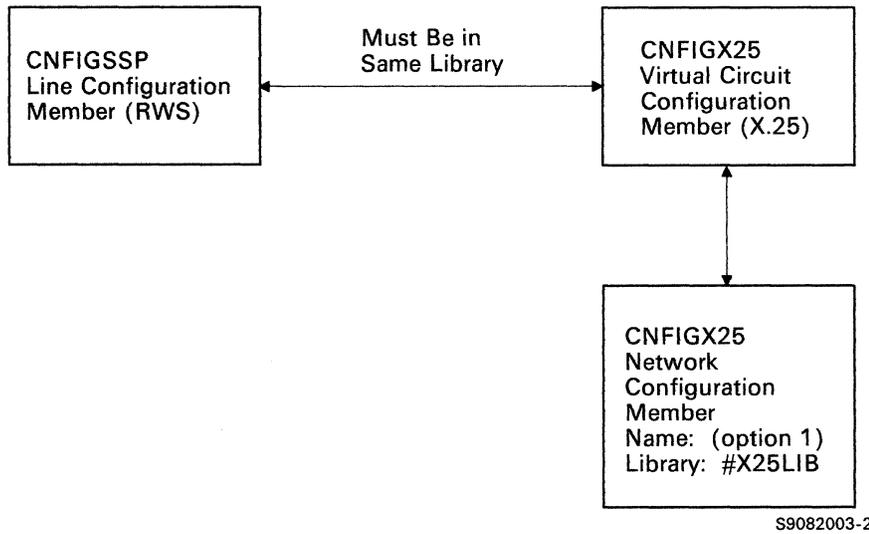
**4** In this step, you define the virtual circuits to use. Once again, you use the CNFIGX25 utility. Note that step 3 (network and logical channel configuration) must have been previously performed and that the RWS or SSP-ICF configuration must have been previously defined.

On display 5.0 of CNFIGX25, you must specify the name of the associated RWS member (specified on display 3.0 during CNFIGSSP) or the associated SSP-ICF line member (specified on display 1.0 during CNFIGICF line member definition).

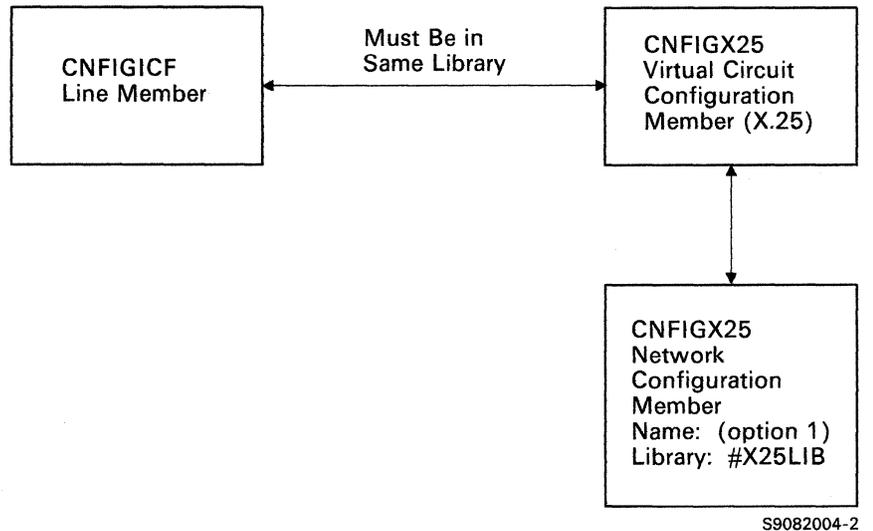
For a RWS configuration (CNFIGSSP), if there is more than one X.25 line defined, then you must enter the X.25 virtual circuit configuration member you want to use. Otherwise, this field is for display only. This name matches the value specified on display 9.0 during CNFIGSSP for the remote work station definition or, if SSP-ICF is used, the name specified on display 12.0 during SSP-ICF line member definition.

You must also specify the name of the associated network configuration you created during step 3 (network and logical channel configuration).

Figure 4-2 shows the relationships among the members used for X.25 with remote work stations; and Figure 4-3 shows the relationships among the members used for X.25 with an SSP-ICF subsystem.



**Figure 4-2. Relation of RWS and X.25 Members**



**Figure 4-3. Relation of SSP-ICF and X.25 Members**

## Installing X.25 Support

You install the X.25 support on System/36 during the initial system configuration, or when you change the system configuration. In either case, you use the CNFIGSSP procedure to describe your System/36 environment.

You install the X.25 support during the program products definition of the System Support Program Product (SSP). For a complete description of installing the program products including X.25, refer to the manual *Changing Your System Configuration*.

## Configuration Requirements

You use the X.25 configuration utility (CNFIGX25) to enter the X.25 network subscription data and to select parameters for each virtual circuit you create. This procedure must be repeated for each X.25 line.

Before you can configure the X.25 support (using the CNFIGX25 procedure), you must define either remote work stations (during system configuration using the CNFIGSSP procedure) or an SSP-ICF subsystem configuration (using the CNFIGICF procedure). If you change an RWS or SSP-ICF configuration, you must use the X.25 configuration utility to edit the associated X.25 configuration.

Use the X.25 configuration utility to define each virtual circuit, whether it is a permanent virtual circuit (PVC) or a switched virtual circuit (SVC).

For an SVC, the logical channel can be configured for incoming calls only, outgoing calls only, or both.

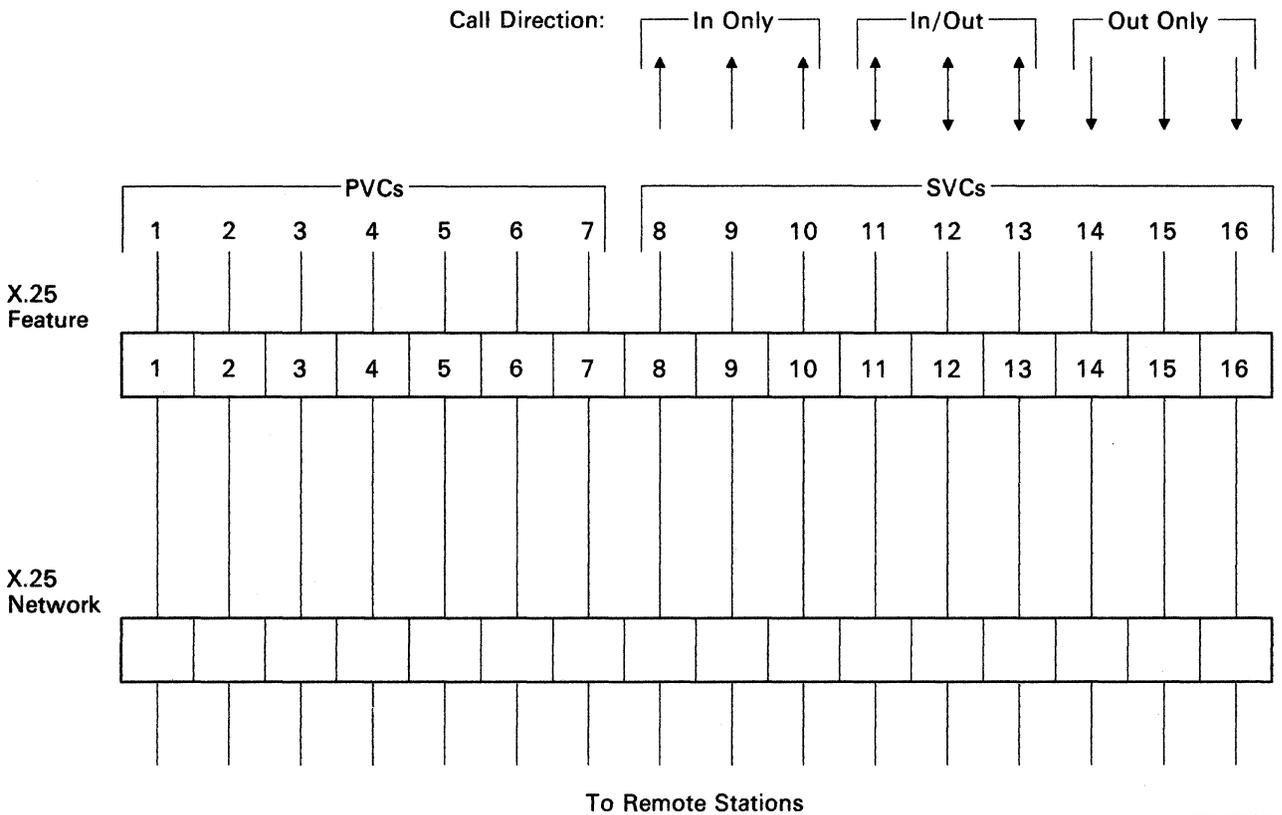
*Note: The connection between System/36 and the X.25 network is always over a nonswitched communications line. However, System/36 supports both switched and permanent virtual circuits.*

System/36 supports a maximum of 16 logical channels per line, which are numbered 1 through 16 (see Figure 4-4). Each logical channel supports either a PVC or an SVC. One to three X.25 lines can be defined. Up to 64 virtual circuits can be defined for a line, but only up to 16 can be active at any one time.

*Note: Both the network and virtual circuit configurations from the previous release must be updated. To update the network and logical channel configurations, edit the existing network and logical channel configurations and create any new network and logical channel configurations needed for additional X.25 lines (if any). To update the virtual circuit configurations, edit the X.25 configuration members and, when prompted, fill in the network and logical channel configuration member to be associated with the X.25 configuration member.*

Logical channels are connected to virtual circuits in the following order (see Figure 4-4):

1. PVCs
2. Incoming-only SVCs
3. Incoming and outgoing SVCs
4. Outgoing-only SVCs



S9082005-1

**Figure 4-4. System/36 X.25 Logical Channel Configuration Example**

Figure 4-4 illustrates a typical logical channel configuration. Logical channels 1 through 7 are permanent and reserved for PVCs, while logical channels 8 through 16 are switched and reserved for SVCs. The SVC logical channels are divided into three classes: in only, both in and out, and out only. An *incoming* call is assigned to the first available logical channel defined for incoming calls, starting with the first logical channel for *incoming* SVCs (channel 8) and ending with the last logical channel for *both* SVCs (channel 13).

Similarly, the system places *outgoing* calls on the first available logical channel, starting with the last logical channel available for outgoing-only SVCs (channel 16) and ending with the first logical channel available for *both* SVCs (channel 11). The middle three channels can be used by incoming and outgoing calls.

If you request an SVC connection when no logical channel is available, your request is placed on one of two queues, depending on whether it is an incoming or outgoing connection. If you request an SVC connection for station test and no logical channel is available, the request is rejected.

If you configure an SSP-ICF subsystem with a phone list (autocall), you must configure at least one logical channel as an SVC with an outgoing direction.

If you configure an RWS configuration or an SSP-ICF subsystem for autoanswer, you must configure at least one logical channel as an SVC with an incoming direction.

## Configuration

System/36 X.25 programming support allows a station on a nonswitched line to be associated with either a PVC or an SVC (similar to conventional point-to-point nonswitched communications).

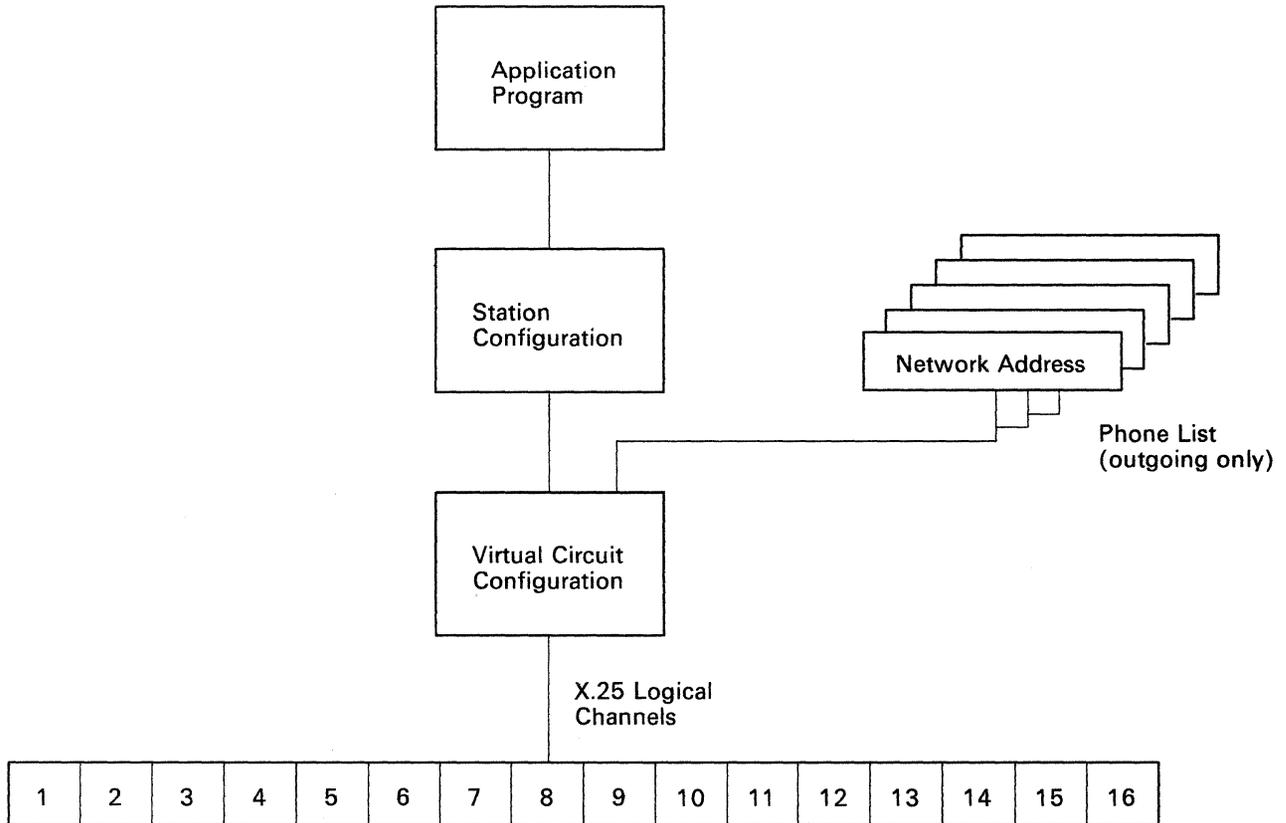
System/36 X.25 programming support also allows the association of multiple stations on a nonswitched line with either PVCs or SVCs (similar to conventional multipoint nonswitched communications). Each station configuration must have a corresponding virtual circuit configuration. Each virtual circuit defined as switched can be independently configured for outgoing or incoming call establishment.

You can configure more stations than the available number of logical channels. If no logical channels are available, any connection requests requiring a logical channel for an SVC configured for outgoing calls are placed on a queue and assigned a logical channel as soon as one of the correct type (IN/OUT or OUT only) becomes available.

When there are no logical channels available, the system operator gets a message. Logical channels become available as virtual circuits finish with them.

## Switched Configuration

System/36 X.25 programming support allows the association of a single station switched line to an SVC as shown in Figure 4-5.



S9082006-1

**Figure 4-5. System/36 X.25 Single Station Switched Configuration**

Any requests for SVCs configured for incoming calls are placed on a queue until a call arrives. This configuration requires at least one switched logical channel with an incoming call direction.

Once the System/36 X.25 support is installed and configured, the operation of the X.25 network is transparent to the application programs, RWS, or SSP-ICF subsystems.

If needed, you can use the X.25 maintenance utility (MAINTX25) to display the status of the X.25 links and to temporarily change some of the virtual circuit parameters.

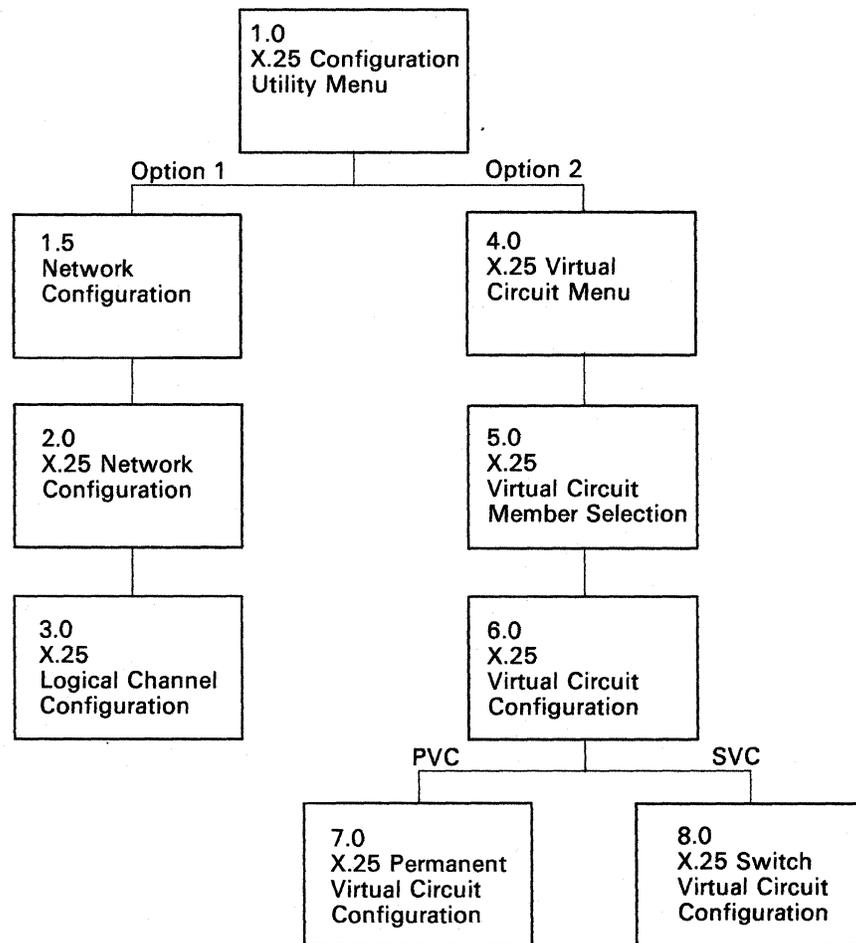
# Defining an X.25 Configuration

You use either the CNFIGX25 procedure, which has no parameters, or the system prompt menus to start the X.25 configuration utility.

The network and logical channel configurations are stored in #X25LIB in a member named by you; the virtual circuits are stored in the same library as the associated RWS or SSP-ICF configurations.

*Note: Tariff information for an X.25 configuration is stored in a file created by the configuration utility and cannot be transported from one system to another. If an X.25 configuration member is generated on one system and then used on other systems, each site must edit the configuration member (using CNFIGX25) to create the tariff files (if needed).*

Figure 4-6 shows the flow of the X.25 configuration utility (CNFIGX25) displays.



S9082007-3

Figure 4-6. X.25 Configuration Utility Display Flow

Press the Enter key to move from one display to the next, unless another key is indicated on the display.

Help text is available for all displays in this utility. Simply press the Help key for an explanation of the information on the display, available options, and valid command keys and their functions. You cannot enter data while viewing a help display.

## Display 1.0 X.25 Configuration Utility Menu

You use this display and the following displays to define the System/36 X.25 support.

```
1.0                                X.25 CONFIGURATION UTILITY MENU                                W1

1. Select one of the following:
  1. X.25 network and logical channel configuration
  2. X.25 virtual circuit configuration
Option . . . . . _

Cmd7-End
```

### 1. Select one of the following:

1. *X.25 network and logical channel configuration* allows you to enter or change network and logical channel parameters. If you specify this option, the next display you will see is display 1.5.
2. *X.25 virtual circuit configuration* allows you to enter or change virtual circuit parameters.

## Network and Logical Channel Configuration

### Display 1.5 X.25 Network Configuration Menu

The X.25 Network Configuration Menu (display 1.5) appears when you select option 1 from the X.25 Configuration Utility Menu (display 1.0).

```
1.5                      X.25 NETWORK CONFIGURATION MENU                      W1

1. Select one of the following:
  1. Create new member
  2. Edit member
  3. Remove member
  4. Print member
Option . . . . . _

2. Network configuration member name . . . . . _____

Cmd7-End   Cmd19-Cancel
```

**1. Select one of the following:**

This prompt allows you to specify whether you are creating, editing, removing, or printing an X.25 network configuration member.

**2. Network configuration member name**

This prompt allows you to specify the name for your X.25 network configuration member.

## Display 2.0 X.25 Network Configuration

The X.25 Network Configuration display appears when you select option 1 from the X.25 Network Configuration Menu (display 1.5). The member name that was entered on display 1.5 appears on the top line of this display.

2.0	X.25 NETWORK CONFIGURATION	X25MBR	W1
1.	Network type . . . . .	A,B,C,D	A
2.	Network default packet size . . . . .	64,128,256,512	128
3.	Network default packet window . . . . .	2-15	2
4.	Link level time-out in seconds. . . . .	1.0-9.9	3.0
5.	Local network address. . . . .	.1010	
6.	Number of logical channels . . . . .	1-16	1
7.	Maximum packet size allowed by network . . . . .	256,512	256

Cmd7-End    Cmd19-Cancel

### 1. Network type

Specify the type of network support required.

- *Type A* supports all the standard functions of X.25 and uses modulo 8 sequencing.
- *Type B* is similar to type A, but uses modulo 128 sequencing.
- *Type C* is similar to type A, except that it supports the SABM/DISC deviation.
- *Type D* is similar to type A, except that it supports the remote initiation deviation.

The default is type A. Refer to Appendix A to determine which network type to specify.

### 2. Network default packet size

Specify the default packet size that is in the X.25 network subscription. You may define the packet as 64, 128, 256, or 512 bytes. The default is 128 bytes.

### 3. Network default packet window

Specify the default packet window size that is in the network subscription. You may specify the packet window as being from 2 through 15 packets, with the CNFIGX25 default being 2.

**4. Link level time-out in seconds**

Specify the amount of time you want the system to wait for a response from the X.25 network. You may specify from 1.0 to 9.9 seconds. The default is 3.0 seconds.

**5. Local network address**

Specify the local network address. You may enter up to 15 decimal digits. The first 4 digits must be the network identification if you enter the local network identification with the network address. There is no default.

**6. Number of logical channels**

Specify the number of logical channels in the X.25 network subscription. The maximum value is 16 and the default is 1.

**7. Maximum packet size allowed by network**

Specify the maximum packet size allowed by the network. The maximum value is 512; the default is 256.

*Note: A packet size of 256 increases the storage used by the X.25 task.*

## Display 3.0 X.25 Logical Channel Configuration

```
3.0                X.25 LOGICAL CHANNEL CONFIGURATION        X25MBR   W1

Reference number:                1
1. Type. . . . . S,P S
   S-switched P-permanent
2. Group number . . . . . 0-F 0
3. Channel number . . . . . 00-FF
4. Call direction . . . . . B,I,O B
   B-both I-in only O-out only

Cmd3-Previous Display  Cmd7-End  Cmd19-Cancel
```

Reference numbers are shown in ascending order. If you specify more than eight logical channels, press the Enter key to display the remaining logical channels, then press command key 3 to return to your first display.

### 1. Type

Specify the type of logical channel in the X.25 network subscription. Enter P for a permanent virtual circuit or S for a switched virtual circuit. The default is S.

### 2. Group number

Specify the group number of each logical channel in the X.25 network subscription. Enter a hexadecimal number from 0 through F. The default is 0.

### 3. Channel number

Specify the channel number of each logical channel in the X.25 network subscription. You can select any hexadecimal number from 00 through FF. There is no default.

### 4. Call direction

Specify the direction in which calls can occur on each logical channel in the X.25 network subscription. This only applies to switched logical channels. You may select I for incoming calls only, B for incoming and outgoing calls, or O for outgoing calls only. You should enter a blank for permanent logical channels. The default is B.

Press command key 7 to return to the X.25 Network Configuration Menu (display 1.5); press command key 3 to return to the previous display; or press command key 19 to cancel CNFIGX25 and return to the System/36 command display.

## Virtual Circuit Configuration

### Display 4.0 X.25 Virtual Circuit Menu

The X.25 Virtual Circuit Menu appears when you select option 2 from the X.25 Configuration Utility Menu (display 1.0).

```
4.0                      X.25 VIRTUAL CIRCUIT MENU                      W1

1. Select one of the following:
  1. Create new member
  2. Edit member
  3. Create new member from existing member
  4. Remove member
  5. Print member
Option . . . . . _

Cmd7-End   Cmd19-Cancel
```

#### 1. Select one of the following:

1. *Create new member.*
2. *Edit member* allows you to review and change the values in an existing X.25 virtual circuit configuration member.
3. *Create new member from existing member* allows you to use an existing X.25 virtual circuit configuration member as the basis for a new member. The existing member is not changed.
4. *Remove member.*
5. *Print member.*

## Display 5.0 X.25 Virtual Circuit Member Select

```
5.0                      X.25 VIRTUAL CIRCUIT MEMBER SELECT                      W1

1. Member name . . . . . _____
2. Related RWS or SSP-ICF line member name . . . . . _____
3. Library name. . . . . _____
4. Existing member name. . . . . _____
5. Existing member library name. . . . . _____
6. X.25 network configuration member name . . . . . _____

Cmd7-End   Cmd19-Cancel
```

### 1. Member name

Specify the name of the X.25 virtual circuit member on which you want to perform the operation. This is retrieved from the related RWS or SSP-ICF line member.

### 2. Related RWS or SSP-ICF line member name

Specify the name of the RWS or SSP-ICF configuration member with which these parameters are to be associated.

### 3. Library name

Specify the name of the library in which the member is stored or in which the new member is to be stored. This name must match the library name you specified during RWS or SSP-ICF configuration. The default is the current active user library.

### 4. Existing member name

This prompt appears only if you selected option 3 on the previous display. Enter the name of the existing X.25 virtual circuit member from which you want to create a new member. The new member will have the same configuration parameters as the member you specify here.

### 5. Existing member library name

This prompt appears only if you selected option 3 on the previous display. Enter the member library from which you want to copy parameters. The default is the current active user library.

### 6. X.25 network configuration member name

Specify the name of the member in which the network configuration parameters are stored.

## Display 6.0 X.25 Virtual Circuit Configuration

```
6.0          X.25 VIRTUAL CIRCUIT CONFIGURATION          *****      W1

      Remote station: *****      Station address: **

1. Packet size . . . . . 64,128,256,512 ***
2. Packet window. . . . . 2-15 2
3. Protocol . . . . . **** Q
4. Virtual circuit type . . . . . SVC,PVC SVC
5. Tariff totals accumulation . . . . . Y,N N
6. Response time tolerance in seconds . . . . . 100-999 100

Cmd3-Previous remote station  Cmd7-End  Cmd19-Cancel
```

The X.25 virtual circuit member name appears in the upper right corner of the display (to the left of the workstation ID). *Remote station* shows either the control unit logical ID that you specified in CNFIGSSP for the RWS or the remote system name that you specified in CNFIGICF for the line configuration. *Station address* shows either the control unit address that you specified in CNFIGSSP for RWS or the remote or local station address that you specified in CNFIGICF for the line configuration. These fields are shown for reference only.

### 1. Packet size

Specify the packet size used with this virtual circuit. You may define the packet size as 64, 128, 256, or 512 bytes. The default is the default packet size you entered during the network configuration section of CNFIGX25. This value cannot be larger than the maximum packet size allowed by the network as indicated in the network configuration.

### 2. Packet window

Specify the packet window size you want to use with this virtual circuit. Enter a value from 2 through 7 (2 through 15 for network type B). The default is the network default packet window you entered during the network configuration part of CNFIGX25.

### 3. Protocol

Specify the end-to-end protocol that you want to use with this virtual circuit. Both ends of the link must be using the same protocol. The protocol types are:

- P* Physical Services Headers (PSH). This logical link protocol uses a Physical Services Header to carry logical link control information. The PSH protocol has been used in early IBM SNA implementations for X.25. You must specify PSH protocol if the remote station is using it.
- Q* Q-bit Logical Link Control (QLLC). This logical link protocol uses the qualifier (*Q*) bit in X.25 data packets to identify packets that carry logical link control information. This information is required to support logical link functions or adjacent node physical services such as exchange of identification (XID), mode selection (SNRM/SABM), circuit test (TEST), and disconnection (DISC).
- E* Enhanced recovery logical link control (ELLC). This logical link protocol uses a special header to carry information that permits error recovery and resynchronization on an end-to-end or DTE-to-DTE basis. This protocol should be used when network reliability is low or when network congestion is common.
- A* Asynchronous. When an asynchronous subsystem has been selected, the system-defined protocol is A. This cannot be changed.

The default is *Q* for a non-asynchronous subsystem.

*Note:* An increase in packet traffic over *P* and *Q* protocols should be expected when using the *E* protocol. This overhead is due to ELLC acknowledgements sent in response to incoming ELLC data.

### 4. Virtual circuit type

Specify the type of virtual circuit you need for this station. Enter PVC for permanent virtual circuits or SVC for switched virtual circuits.

If the associated RWS or SSP-ICF configuration is switched, you must define this virtual circuit as an SVC. If the associated RWS or SSP-ICF configuration is nonswitched, you can specify either SVC or PVC.

The default is SVC.

### 5. Tariff totals accumulation

Specify whether you want tariff totals to be accumulated in a file for this virtual circuit. Enter Y (yes) or N (no). If you specified Y for any of the stations in this configuration member, an indexed file is allocated. The default is N.

## 6. Response time tolerance in seconds

Specify the amount of time, in seconds, that the System/36 is to wait for the remote work station to respond to a command. Allowed entries are from 100 through 999 seconds; the default is 100 seconds. If prompt 3, *Protocol*, is set to E, this entry should be set to a minimum of 100 times the value specified in the *Link level time-out in seconds* prompt on the X.25 Network Configuration display.

*Note: If the parameters you enter do not conform to your network subscription, you will receive an error message when you attempt to connect to the network.*

If you select a permanent virtual circuit (PVC), the next display shown is the X.25 Permanent Virtual Circuit Configuration display (display 7.0); if you select a switched virtual circuit (SVC), the next display shown is the X.25 Switched Virtual Circuit Configuration display (display 8.0).

### Display 7.0 X.25 Permanent Virtual Circuit Configuration

```
7.0      X.25 PERMANENT VIRTUAL CIRCUIT CONFIGURATION      *****      W1

1. Logical channel reference number . . . . .1-16  _

Cmd3-Previous display  Cmd7-End  Cmd19-Cancel
```

This display appears only if you selected a permanent virtual circuit (PVC) on the Virtual Circuit Configuration display (display 6.0). The X.25 virtual circuit configuration name appears in the upper right corner of this display.

#### 1. Logical channel reference number

This number should match one of the logical channel numbers you entered on the Logical Channel Configuration display (display 3.0). You receive an error message if the logical channel reference number you enter has already been specified in this configuration or if it is not a permanent virtual circuit.

Press command key 7 to save the entry and return to the Virtual Circuit menu (display 4.0). Press command key 3 to return to the X.25 Virtual Circuit Configuration display (display 6.0). If there are additional remote stations in the RWS or SSP-ICF configuration member, press the Enter key to return to display 6.0. Press command key 19 to cancel the virtual circuit configuration (no entries are saved).

## Display 8.0 X.25 Switched Virtual Circuit Configuration

```
8.0          X.25 SWITCHED VIRTUAL CIRCUIT CONFIGURATION      *****      W1
1. Remote network address . . . . . _____
2. Call direction . . . . . I,O I
3. Reverse charge . . . . . Y,N N
4. Connection password. . . . . _____
5. Closed user group ID . . . . . blank,00-FF **
6. Unique network facilities. . . . . _____
. . . . . _____

Cmd3-Previous display  Cmd7-End  Cmd19-Cancel
```

This display appears only if you selected a switched virtual circuit (SVC) on the X.25 Virtual Circuit Configuration display (display 6.0). The X.25 virtual circuit configuration name is displayed in the upper right corner of this display.

### 1. Remote network address

You can enter up to 15 digits. There is no default. If you enter the network identification with the network address, the first 4 digits must be the network identification.

You can leave this field blank if this virtual circuit configuration is for an asynchronous remote station that will be calling you through a PAD.

This prompt is not displayed if the associated SSP-ICF line member is switched and if *call* is specified with an X.25 phone list. When you use a phone list, X.25 uses the network addresses in the phone list (as defined by the DEFINX25 procedure).

### 2. Call direction

Specify the call direction to be used in communications between this switched virtual circuit and the station you specified for the remote network address. This value can be:

*I* for incoming call or

*O* for outgoing call

The default is I.

If the associated SSP-ICF line member is switched with a switch type of *call* and an X.25 phone list is specified, then the call direction must be O (outgoing). If the line is switched with autoanswer, the call direction must be I (incoming). If the SSP-ICF line member is configured as being autoanswer at ENABLE and *call* at session initiation, the call direction must be O (outgoing).

If this virtual circuit configuration is for an asynchronous remote station that will be calling you through a PAD, and the remote network address has been left blank, the call direction must be I (incoming).

### **3. Reverse charge**

Specify whether reverse charging may be requested on outgoing call requests or accepted on incoming call requests. The parameter can be Y (yes) or N (no). The default is N.

### **4. Connection password**

Specify the connection password to be exchanged with the remote station to establish the virtual circuit. You may enter up to 8 characters. There is no default. No password validation occurs if you leave this field blank. If you enter a password, the password of an incoming call request must match this password for a connection to occur. On outgoing calls, the password you enter becomes the password of the outgoing call request.

You must enter a password if two switched virtual circuits use two separate logical channels to the same station at the same time. The password uniquely identifies the stations.

If this virtual circuit configuration is for an asynchronous remote station, the connection password prompt is not displayed.

This parameter is not displayed if the associated SSP-ICF line member is switched with a switch type of *call*, and an X.25 phone list is specified. When a phone list is used, X.25 uses the connection passwords in the X.25 phone list (as defined by the DEFINX25 procedure).

### **5. Closed user group ID**

Specify the closed user group for the remote station, if one is used. Enter 2 hexadecimal characters or leave blank.

## **6. Unique network facilities**

Specify the network specific hexadecimal codes (up to 40) you want to insert on an outgoing call request. These codes can be used to request facilities such as priority service or a specific throughput class, or to select a specific RPOA for international virtual calls.

You may obtain network facilities and their hexadecimal codes from the carrier.

The hexadecimal codes will be placed directly in the facilities field of the appropriate packets. Only syntax checking occurs. It is your responsibility to ensure the facilities you request are available.

You can specify any unique network facilities, with the following exceptions:

- Packet size
- Window size
- Password
- Closed user group
- Reverse charge

You specify these facilities during X.25 configuration using the X.25 configuration utility. You receive an error message if you define any of these in the unique network facilities field.

Press command key 7 to return to the X.25 Virtual Circuit menu (display 4.0). Press command key 3 to return to the Virtual Circuit Configuration display to define more logical channels for this member. If there are additional remote stations in the RWS or SSP-ICF configuration member, press the Enter key to return to display 6.0. Press command key 19 to cancel the virtual circuit configuration. No entries are saved.

## Reconfiguration and Monitoring

Whenever you change the associated RWS or SSP-ICF line configuration or the network configuration, you should run CNFIGX25 and select option 2 on display 4.0. If you delete a station and then select option 2, CNFIGX25 automatically deletes any stations that are configured but no longer in the associated RWS or SSP-ICF line member configuration. Similarly, if you add a station and run option 2, you are prompted for X.25 parameters for the new station.

## Maintenance and Status of X.25 Virtual Circuits

You can use the X.25 maintenance utility to monitor the status of and change certain configuration parameters. You start the utility by entering the MAINTX25 procedure command, which has no parameters. You are then prompted by a series of displays.

Press the Enter key to move from one display to the next, unless another key is specified.

Help text is available for all displays in this utility. Simply press the Help key for an explanation of the information on the display, for available options, and for valid command keys and their functions. You cannot enter data while viewing a help display.

## Monitoring Status

### Display 1.0 X.25 Maintenance Utility Menu

```
1.0                      X.25 MAINTENANCE UTILITY MENU                      W1

1. Select one of the following:
  1. Display the status of the logical channels
  2. Display/Edit the stations waiting for call setup
  3. Display/Edit the active virtual circuit configurations
  4. Display the accumulated tariff totals
  5. Print the accumulated tariff totals and reset
  6. Print the accumulated tariff totals without reset
Option . . . . . _

2. Line number . . . . . 1,8 _

Cmd7-End
```

#### 1. Select one of the following:

1. *Display the status of the logical channels* displays the logical channels and the status of the virtual circuits using the channels on the selected line.
2. *Display/Edit the stations waiting for call setup* displays the status of all virtual circuit configurations on the selected line that are waiting for call setup. These virtual circuits are either configured for incoming calls and waiting for a call or reconnection, or configured for outgoing calls and waiting for a logical channel or network address to become available. The configuration parameters of a station can also be edited by selecting this option.
3. *Display/Edit the active virtual circuit configurations* displays the status of active virtual circuit configuration members on the selected line. An individual configuration of the member can be selected and its status displayed. The configuration parameters may then be changed.
4. *Display the accumulated tariff totals* displays the following accumulated tariff totals for each virtual circuit:
  - Number of calls
  - Number of packets sent and received
  - Connect time

5. *Print the accumulated tariff totals and reset* prints the accumulated tariff totals of a virtual circuit configuration member and resets the totals of that member.

6. *Print the accumulated tariff totals without reset* prints the accumulated tariff totals of a virtual circuit configuration member without resetting the totals.

## 2. Line number

Specify the number of the X.25 line on which you want to display, edit, or print.

## Display 2.0 X.25 Logical Channel Status

This display appears if you select *Display the status of the logical channels* (option 1) from the X.25 Maintenance Utility Menu (display 1.0). The name of the network configuration appears in the top right corner.

Press command key 7 to return to the Maintenance Utility Menu; press the Enter key or command key 15 to update the information on the display; or press command key 19 to cancel the logical channel status display. If there are more than seven logical channels, use the roll keys to display additional channels.

2.0		X.25 LOGICAL CHANNEL STATUS								***** W1	
LC NUM	LC TYPE	LC STATUS	CALL DIR	REMOTE STATION	STATION ADDR	LINE	CONFIG TYPE	START TIME	PACKETS IN	PACKETS OUT	
*	***	*****	***	*****	**	*	*****	*****	*****	*****	

Cmd7-End    Cmd15-Update    Cmd19-Cancel    Roll-Page

**LC NUM:** The logical channel reference number as entered on the X.25 configuration utility Logical Channel Configuration display. It can be any number from 1 through the number of logical channels defined (maximum of 16).

**LC TYPE:** The logical channel type (PVC or SVC) as entered on the Logical Channel Configuration display during X.25 configuration (CNFIGX25).

**STATUS:** The X.25 logical channel status.

*Avail* The logical channel is available for use.

*Active* The logical channel is active.

*Unavail* The logical channel is unavailable for use due to an error condition.

**CALL DIR:** The call direction configured for the virtual circuit on this logical channel.

*In* Incoming call

*Out* Outgoing call

**REMOTE STATION:** The station name associated with the virtual circuit using this logical channel. The remote station name is defined in the associated SSP-ICF line member or RWS configuration member.

**STATION ADDR:** The station address of the virtual circuit using this logical channel. The station address is defined in the associated SSP-ICF line member or RWS configuration member.

**LINE:** The line number of the virtual circuit using this logical channel.

**CONFIG TYPE:** The communications support associated with the virtual circuit using this logical channel.

*RWS* SNA Remote Work Station support

*Peer* SNA Peer support

*C/SNA* SNUF, SNA MSRJE, APPC, and/or SNA 3270 Device Emulation

*SFS* SNA Finance support

*ST TST* SNA Station Test

*Async* Asynchronous communications support

**START TIME:** The time, in hours and minutes, that the virtual circuit was opened.

**PACKETS IN:** The total number of data packets received since the virtual circuit was opened. The value may be up to 9 digits.

**PACKETS OUT:** The total number of data packets transmitted since the virtual circuit was opened. The value may be up to 9 digits.

### Display 3.0 X.25 Call Wait Queue Status

This display is presented if you select *Display/Edit the stations waiting for call setup* from the X.25 Maintenance Utility Menu (display 1.0).

3.0 X.25 CALL WAIT QUEUE STATUS								W1
REMOTE STATION	STATION ADDR	LINE	MEMBER NAME	CONFIG TYPE	CALL DIR	WAIT START TIME	WAIT CONDITION	
1.	*****	**	*	*****	*****	***	*****	*****
2.	*****	**	*	*****	*****	***	*****	*****

Select one of the stations to edit parameters . . . . . \_\_\_\_\_

Cmd7-End    Cmd15-Update    Cmd19-Cancel    Roll-Page

This display shows the status of all virtual circuit configurations that are waiting for call setup from the line selected on the X.25 Maintenance menu (display 1.0). These virtual circuits are either those configured for incoming calls and waiting for an incoming call or reconnection, or those configured for outgoing calls and waiting for a logical channel or network address to become available.

You can edit the configuration parameters for a station by entering the station number (1 to 999). Display 6.0, X.25 Virtual Circuit Modification, is then presented. If there are more than the six stations, use the Roll keys to display the remaining stations.

**REMOTE STATION:** The station name associated with the virtual circuit configuration. The remote station name is defined in the associated SSP-ICF line member or RWS configuration member.

**STATION ADDR:** The station address associated with the station as defined in the associated SSP-ICF line member or RWS configuration member.

**LINE:** The line number of the station.

**MEMBER NAME:** The name of the X.25 virtual circuit configuration member that is associated with the remote station.

**CONFIG TYPE:** The type of communications support used with the station.

*RWS* SNA Remote Work Station support

*Peer* SNA Peer support

*C/SNA* SNUF, SNA MSRJE, APPC, and/or SNA 3270 Device Emulation

*SFS* SNA Finance support

*ST TST* SNA Station Test

*Async* Asynchronous communications support

**CALL DIR:** The call direction chosen for this virtual circuit.

*In* Incoming call

*Out* Outgoing call

**WAIT START TIME:** The elapsed time, in hours and minutes, since the station was enabled or varied online and placed on the call wait queue.

**WAIT CONDITION:** The wait condition for SVCs.

*Call* Waiting for an incoming call.

*LC* Waiting for a logical channel to become available.

*Busy* The remote network address called is busy.

*Reconn* Waiting for reconnection.

## Display 4.0 X.25 Active Virtual Circuit Configuration Members

This display is presented if you selected *Display/Edit the active virtual circuit configuration* (option 3) from the the X.25 Maintenance Utility Menu (display 1.0) and there are at least two active virtual circuit configurations.

4.0 X.25 ACTIVE VIRTUAL CIRCUIT CONFIGURATION MEMBERS							W1
MEMBER NAME	CONFIG TYPE	RWS OR LINE MEMBER NAME	LINE	NUMBER OF STATIONS	NUMBER ACTIVE	NUMBER ON WAIT QUEUE	
1. *****	*****	*****	*	**	**	**	

Select one of the members for station details . . . . . \_

Cmd7-End    Cmd15-Update    Cmd19-Cancel    Roll-Page

**MEMBER NAME:** The name of the X.25 configuration member that is active.

**CONFIG TYPE:** The type of communications support used by this member.

**RWS**      SNA Remote Work Station support

**Peer**      SNA Peer support

**C/SNA**    SNUF, SNA MSRJE, APPC, and/or SNA 3270 Device Emulation

**SFS**      SNA Finance support

**ST TST**   SNA Station Test

**Async**    Asynchronous communications support

**RWS OR LINE MEMBER NAME:** The name of the RWS configuration member or the SSP-ICF line member associated with the X.25 configuration member.

**LINE:** The line number used by the associated RWS or SSP-ICF configuration.

**NUMBER OF STATIONS:** The number of stations within the configuration member.

***NUMBER ACTIVE:*** The number of active (currently using a logical channel) stations within that configuration member.

***NUMBER ON WAIT QUEUE:*** The number of stations waiting for a logical channel in this configuration member.

***Select one of the members for station details:*** Enter the number of the member (one of those displayed under *Member Name*) for which you wish to see the detail.

If you enter the number of a member name, the display shown is display 5.0, the X.25 Virtual Circuit Configuration Status.

## Display 5.0 X.25 Virtual Circuit Configuration Status

Display 5.0 is presented when you select one of the members on display 4.0. If you select option 3 from the X.25 Maintenance Utility Menu, display 5.0 is presented if only one virtual circuit configuration member is active.

5.0 X.25 VIRTUAL CIRCUIT CONFIGURATION STATUS ***** W1										
REMOTE STATION	STATION ADDR	VC TYPE	PACKET SIZE	PACKET WINDOW	PROT	TOTALS ACCUM	CALL DIR	REVERSE CHARGE	CONNECT STATUS	
1.	*****	**	***	***	**	*	***	***	***	****

Select one of the stations to edit parameters . . . . . \_

Cmd7-End    Cmd15-Update    Cmd19-Cancel    Roll-Page

The name of the X.25 virtual circuit configuration is shown in the upper right corner of the display.

The following information is displayed on the Virtual Circuit Configuration Status display:

**REMOTE STATION:** The name of the remote station associated with the virtual circuit configuration. This name is defined in the associated RWS or SSP-ICF line configuration.

**STATION ADDR:** The address associated with the station, as defined in the associated RWS or SSP-ICF line configuration.

**VC TYPE:** The virtual circuit type (SVC or PVC) as defined using the X.25 configuration utility.

**PACKET SIZE:** The virtual circuit packet size.

**PACKET WINDOW:** The virtual circuit packet window size.

**PROT:** The protocol that will be used with this virtual circuit. It can be P for PSH, E for ELLC, Q for QLLC, A for asynchronous.

**TOTALS ACCUM:** Specifies whether virtual circuit tariff totals are being accumulated.

**CALL DIR:** The virtual circuit call direction.

*REVERSE CHARGE:* Defines whether reverse charge is specified.

*CONNECT STATUS:* The station connect status.

- Disc* Station is disconnected.
- Req* Request for a connection has been initiated.
- Wait* Station is on the call wait queue.
- Clr Rcv* Clear recovery in progress.
- Conn* The connection is established.
- Rst Rcv* Reset recovery in progress.
- Err* Station is in error state.

If you want to change any of the configuration values, enter a station number to continue with the Virtual Circuit Modification display (display 6.0). (This number cannot exceed the number of remote stations in the virtual circuit configuration.) The modification display does not appear if the virtual circuit configuration is not active. Changes cannot be made if the remote station is active.

## Changing Configuration

### Display 6.0 X.25 Virtual Circuit Modification

This display appears when a station number is entered from the Virtual Circuit Configuration Status display (display 5.0), or when a station number is entered on the Call Wait Queue Status display (display 3.0).

```
6.0          X.25 VIRTUAL CIRCUIT MODIFICATION          *****      W1

      Remote station: *****      Station address: **

1. Packet size . . . . . 64,128,256,512  ***
2. Packet window . . . . . 2-15  **
3. Protocol . . . . . ****  *
4. Virtual circuit type . . . . . SVC,PVC  ***
5. Tariff totals accumulation . . . . . Y,N  *
6. Response time tolerance in seconds . . . . . 100-999  ***

Cmd7-End  Cmd19-Cancel
```

The name of the X.25 virtual circuit configuration is shown in the upper right corner of the display.

Virtual circuit parameters may be changed using this display. These changes take effect the next time the virtual circuit is activated and remain in effect until changed by this utility, or until the X.25 link is reenabled. When the X.25 link is reenabled, the configuration will be determined by the parameters defined using the X.25 configuration utility.

The remote station and station address are shown for reference only and cannot be changed. The remote station field shows the control unit ID that was specified in CNFIGSSP for RWS, or the remote station name that was specified in CNFIGICF for the line configuration. The station address field shows the control unit address that was specified in CNFIGSSP for RWS, or the remote/local station address that was specified in CNFIGICF for the line configuration.

The virtual circuit modification parameters are:

**1. Packet size**

Specify the packet size used with this virtual circuit. It can be 64, 128, 256, or 512 bytes.

**2. Packet window**

Specify the packet window size used with this virtual circuit. For network type A or C, it must be from 2 through 7. For network type B, it must be from 2 through 15.

**3. Protocol**

Specify the link-level end-to-end protocol used with this virtual circuit. The protocol types are:

*P* Physical services headers (PSH)

*E* Enhanced error recovery logical link control (ELLC)

*Q* Q-bit logical link control (QLLC)

*A* Asynchronous

*Note:* If you are defining an asynchronous communications support subsystem, the only value you see is an *A*. If you are defining other than an asynchronous support subsystem, you see *P*, *E*, and *Q*.

**4. Virtual circuit type**

Specify the virtual circuit type (SVC or PVC) for this station. This parameter is shown only for reference and cannot be changed.

**5. Tariff totals accumulation**

This prompt indicates whether tariff totals are to be accumulated for this virtual circuit. It can be Y (yes) or N (no). This value cannot be changed from N to Y if the station was originally defined as N when the virtual circuit configuration member was created (using the CNFIGX25 procedure). Changing from Y to N stops tariff totals accumulation until it is changed back to Y by this utility or until the X.25 link is enabled again.

**6. Response-time tolerance in seconds**

Specify the amount of time, in seconds, that the System/36 is to wait for the remote work station to respond to a command. Allowed entries are from 100 through 999 seconds; the default is 100 seconds. If prompt 3, *Protocol*, is set to *E*, this entry should be set to a minimum of 100 times the value specified in the *Link level time-out in seconds* prompt on the X.25 Network Configuration display.

If you are working with a permanent virtual circuit, display 7.0, the X.25 Permanent Virtual Circuit Modification display, is presented when the Enter key is pressed. If you are working with a switched virtual circuit, display 8.0, X.25 Switched Virtual Circuit Modification display, is presented when the Enter key is pressed.

## Display 7.0 X.25 Permanent Virtual Circuit Modification

This display is presented after display 6.0 only if you are working with a permanent virtual circuit.

```
7.0      X.25 PERMANENT VIRTUAL CIRCUIT MODIFICATION      *****      W1

1. Logical channel reference number . . . . . 1-16  _

Cmd3-Previous display  Cmd7-End  Cmd19-Cancel
```

The name of the X.25 virtual circuit configuration is shown in the upper right corner of the display.

### 1. Logical channel reference number

Specify the reference number for the logical channel. The logical channel reference number serves as a cross reference between this display and the X.25 Logical Channel Configuration display (display 3.0). An error message is issued if the number entered here has already been specified in this configuration, if it exceeds the actual number of logical channels, or if it is not configured as a PVC.

The next display shown depends on the path by which you arrived here (at display 7.0). If you had selected option 3 on the X.25 Maintenance Utility menu (display 1.0) and then entered a station number on the X.25 Call Wait Queue Status display (display 3.0), display 3.0 is shown again. Otherwise, the X.25 Virtual Circuit Configuration Status display (display 5.0) is shown.

## Display 8.0 X.25 Switched Virtual Circuit Modification

This display is presented after display 6.0 only if you are working with a switched virtual circuit.

```
8.0          X.25 SWITCHED VIRTUAL CIRCUIT MODIFICATION          *****          W1

1. Remote network address . . . . . *****
2. Call direction . . . . . I,O *
3. Reverse charge . . . . . Y,N *
4. Connection password . . . . . *****
5. Closed user group ID . . . . . blank,00-FF **
6. Unique network facilities
   . . . . . *****

Cmd3-Previous display  Cmd7-End  Cmd19-Cancel
```

The name of the X.25 virtual circuit configuration is shown in the upper right corner of the display.

### 1. Remote network address

Specify the remote network address. Up to 15 digits can be entered. If the network ID is entered with the network address, then the first 4 digits must be the network ID. There is no default.

This prompt is not displayed if the associated SSP-ICF line member is switched with a switch type of *call* and an X.25 phone list is specified. When a phone list is used, X.25 uses the network addresses in the phone list (as defined by the DEFINX25 procedure).

### 2. Call direction

Specify the call direction to be used with this SVC.

*In:* Incoming call

*Out:* Outgoing call

This parameter cannot be changed if the associated SSP-ICF configuration is switched. If the line is nonswitched, this parameter can be changed to a new call direction only if there is at least one logical channel that supports the new call direction.

### **3. Reverse charge**

Specify whether reverse charging can be used. Reverse charging can be used in either of the following two ways:

- Requesting a reverse charge for an outgoing call
- Accepting a reverse charge on an incoming request from the specified station

This parameter can be either Y (yes) or N (no).

### **4. Connection password**

Specify the connection password to be exchanged with the specified station. Up to 8 characters may be entered. There is no default. No password validation occurs if this field is blank. If a password is entered, then the password of an incoming call request must match this password or no connection is made. On outgoing calls, the password entered here becomes the password of the outgoing call request.

A password must be entered if two switched virtual circuits are to use two separate logical channels to the same station at the same time. The password identifies the stations.

This parameter is not displayed if the associated SSP-ICF line member is switched with a switch-type call and an X.25 phone list number is specified. When a phone list is used, X.25 uses the connection passwords in the X.25 phone list (as defined by the DEFINX25 procedure). This prompt is not displayed for an asynchronous remote station.

### **5. Closed user group ID**

Specify the closed user group for the station. Specify 2 hexadecimal characters or leave blank.

### **6. Unique network facilities**

Specify network hexadecimal codes that may be inserted on an outgoing call request. These codes can be used to request facilities such as priority service or a specific throughput class, or to select specific recognized private operating agencies (RPOA) for international virtual calls. Up to 40 hexadecimal bytes may be entered.

The hexadecimal codes are placed directly in the facilities field of the appropriate packets. Only syntax checking is performed. It is the user's responsibility to ensure that the facilities requested are available.

Any unique network facilities may be specified with the following exceptions:

- Packet size
- Window size
- Password
- Closed user group
- Reverse charge

The preceding facilities may be specified through the X.25 configuration utility. An error message will be issued if any of these are defined in the unique network facilities field.

The next display shown depends on the path by which you arrived here (at display 8.0). If you had selected option 3 on the X.25 Maintenance Utility menu (display 1.0) and then entered a station number on the X.25 Call Wait Queue Status display (display 3.0), display 3.0 is shown again. Otherwise, the X.25 Virtual Circuit Configuration Status display (display 5.0) is shown.

## Display 9.0 X.25 Virtual Circuit Configurations with Tariff Totals

Display 9.0 is presented when option 4, 5, or 6 is selected on the Maintenance Utility Menu (display 1.0). It shows the virtual circuit configuration members for which tariff information is being accumulated. When you enter the corresponding number for the member, the operation selected on display 1.0 is performed. If option 4 was selected on display 1.0, the Virtual Circuits Total (display 10.0) is shown. Otherwise, the information is printed and display 9.0 is displayed again.

X.25 support will accumulate tariff-related totals and store them in a data file. One data file is allocated for each X.25 configuration member. A file is automatically allocated for each station in a member configured for tariff totals accumulation.

The following tariff totals are accumulated for each virtual circuit:

- Number of calls in and out
- Number of packets sent and received
- Connect time in and out

```

9.0          X.25 VIRTUAL CIRCUIT CONFIGURATIONS WITH TARIFF TOTALS          **
MEMBER NAME  RWS OR LINE MEMBER NAME  MEMBER NAME  RWS OR LINE MEMBER NAME
1. *****  *****                   2. *****  *****
3. *****  *****                   4. *****  *****
5. *****  *****                   6. *****  *****
7. *****  *****                   8. *****  *****
9. *****  *****                   10. ***** *****
11. ***** *****                   12. ***** *****
Select one of the members for station details . . . . . ***
Cmd7-End   Cmd19-Cancel   Roll keys-Page

```

**MEMBER NAME:** The name of the X.25 virtual circuit configuration member associated with a tariff totals accumulation data file.

**RWS OR LINE MEMBER NAME:** The SSP-ICF line member or RWS configuration member name associated with the X.25 member.

Enter the number corresponding to the desired member in the lower right corner of the display. The number entered must be between 1 and the number of members defined (a maximum of 999). The option you selected on the X.25 Maintenance Utility Menu (display 1.0) is then performed.

## Display 10.0 X.25 Virtual Circuit Totals

This display is presented when option 4 (*Display the accumulated tariff totals*) is selected on the Maintenance Utility Menu (display 1.0) and a member is selected on the X.25 Virtual Circuit Configurations with Tariff Totals display (display 9.0).

10.0		X.25 VIRTUAL CIRCUIT TOTALS				Last Reset-**-**/**		W1
REMOTE STATION	STATION ADDR	CALLS IN	CALLS OUT	TIME CONNECTED IN	TIME CONNECTED OUT	PACKETS IN	PACKETS OUT	
*****	**	***	***	*****	*****	*****	*****	

Cmd7-End    Cmd19-Cancel    Roll keys-Page

**REMOTE STATION:** The station name associated with the virtual circuit.

**STATION ADDR:** The station address associated with the station.

**CALLS:** The number of calls made on the virtual circuit. Does not apply to PVCs.

**IN:** Incoming calls

**OUT:** Outgoing calls

**TIME CONNECTED:** The amount of time (in hours and minutes) that the virtual circuit was active for calls. Does not apply to PVCs.

**IN:** Incoming calls

**OUT:** Outgoing calls

**PACKETS IN:** The total number of data packets received (up to 99999999) when the virtual circuit was active.

**PACKETS OUT:** The total number of data packets transmitted (up to 99999999) when the virtual circuit was active.

Press command key 7 to return to the X.25 Virtual Circuit Configurations with Tariff Totals display (display 9.0).



## Chapter 5. Defining Lists for BSCCEL, Autocall, X.21, X.25, and Asynchronous Communications

The procedures described in this chapter are used to define the lists needed by System/36 in certain communications environments. For example, when autocall is used, it needs a list of the telephone numbers to call; X.25 uses a list of network addresses. The procedures defined in this chapter are:

- Defining remote IDs for SSP-ICF BSCCEL (DEFINEID)
- Defining phone number list for autocall (DEFINEPN)
- Defining X.21 public data network connection numbers or X.21 short hold mode line configuration information (DEFINX21)
- Defining an X.25 or asynchronous PAD phone list (DEFINX25)

The uses of the lists by the communications features are described in the following System/36 manuals:

- *MSRJE Guide*
- *3270 Guide*
- *C & SM Guide*
- *Programming with RPG II*
- *Programming with Assembler*
- *Using the Asynchronous Communications Support*
- The appropriate ICF reference manual for the subsystem you are using

## DEFINEID Procedure (for BSCEL)

The DEFINEID procedure is used to specify a list of the remote IDs for a switched communication line using the SSP-ICF BSCEL subsystem. When the System/36 using BSCEL is connected to a remote system by a switched communications line, this list is examined for a comparison with the ID received from the remote system. This list is only examined when multiple remote switched line IDs were specified when the subsystem was configured. If the ID is found, line initialization completes successfully. If it is not found, the remote system is disconnected.

The DEFINEID procedure can be run from any command-capable display station.

For the BSCEL subsystem to use the remote IDs defined by the DEFINEID procedure, the multiple remote IDs option must be selected when you configure the BSCEL subsystem using the CNFIGICF procedure. The DEFINEID procedure is called automatically by the CNFIGICF procedure when the multiple remote ID option is selected. See the appropriate ICF reference manual for the subsystem you are using for information on defining a BSCEL subsystem using CNFIGICF.

If the subsystem has already been enabled, and you want to change the list of remote IDs:

1. Disable the BSCEL subsystem using the DISABLE procedure.
2. Change the remote ID file (#IBSRID) using the DEFINEID procedure.
3. Enable the BSCEL subsystem using the ENABLE procedure.

You should run the DEFINEID procedure before the BSCEL subsystem requiring remote IDs is enabled.

The DEFINEID procedure runs the \$IDSET utility program. The DEFINEID procedure creates a system file named #IBSRID, which is four sectors long and can contain up to 55 remote IDs.

Following are the DEFINEID procedure prompt display and an explanation of the parameters:

```
                                DEFINEID PROCEDURE
                                Creates, updates, displays or deletes the list of
                                remote IDs for a switched communication line using
                                the SSP-ICF BSCSEL subsystem

Remote ID option . . . . . DISPLAY,DELETE,UPDATE DISPLAY

Cmd3--Previous menu                                                    COPR IBM Corp. 1986
```

**Remote ID option**

Specify if the remote ID should be displayed, deleted, or updated.

*DISPLAY* specifies that the remote IDs are to be displayed. The remote IDs cannot be modified. This parameter is valid only if remote IDs are defined.

*DELETE* specifies that the entire list of remote IDs (file #IBSRID) is to be deleted from disk. This parameter is valid only if remote IDs are defined.

*UPDATE* specifies either that the list of remote IDs is to be created, or that the existing list of remote IDs is to be changed.

**Example**

This example (using the DEFINEID procedure command) shows how to create or update the remote ID list.

```
DEFINEID UPDATE
```

Refer to Appendix D for the format of this command.

After you enter the procedure command, you see the BSC Switched Line Remote Identification Definition display (Figure 5-1) on which you can add or update BSC switched line remote identification definitions.

## BSC Switched Line Remote Identification Definition Display Description

The BSC Switched Line Remote Identification Definition display (shown in Figure 5-1) allows you to enter an initial remote ID list or to update the existing IDs. You can add, delete, activate, or deactivate the remote IDs. When the DEFINEID procedure ends, all deleted remote IDs are removed from the file and the file is condensed.

BSC SWITCHED LINE REMOTE IDENTIFICATION DEFINITION			
STATUS	REMOTE ID, hexadecimal	STATUS	REMOTE ID, hexadecimal
1	..	2	..
3	..	4	..
5	..	6	..
7	..	8	..
9	..	10	..
11	..	12	..
13	..	14	..
15	..	16	..
Cmd7-End	Cmd19-End without update	Roll keys-Page	

Figure 5-1. DEFINEID Entry Display

The columns for the display shown in Figure 5-1 are defined as follows:

*Status* specifies the status for the remote ID. Valid entries are D, I, R, or a blank.

*D* indicates that the remote ID should be deleted from the remote ID list.

*I* indicates that the remote ID is to be deactivated, that is, the ID is not included in the compare operation but remains in the remote ID list.

*R* indicates that the remote ID is to be reactivated, that is, after the code was deactivated (I), the remote ID is again to be included in the compare operation.

If the status field is left *blank*, the remote ID is added to or updated in the list.

*Remote ID* specifies the ID of the remote station in hexadecimal.

The display functions are specified by the following keys:

<b>Key</b>	<b>Function</b>
Enter	Page forward
Roll Up	Page forward
Roll Down	Page back
Command key 7	End the DEFINEID procedure
Command key 19	End the DEFINEID procedure but do not place any changes made in the file containing the remote IDs (named #IBSRID)
Help	Display additional information

## DEFINEPN Procedure (for Autocall)

The DEFINEPN procedure provides a way to create or update a phone list for the autocall feature. The phone lists are created by the DEFINEPN procedure and are used by the autocall feature. The generated phone lists are placed in load members. Refer to the appropriate communications manual for information on how the phone list can be used.

When the DEFINEPN procedure begins, you can either create a new phone list or change an existing phone list. You can then enter the name of the phone list, the name of the library to contain the phone list, and the mode of operation (either delay or nodelay).

*Note: DELAY must be specified for systems in all countries except the United States and Canada. If DELAY is specified, the autocall feature will process the phone list in the following manner:*

- *Sixty seconds pass before the first call is placed*
- *Sixty seconds pass before a return call is placed to a member that was previously called unsuccessfully*
- *Three seconds pass between each attempted call to a number not previously called*

*If NODELAY is specified, there is no delay between calls when the phone list is processed.*

The member must be in the same library as the CNFIGICF configuration member. After the phone list and library names are entered, another display is shown that allows you to enter or change the phone numbers.

The DEFINEPN procedure runs the \$PNLM utility program.

### Example

To create a phone list named PHONELST, which is to be placed in the library named COMMLIBR, you would enter the following:

```
DEFINEPN
```

You would then:

1. On the first display, select the option to build the phone list.
2. On the second display, enter the name of the phone list (PHONELST), the library name (COMMLIBR), and the mode of operation (either DELAY or NODELAY). The library name may already be filled in if you previously specified a session library.
3. On the third display (Figure 5-2), enter the phone numbers, retry values, and delay values.

## DEFINEPN Display Description

Figure 5-2 shows the display that is shown when you create a list; the display for changing the list is similar.

DEFINEPN		
Build a phone list		
Phone number 1-22 digits, I, D	Retry value 1-255	Delay value 3-126
5551234.....	002	003
.....	.....	.....
.....	.....	.....

Roll Keys-Paging                      Cmd3-Previous display                      Cmd7-End

**Figure 5-2. DEFINEPN Phone List Display**

The following information should be specified for each phone number in the phone list:

*Phone number* specifies the number including separator and end of number characters, if used. The phone number can be 1 to 22 characters in length with any number of separator characters and one end of number character included. Allowable characters are apostrophes ('), asterisks (\*), and the digits 0 through 9. Other characters that can be entered are: plus signs (+), colons (:), commas (,), and question marks (?). These other characters currently have no use or definition.

An apostrophe (') represents a separator character. This character is used to make the autocal feature wait for a dial tone before continuing with the rest of the numbers to be called. For example, in many businesses you must dial 9 before you get a phone line outside your business. You might place a separator character after the 9 to make the autocal feature wait for the dial tone that occurs after the 9 is dialed. Check with your common carrier (a company that provides communications services) to see whether you need separator characters in your phone lists.

An asterisk (\*) represents the end-of-number character. If included, it must be the last character of the phone number. For a description of how to configure your system for the separator and end-of-number characters, see the "SETCOMM Procedure" in Chapter 2.

The end-of-number character is used by only a few modems, and causes the data-set-ready condition immediately on those modems. For this reason, you should check with your modem supplier to determine whether your modem requires end-of-number characters.

**I** in the leftmost position of the field inserts an entry after the current entry. An **I** is not allowed if the list has fewer than two entries, if it is the last entry of the list, or if the maximum number of entries in the list has been reached. Only one entry can be inserted at a time.

**D** in the leftmost position of the field deletes an entry. You can delete more than one entry at a time.

*Retry value* specifies the total number of times an attempt should be made to call this number. Allowable values are 001 to 255. If no retry count is specified, a value of 001 is assumed. The value you enter must be 3 digits long and right-justified; that is, if you want a value of 5, you must enter 005. Note that you can enter a 5 and press the Field Exit key to right-justify the value (you will see 005).

*Delay value* indicates the time to wait for the remote system to be connected after the last digit has been dialed. Allowable values are 003 to 126 seconds. If no value is specified, 20 seconds are assumed. The timer value must be right-justified; that is, if you want a value of 5, you must enter 005. Note that you can enter a 5 and press the Field Exit key to right-justify the value (you will see 005).

*Note: Depending on the modems and the communications programs used, 3 seconds may not be enough time for the remote system to be connected. It is suggested that this value be 24 seconds or greater.*

## DEFINX21 Procedure (for X.21 Network)

The DEFINX21 procedure provides a way to create or update a list of public data network connection numbers for the X.21 switched feature; or to create, update, print, or remove an X.21 short hold mode (SHM) line configuration.

The DEFINX21 procedure runs the \$XNLM utility program or the \$XNSH utility program.

Following are the DEFINX21 procedure prompt and an explanation of the parameter:

```
DEFINX21 PROCEDURE                               Optional-*
Creates or updates a short hold mode line configuration
or the lists of connection numbers for the X.21 feature.
Short hold mode . . . . . NONSHM,SHM NONSHM

Cmd3-Previous menu                               COPR IBM Corp. 1985
```

Figure 5-3. DEFINX21 Procedure List Display

### Short hold mode

Specify whether you are working with an X.21 short hold mode line. Short hold mode can help reduce line usage on X.21 circuit switched lines. See Appendix H, "X.21 Short Hold Mode" for more information on short hold mode.

*NONSHM* creates or updates the lists of X.21 public data network connection numbers. *NONSHM* is the default. If you use the default, the next display you use will be the DEFINX21 Connection List display.

*SHM* creates, updates, prints, or removes an X.21 short hold mode line configuration. If you specify *SHM*, the next display you will use is the Define X.21 Short Hold Mode Option menu. On this display you can specify the option you want.

## Define an X.21 Connection List

The lists are created by the DEFINX21 procedure and are stored as library load members. Refer to the appropriate communications manual for information on how this list can be used.

When the DEFINX21 procedure begins, you can choose either to create a new list or to change an existing list. You can then enter the name of the list and the name of the library to contain the list. The member must be in the same library as the CNFIGICF configuration member. After the list and library names are entered, a display allows you to enter, change, or delete the connection numbers and the retry values and delay values for the numbers.

### Example

This example shows how to create an X.21 connection list named PHONEX21. Enter:

```
DEFINX21 NONSHM
```

You would then perform the following:

1. On the first display, select the option to create the connection list.
2. On the second display, enter the connection list name (PHONEX21), and the library name where the connection list should be stored.
3. On the third display (Figure 5-4), enter the connection numbers, retry values, and delay values for the phone list.

Refer to Appendix D for the format of this command.

## DEFINX21 Connection List Display Description

Figure 5-3 shows the display that appears when you create a list; the display for changing the list is similar.

```

3.0 DEFINX21 CONNECTION LIST
      Create a connection list
      Connection number      Retry value      Delay value
      1-18 digits,DC,I,D    1-255          0-16
      .....                ....           ....
      .....                ....           ....
      .....                ....           ....

Cmd7-End      Cmd3-Previous display
```

Figure 5-4. DEFINX21 Connection List Display

The following information can be specified for each connection number in the phone list:

*Connection number* specifies the number to be dialed. The number can be from 1 to 18 characters. The allowed characters are 0 through 9, hyphens (-), periods (.), commas (,), and slashes (/). The actual characters you enter are determined by your network.

You can also enter DC, I, or D.

*DC* specifies direct call. Direct call is a facility of the X.21 network.

*I* specifies that you want to insert a number. An I in the leftmost position of the field inserts a number after the current number. An I is not allowed if the list has fewer than two numbers, if it is the last number on the list, or if the maximum number of entries in the list has been reached. Only one number can be inserted at a time.

*D* specifies that you want to delete a number. You can delete more than one entry at a time.

*Retry value* specifies the total number of times an attempt should be made to call this number.

Allowed values are 001 to 255. If no retry count is specified, a value of 001 is assumed. The error retry count value must be 3 digits long and right-justified; that is, if you want an error retry count of 5, you should enter 005. You can enter a 5 and press the Field Exit key to right-justify the value (you will see 005).

*Delay value* indicates the minimum time to wait before attempting a retry to a number that could not be reached. Allowed values are 0 to 16 seconds. If no value is specified, 00 seconds are assumed. The delay value must also be right-justified.

## **Define an X.21 Short Hold Mode Line Configuration**

Only one X.21 short hold mode configuration per line can be defined. The line configurations are stored as a load member in the library #X21LIB. If this library is not already on your system, it will be built by the DEFINX21 procedure.

When the DEFINX21 procedure begins, you can select either to create a new X.21 SHM line configuration or to update, print, or remove an existing X.21 SHM line configuration. You can then enter the line number of the new or existing configuration. If you chose to create or update a configuration, a display will allow you to enter or change the X.21 SHM line configuration values.

### **Example**

This example shows how to create an X.21 SHM configuration for line 1.  
Enter:

```
DEFINX21 SHM
```

You would then do the following:

1. On the first display, select the option to create an X.21 SHM line configuration.
2. On the second display, enter the line number (1).
3. On the third display (Figure 5-5), enter the X.21 SHM configuration values for the line.

## DEFINX21 Short Hold Mode Line Configuration Display Description

The following display appears when you create an X.21 Short Hold Mode line configuration. The display for updating an X.21 SHM line configuration is similar.

```
3.0                CREATE AN X.21 SHORT HOLD MODE LINE CONFIGURATION

Local phone number . . . . . _____
Retry value . . . . . 1-255 ___
Delay value in seconds . . . . . 0-16 ___
Disconnect timer value in seconds . . . . . 1.0-60.0 ___
Inactivity timer value in minutes . . . . . D,1-60 ___
Local XID node ID . . . . . 0-9,A-F ___
Direct call? . . . . . Y,N ___
Nordic network and host has group
number facility? . . . . . Y,N ___

Cmd3-Previous display      Cmd7-End      Cmd19-Cancel      COPR IBM Corp. 1986
```

Figure 5-5. Create an X.21 Short Hold Mode Line Configuration Display

### Local phone number

Specify the phone number of the local system. One to 18 characters can be entered. The actual number of characters that can be entered and the separator characters that may be used are determined by your network.

### Retry value

Specify the number of times an attempt should be made to establish communications with a remote system; one to 255 attempts can be made. An error condition is indicated if the connection cannot be established.

### Delay value in seconds

Specify the minimum time (one to 16 seconds) to wait after a call has failed before attempting to retry a call to a remote system.

### Disconnect timer value in seconds

Specify the minimum amount of time that the system should stay connected with the specified station before entering the short hold mode disconnected state. From 1.0 to 60.0 seconds can be entered in multiples of 0.5.

**Inactivity timer value in minutes**

Specify the time interval after which the primary station should call and poll each specified station to verify that it is still available. One through 60 minute intervals are allowed. You can specify D to disable the inactivity timer.

*Note: The disconnect and inactivity timer values configured here are only used when the local station is the primary station on the line.*

**Local XID node ID**

Specify 5 hexadecimal characters (0 through 9, A through F) for the local XID node ID. The local XID node ID identifies your local device (your chosen value is used by the SDLC XID command).

**Direct call?**

Specify whether the X.21 direct call facility should be used to call a remote system. Direct call is a facility of the X.21 network.

**Nordic network and host has group number facility?**

Specify whether you are on the Nordic network; the host has multiple lines at the same address (group number facility). This prompt applies only if you are using Upline, MSRJE, or 3270 Device Emulation.

## DEFINX25 Procedure (for X.25 Network)

You define an X.25 phone list or an asynchronous PAD phone list by entering the DEFINX25 procedure command. A phone list selection display is then shown on which you can specify the type of phone list you wish to work with (X.25 or asynchronous). After you make this selection, a menu that allows you to specify whether you want to create, change, remove, or print a list of network addresses is presented.

If you are creating or changing a list of network addresses, additional displays are then presented.

Following are the X.25 Define Phone List Selection display and an explanation of the parameters:

```
0.5                X.25 DEFINE PHONE LIST SELECTION                W1

1. Select one of the following:
  1. Work with X.25 phone lists
  2. Work with asynchronous PAD phone lists

Option . . . . . _

Cmd7-End

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```

### 1. Select one of the following:

1. *Work with X.25 phone lists* specifies option 1 to work with X.25 phone lists; the next display is display 1.0, on which you can create, change, remove or print an X.25 phone list.
2. *Work with asynchronous PAD phone lists* specifies option 2 to work with asynchronous communications phone lists when PAD emulation is configured. The next display is display 1.0, on which you can create, change, remove, or print an asynchronous PAD phone list.

## Define an X.25 Phone List

These network addresses are successively tried on outgoing call requests. If a successful connection is made, a virtual circuit is established. If all network addresses and retry values are exhausted, then a message will be displayed.

For incoming calls, when autoanswer is specified in the line configuration, the network address supplied by the calling station is compared to the addresses in this phone list. If a match is found, the virtual circuit is established. If no match is found, the call request is rejected.

*Note: To use a phone list to verify incoming call requests for an SSP-ICF subsystem, you must:*

1. Specify autoanswer (option 2) for the **Switch type at ENABLE** prompt on display 12.0, SNA Line Member Attributes, when defining the SNA/X.25 line member using CNFIGICF.
2. Specify call (option 1) for the **Switch type for session initiation** prompt and specify an X.25 phone list name for the **Phone list name** prompt on display 13.0, Remote System Attributes, when defining an SNA/X.25 line member with CNFIGICF.
3. Specify outgoing (O) for the **Call direction** prompt on display 3.0, Logical Channel Configuration, during X.25 logical channel definition using CNFIGX25.

On the following display, you can specify whether you want to create, change, remove, or print an X.25 phone list.

```
1.0                                X.25 DEFINE PHONE LIST MENU                                W1

1. Select one of the following:
  1. Create an X.25 phone list
  2. Change an X.25 phone list
  3. Remove an X.25 phone list
  4. Print an X.25 phone list
Option . . . . . _

Cmd7-End   Cmd19-Cancel
```

If you had selected option 2 on display 0.5, you would also see display 1.0. In this case, the options would specify creating, changing, removing, or printing an asynchronous PAD phone list.

## Define an Asynchronous PAD Phone List

If you used DEFINX25 to create asynchronous communications PAD phone lists, you can use the rotary dial function to automatically call valid phone list numbers. Calls are made starting with the first number in your list. If a connection is not made, the number is retried, depending on its retry count, before the next number is tried. This automatic calling continues until the last number is called. If no successful connections are made, an error message is shown on the display.

Refer to the *Using the Asynchronous Communications Support* manual for more information on the rotary dial function.

## Display 2.0 X.25 Phone List Member Selection

The second line of the heading indicates the operation to be performed (create, change, remove, or print from display 1.0) and the type of list (X.25 phone list or asynchronous communications PAD phone list from the phone list selection display 0.5).

```
2.0          DEFINX25 PHONE LIST MEMBER SELECTION          W1
                CREATE AN X.25 PHONE LIST
1. Phone list name . . . . . _____
2. Phone list library name . . . . . _____
3. Associated remote system name . . . . . _____

Cmd7-End   Cmd19-Cancel
```

### 1. Phone list name

Specify the name of the phone list. For an X.25 phone list, this name must be inserted into the associated SSP-ICF configuration phone list name field. There is no default.

### 2. Phone list library name

Specify the name of the library containing the phone list. For an X.25 phone list or for an asynchronous communications PAD phone list, the library name must be the same as the corresponding SSP-ICF line member library name. The default for this prompt is the current active user library.

### 3. Associated remote system name

Specify, when using the CREATE option, the name of the remote system in the SSP-ICF line member with which this list is to be associated. When using the CREATE option, the associated remote system name will be displayed by the utility after the first two prompts have been entered and the Enter key has been pressed. This prompt is not displayed for PRINT and REMOVE or for any operation on an asynchronous communications PAD phone list.

## Display 3.0 X.25 Define Phone List

The second line of the display indicates the operation, create or change from display 1.0, and the type of phone list, X.25 or asynchronous from display 0.5.

3.0	X.25 Define Phone List	W1
Create X.25 Phone List		
NETWORK ADDRESS 1-15 Digits,I,D	PASSWORD	RETRY VALUE 1-255
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Cmd7-End	Cmd19-Cancel	Enter-Update
		Roll-Page

*Network address* specifies the remote network address of the station to be called. Up to 15 digits can be entered. If the network ID is entered with the network address, then the ID must be the first 4 digits entered. There is no default.

Entering an **I** in the leftmost position allows you to insert a new entry in the phone list after the current entry. An insert is not allowed if the list has one or no entries, if the current entry is the last entry in the list, or if the list already contains the maximum number of entries. Only one insert can be performed at a time.

You can also enter a **D** in the leftmost position to delete the current entry in the list. More than one entry can be deleted.

*Password* specifies the connection password to be exchanged with the remote station. Up to 8 characters may be entered. The password must match the password of the remote station. Otherwise, the connection will not be established. There is no default.

This column is not shown for an asynchronous communications PAD phone list because passwords cannot be entered.

*Retry value* specifies the number of times that an attempt will be made to call the specified remote station.

Press the Enter key to update the phone list or press command key 7 to return to the Phone List Main Menu (display 1.0).



## Chapter 6. Starting and Stopping Communications Subsystems

### ENABLE Procedure

The ENABLE procedure starts or enables one of the interactive communications subsystems, MSRJE, 3270 Device Emulation, or PC Support/36. The ENABLE procedure must be run before a subsystem can be used. See one of the following manuals for more information:

- For information about SSP-ICF, see the appropriate ICF reference manual for the subsystem you are using.
- For information about asynchronous communications support, see the manual *Using the Asynchronous Communications Support*.
- For information about MSRJE, see the manual *MSRJE Guide*.
- For information about 3270 device emulation, see the manual *3270 Guide*.
- For information about APPN, see the manual *Advanced Peer-to-Peer Networking Guide*.
- For information about PC Support/36, see the manual *PC Support/36 User's Guide*.

This procedure can be run at any display station, but only one ENABLE procedure can be run at a time.

The ENABLE procedure runs the \$IENBL utility program.

Following are the ENABLE Procedure prompt display and an explanation of the parameters:

```

                                ENABLE PROCEDURE                                Optional-*
                                Enables an Interactive Communications Feature,
                                MSRJE, or 3270 device emulation subsystem

Subsystem configuration name . . . . . SUB1
Name of library . . . . . MYLIB
Line number . . . . . 1-10 1 *
Display values in effect
  for this subsystem . . . . . NOSHOW,SHOW SHOW
Remote location name . . . . . RLOC04 *
Line member name . . . . .

Cmd3-Previous menu      Cmd4-Put on job queue      COPR IBM Corp. 1986

```

**Subsystem configuration name**

Specify the subsystem configuration to be enabled. This is the name that was specified when the CNFIGICF procedure was run to configure the subsystem member. The subsystem name in the example is SUB1.

**Name of library**

Specify the library containing the subsystem configuration. If no library name is specified, the current library is assumed. MYLIB is the library in this example.

**Line number**

Specify the number of the communications line to use for the subsystem. You can specify any number from 1 through 10. If you are enabling the Intra subsystem, you must omit this parameter. If the subsystem has been previously enabled and you are enabling another remote location for that subsystem, this parameter is optional. The example uses line 1.

**Display values in effect for this subsystem**

Specify whether the display values configured for the subsystem are to be displayed. Allowed entries are:

*NOSHOW* specifies that the parameters configured for a particular subsystem are not to be displayed. If no parameter is specified, *NOSHOW* is assumed.

*SHOW* specifies that all the parameters configured for a particular subsystem are to be displayed. You cannot change any of these parameters. For a description of the parameters that are displayed, see one of the manuals listed on the first page of this chapter.

In this example, *SHOW* is used to show the values for all locations for which *Y* (yes) was specified on the *Activate location at ENABLE* prompt during *CNFIGICF*.

**Remote location name**

Specify the location to be activated. The location is activated if it is not already enabled. *RLOC04* is the remote location name used in the example.

**Line member name**

Specify the name of the line being enabled. This is the name that was configured during the *CNFIGICF* procedure. This parameter is only valid for *APPN*. This prompt is left blank in the example because this line is not an *APPN* line.

Refer to Appendix D for the format of the *ENABLE* command.

## DISABLE Procedure

The DISABLE procedure stops or disables an enabled Interactive Communications Feature (SSP-ICF) subsystem, MSRJE, 3270 Device Emulation, or PC Support/36. See one of the following manuals for more information:

- For information about SSP-ICF, see the appropriate ICF reference manual for the subsystem you are using.
- For information about asynchronous communications support, see the manual *Using the Asynchronous Communications Support*.
- For information about MSRJE, see the manual *MSRJE Guide*.
- For information about 3270 Device Emulation, see the manual *3270 Guide*.
- For information about APPN, see the manual *Advanced Peer-to-Peer Networking Guide*.
- For information about PC Support/36, see the manual *PC Support/36 User's Guide*.

The DISABLE procedure can be run from any display station, but from only one display station at a time.

If there are active communication sessions, DISABLE displays a message with the following options:

- 0 Hold the disable; no new sessions are to start. The system will continue the disable when the current communication sessions end.
- 1 Retry the disable and check again for active sessions.
- 2 Immediately end the active sessions and continue the disable.
- 3 End the DISABLE procedure and ignore the disable request. The DISABLE procedure is canceled, and the subsystem remains enabled.

The DISABLE procedure runs the \$IEDS utility program.

Following are the DISABLE Procedure prompt display and an explanation of the parameters:

```

                                DISABLE PROCEDURE                                Optional-*
                                Disables an enabled subsystem

Subsystem configuration name . . . . . SUB1
Name of location to be ended . . . . . *
Line number . . . . . 1-10 *

Cmd3-Previous menu      Cmd4-Put on job queue      COPR IBM Corp. 1986
```

**Subsystem configuration name**

Specify the subsystem configuration to be disabled. On the above display, the subsystem name is SUB1.

**Name of location to be ended**

Specify the remote location to be disabled. The subsystem remains enabled as long as there are other active locations. If the location name is not specified, all remote locations will be disabled. No location name is given in the example.

**Line number**

Specify the line number of the APPN remote location(s) you want to disable. If no location name was specified on the previous prompt, all APPN remote locations enabled on this line will be disabled. The APPN subsystem remains enabled as long as there are APPN locations for other lines that are being used. This prompt is optional.

Refer to Appendix D for the format of the DISABLE command.



## Chapter 7. Problem Determination and Link Verification

### ICFDEBUG Procedure

The ICFDEBUG procedure controls the running of the Interactive Communications Feature (SSP-ICF) debug program.

The SSP-ICF debug procedure (ICFDEBUG) allows you to save information on disk about each SSP-ICF operation while your program(s) is running. You can then display or print the information to help you find the cause of an SSP-ICF problem. Information is saved for all SSP-ICF operations in all application programs that are running. After the debug file is displayed or printed, the file is deleted.

To use the procedure, enter the ICFDEBUG procedure command. You also enter a parameter with the command to activate or deactivate the debug trace, or to specify whether you want the debug information displayed or printed. **When you run the ICFDEBUG procedure, any information saved previously is deleted.**

Following is the ICFDEBUG Procedure prompt display and a description of each parameter:

```

                                ICFDEBUG PROEDURE                               Optional-*
                                Controls the running of the Interactive
                                Communications Feature (SSP-ICF) debug program
ICF debug function . . . . . ON,OFF,CRT,PRINT
Name of job for which entries are to be listed . . . . . *
```

Cmd3-Previous menu

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### **ICF debug function**

Entries allowed for this field are:

*ON* specifies that the debug program is to be started. The program begins recording SSP-ICF activities in a disk file.

*OFF* specifies that the debug program is to be stopped. No further SSP-ICF activity is to be recorded and the disk file created by the ICFDEBUG procedure is deleted.

*CRT* specifies that the file previously created by the ICFDEBUG procedure is to be displayed. After the file has been displayed, it is deleted.

*PRINT* specifies that the file previously created by the ICFDEBUG procedure is to be printed. After the file has been displayed, it is deleted.

### **Name of job for which entries are to be listed**

Specify that entries for the named job are to be printed from the file previously created by the ICFDEBUG procedure. You can use the STATUS USERS control command to display the job names.

The following two examples use the ICFDEBUG procedure command. Refer to Appendix D for the format of this command.

#### **Example 1**

This example shows how to start the SSP-ICF debug program.

```
ICFDEBUG ON
```

#### **Example 2**

This example shows how to print the activity recorded after the procedure command ICFDEBUG ON was entered:

```
ICFDEBUG PRINT
```

### **About the Information Saved**

The debug information is saved in a file created by System/36 when you use the debug procedure. The file is deleted when you stop the debug procedure or when you display or print the information in the file.

Up to 512 entries can be stored in the file. If the file becomes full, any further entries are written over the oldest entries in the file. Therefore, the file always contains the 512 most recent SSP-ICF operations. The entries are displayed in the order in which they were stored (oldest to newest). And, the entries may not be in the order in which they were issued by the application program. The entries are in the same order that the return codes were issued by SSP-ICF data management.

## Description of ICFDEBUG Output

The following examples show the format of the ICFDEBUG procedure output. Following these examples is a description of this information.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
JOB NAME	PROC NAME	PROG NAME	LOC NAME	FORMAT NAME	SYM ID	MAJ/MIN	OPERATION CODE	DATA LENGTH	DATA -
W2111447	ITEMARPG	ITEMAR	INTRA		1S/	0000	ACQ		
W2111447	ITEMARPG	ITEMAR	INTRA	\$\$EVOK	1S/	0001	EVI	0023	0000000000000000
02111453	ITEMBRPG	ITEMBR	INTRA		02/1S	0100	ACI	0023	0000000000000000
02111453	ITEMBRPG	ITEMBR	INTRA	\$\$SEND	02/1S	0001	PTI	0224	
W2111447	ITEMARPG	ITEMAR	INTRA		1S/02	0000	GET	0224	
W2111447	ITEMARPG	ITEMAR	INTRA	\$\$SENDET	1S/	0000	PEX	0000	
02111453	ITEMBRPG	ITEMBR	INTRA		02/	0308	ACI	0000	
W2111447	ITEMARPG	ITEMAR			1S	0000	REL		

S9082012-0

- 1** *JOB NAME* is the name of the job associated with this entry.
- 2** *PROC NAME* is the name of the procedure associated with this entry.
- 3** *PROG NAME* is the name of the program which issued the operation in this entry.
- 4** *LOC NAME* is the location name specified in the *SESSION* statement and configuration member.
- 5** *FORMAT NAME* is the name of the \$\$ operation issued by a Basic, COBOL, or RPG II program. If APPC or Intra is being used, this could also be the IDDU format name issued.
- 6** *SYM ID* is the symbolic identifier for this session. If this is shown for a DDM source program, this field will be blank. If this is the Intra subsystem, the symbolic identifier for both programs is displayed or printed as shown in the following example:
 

```

1S/01
|
|   The session identifier for the
|   program started by the evoke
|   operation (assigned by SSP-ICF).
|
|   The session identifier for the
|   program that issued the acquire
|   operation (specified in the SESSION statement).
```
- 7** *MAJ/MIN* are the major and minor portions of the return code issued for this operation. Refer to the appropriate ICF reference manual for the desired subsystem for a description of the return code.
- 8** *OPERATION CODE* is the assembler operation code. Refer to the appropriate ICF reference manual for the desired subsystem for the meaning of the operation code.
- 9** *DATA LENGTH* is the length of the data record sent or received for this operation, if any.
- 10** *DATA* is the first 16 characters of the data sent or received, if any.

# STARTM Procedure

The STARTM procedure starts automatic monitoring of a BSC multipoint line. The System/36 responds to all host polls or selects on a BSC multipoint line with a negative acknowledgement. A nonswappable BSC interrupt handler is not required in main storage for the automatic monitoring function. Therefore, the System/36 can be placed in the host's polling list without any tasks in the System/36 being started until necessary.

Automatic monitoring continues until stopped by the STOPM procedure, or until a batch BSC job is started or an SSP-ICF BSC subsystem is enabled on that line.

The STARTM procedure runs the \$MMST utility program.

Following is the procedure prompt display for STARTM and a description of the parameters:

```
STARTM PROCEDURE
  Starts the automatic monitoring of a communications line

Communications line number . . . . . 1-8
ASCII or EBCDIC transmission code . . . . . A,E
Two-character hexadecimal multipoint station address . . . . .

Cmd3-Previous menu      Cmd4-Put on job queue      (c) 1985 IBM Corp.
```

### Communications line number

Specify the line number that is placed in automatic monitor mode. You can enter a number from 1 through 8. This line must be a multipoint line.

### ASCII or EBCDIC transmission code

Specify the type of transmission code to be used. Allowed entries are:

*E* specifies that the transmission code is EBCDIC.

*A* specifies that the transmission code is ASCII.

### Two-character hexadecimal multipoint station address

Specify the 2-character hexadecimal multipoint station address (either the poll or select sequence can be specified). See "ALTERCOM Procedure" in Chapter 2 for a list of valid hexadecimal multipoint station addresses.

#### Example

This example, using the STARTM Procedure display, shows how to specify line 1 to be automonitored for an EBCDIC station address of C4.

```
STARTM 1,E,C4
```

Refer to Appendix D for the format of this command.

## STATEST Procedure

The STATEST procedure tests the communications line and the controller used for remote display stations and printers. It also tests SSP-ICF Finance controllers, SSP-ICF secondary and negotiated APPC or APPN connections, and SSP-ICF secondary Peer connections. (System/36 is the primary station for APPC or SSP-ICF Peer.)

You can run the test on either a switched, nonswitched, or IBM TRN line. On a switched or TRN line, you can only test one remote station with a single run of the test. On a nonswitched line, you can run up to seven secondary remote stations with a single run of the test. The autocall feature cannot be used for this test.

*Note: A test for APPC or APPN configuration can only be run on a nonswitched or a TRN line.*

The system you are running from will send out a test command to the remote locations you specify. If the remote stations respond properly, the transmission is successful. If the remote stations do not respond properly, or do not respond at all, the transmission is not successful.

After you have begun the test transmissions, no remote station that is being tested can be placed online until the test has completed. If you wish to end the test, press command key 7.

#### Example

To start the STATEST procedure, enter:

```
STATEST
```

## Running the STATEST Procedure

After you enter the STATEST procedure command, the following display appears:

```
LINK STATION TEST LINE OPTIONS

Communications line number . . . . . 1-10 2
Number of test transmissions . . . . . 1-999 2
Number of seconds between transmissions . . . . . 0-20 0
Log successful transmissions to history file? . . . . . Y,N N
Switched line type . . . . . AA,MC,MA AA

Cmd7-End

COPR IBM Corp. 1986
```

Figure 7-1. Link Station Test Display with Sample Data

### Communications line number

Specify the number of the communications line containing the stations or controllers to be tested. The default for this prompt is 1; a 2 is entered in the example.

### Number of test transmissions

Specify the number of test transmissions to be sent to the stations or controllers; a 2 is used in the example.

*Note: If you are using an X.21 SHM line, too many test transmissions may tie up the line and cause other controllers on the line to drop off.*

### Number of seconds between transmissions

Specify the time interval, in seconds, between successive transmissions. On an X.21 SHM line, a low number of seconds is recommended.

### Log successful transmissions to history file?

Specify whether successful transmissions are to be logged to the history file. N means do not log; Y means log. If you choose to log, for each test transmission that is successful, message SYS-3498 is logged to the history file.

### Switched line type

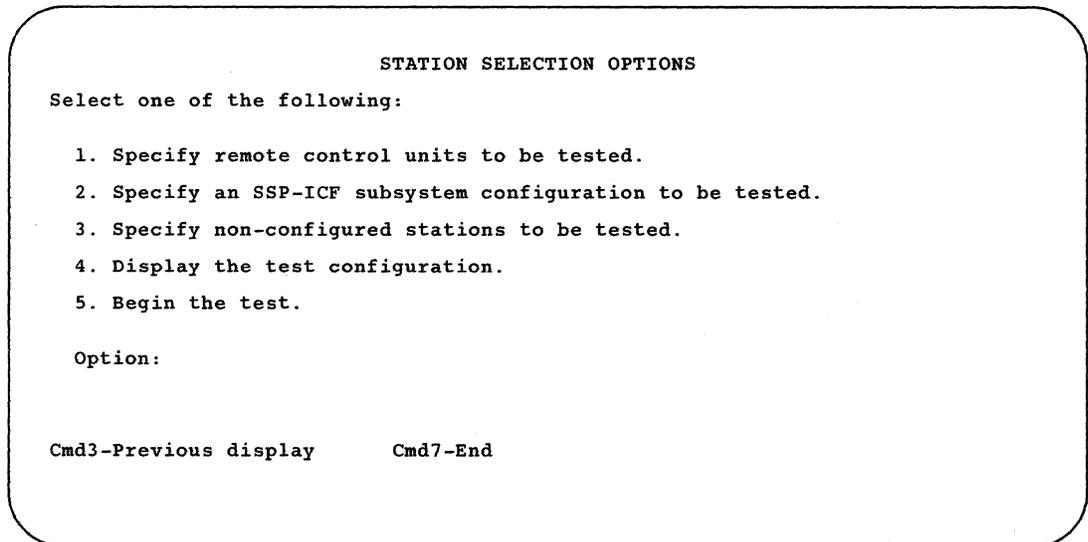
This prompt appears if the line you entered in the first prompt is a switched line. Enter one of the following line types:

*AA* Autoanswer

*MA* Manual answer

*MC* Manual call

After you complete the prompts and press the Enter key, the display shown in Figure 7-2 appears.



**Figure 7-2. Station Selection Options Menu**

Select the option that corresponds to the test you want to perform.

If you selected option 1, see Figure 7-3.

If you selected option 2, see Figure 7-4.

If you selected option 3, see Figure 7-6. You cannot select option 3 for an X.25 line because an X.25 line requires an X.25 configuration member.

If you selected option 4, see Figure 7-7.

If you selected option 5, see "Beginning the Test Transmission" later in this chapter.

*Note:* You cannot run option 1 and option 2 at the same time for an X.25 line.

This display allows you to select the remote work station controllers you want to test. Enter the number corresponding to the controller you want to test. In the sample display, the operator entered 1 to test controller C01 and 2 to test controller C05. When you have completed the display, press the Enter key to return to the Station Selection Options menu (Figure 7-2).

```
                DISPLAY OF REMOTE WORK STATION CONTROLLERS

Select the remote controllers to be tested.
.1. .2. .... .... .... ....

          STATION
        NAME ADDRESS
1.C01          01
2.C05          05

Cmd3-Previous display   Cmd7-End   Roll Keys-Paging
```

**Figure 7-3. Sample Remote Work Station Display**

This display allows you to enter the name of the Interactive Communications feature (SSP-ICF) subsystem configuration that contains the locations you want to test. In the sample display, the operator entered COMM1 and #LIBRARY. The configuration must be SNA finance, APPC, or Peer. If you are testing a peer connection, a secondary subsystem must be enabled on the System/36 that you are testing to.

If you are testing an APPC connection, a secondary or negotiated subsystem must be enabled on the System/36 you are testing to. When you have completed the display, press the Enter key. If this connection is for an APPN subsystem member, the *Line member name* prompt is displayed after you press the Enter key. Enter the line member you want associated with the subsystem member you entered for the first prompt. Press the Enter key to select the SSP-ICF locations you want to test (Figure 7-5).

```
                SSP-ICF CONFIGURATION SELECTION
                Test an SSP-ICF subsystem configuration

Subsystem configuration member name. . . . . COMM1
Library containing the configuration . . . . . #LIBRARY
Line member name . . . . . LN04

Cmd3-Previous display   Cmd7-End
```

**Figure 7-4. Sample SSP-ICF Configuration Display**

This display allows you to select the SSP-ICF locations you want to test. Enter the number corresponding to the location you want to test. In the sample display, the operator entered 1 to test location LOC1 and 3 to test LOC3. When you have filled out the display, press the Enter key to return to the Station Selection Options menu (Figure 7-2).

```

                                DISPLAY OF SSP-ICF LOCATIONS

Select the locations to be tested.
.1. .3.  ...  ...  ...  ...

                                LOCATION
                                NAME      ADDRESS
1. LOC1                          A0
2. LOC2                          A1
3. LOC3                          A2

Cmd3-Previous display  Cmd7-End  Roll keys-Paging

```

**Figure 7-5. Sample SSP-ICF Locations Display**

The following display allows you to enter the address of each station or remote work station controller you want to test. You can also assign a name to that station. This name will be displayed along with the address if a transmission error occurs. In the sample display, the operator entered 05 to test an address and entered 03 and NEWYORK to test the station at that address. When you have completed the display, press the Enter key to return to the Station Selection Options menu (Figure 7-2).

```

                                NON-CONFIGURED STATION SPECIFICATION

Enter the addresses of the stations to be tested:

                                ADDRESS      STATION NAME (optional)
1. 05
2. 03          NEWYORK
3.
4.
5.
6.
7.

Cmd3-Previous display  Cmd7-End

```

**Figure 7-6. Sample Nonconfigured Station Specification**

If you selected option 4, this display shows the test configuration you have selected. If the display is correct, press the Enter key to return to the Station Selection Options menu (Figure 7-2). If the display is incorrect, press command key 7 (Cmd7) to return to the Main Help menu and start the STATEST procedure again.

```

                                DISPLAY OF TEST CONFIGURATION
Line number: 2                Transmissions: 002                Interval: 00 seconds

                                NAME                ADDRESS
1. C01                        01
2. LOC1                        A0
3. LOC2                        A2

Cmd3-Previous display        Cmd7-End
```

**Figure 7-7. Sample Station Test Configuration**

### **Beginning the Test Transmission**

When you select option 5, the display in Figure 7-8 appears indicating that the tests have begun transmitting.

```

                                STATION TEST STATUS

Number of requested transmissions:      002
Number of complete transmissions:      001

The station test is complete.
Waiting for connection.
```

**Figure 7-8. Sample Station Test Transmission Display**

Successful test transmissions result in informational messages that, if you selected the logging option on the first menu, are logged to the history file. Unsuccessful transmissions result in displayed messages that require a response.

The *Waiting for a connection* message remains on the display until after the first transmission is successful.

If you receive a message indicating an unsuccessful transmission, you must respond by taking one of the following options:

<b>Option</b>	<b>Meaning</b>
0	Continue the transmissions to all stations
1	Stop the transmissions to the stations that responded unsuccessfully, but continue the transmissions to the other stations
2	Select a new test configuration
3	Cancel the STATEST procedure

When the test is complete, a message appears for about 3 seconds indicating the completion. After 3 seconds, the Link Station Test display appears (Figure 7-1) and you can select more tests to be done or end the procedure.

### **Notes on Running STATEST**

If a station you are trying to test does not respond correctly, ensure that it is in the correct status for the test. For remote work stations, the control unit being tested must be turned on and offline (other control units can be online). For SNA finance stations, the 3601 4700 controller being tested must be turned on and IPL must have been performed if necessary (other controllers can be online and enabled). For peer or APPC connections, the remote station must have been enabled using the ENABLE procedure.

# STOPM Procedure

This procedure stops the automatic monitoring function of a BSC multipoint line. The line being monitored could have been previously placed in automatic monitor mode in one of three ways:

- By the STARTM procedure
- By disabling an SSP-ICF BSC subsystem
- By the ending of a batch BSC job

The STOPM procedure runs the \$MMSP utility program.

```
                                STOPM PROCEDURE
                                Stops the automatic monitoring of a communication line
Communications line number . . . . . 1-8

Cmd3-Previous menu      Cmd4-Put on job queue      (c) 1985 IBM Corp.
```

### Communications line number

Specify that automatic monitor mode is to be stopped for the specified line. You can enter a number from 1 through 8. This line must be a multipoint line.

### Example

Using the STOPM procedure command to stop automonitoring line 1, enter:

```
STOPM 1
```

Refer to Appendix D for the format of this command.

# TRNMGR Procedure

The Token-Ring Network Manager (TRNMGR) procedure allows you to start, stop, or change the error reporting level for a specified line in an IBM Token-Ring Network. It provides several reporting levels so that you can control the amount of information logged in the system history file.

Following is the TRNMGR Procedure prompt display and a description of each parameter:

```
TRNMGR PROCEDURE                               Optional-*
Set IBM Token-Ring Error Reporting Level
Error reporting level . . . . . OFF,MIN,MED,MAX  MIN
Error reporting line number . . . . . 9,10 10

Cmd3-Previous menu

COPR IBM Corp. 1987
```

### Error reporting level

Specify the error reporting level that you want for the specified line. Allowed entries are:

*OFF* stops all error reporting on the specified line.

*MIN* starts the minimum reporting level, which displays only conditions that indicate degraded performance. This is the default.

*MED* starts the medium reporting level, which displays conditions that indicate potential degraded performance as well as the minimum reporting level information.

*MAX* starts the maximum reporting level, which displays all error conditions, including the information that would be displayed for the *MIN* and *MED* reporting levels.

### Error reporting line number

Specify the communications line number of the Token-Ring Network for which error monitoring and reporting can be started, stopped, or changed. Line 10 is the default.

**Example**

Using the TRNMGR procedure command to start the maximum error reporting level for line 9, enter:

```
TRNMGR MAX,9
```

Refer to Appendix D for the format of this command.



## Chapter 8. Requesting a Network Facility for X.21

### REQUESTX Procedure

The REQUESTX procedure allows you to request or cancel an available user facility in an X.21 public data network. Depending on the network, registration for a variety of facilities or services can be done by service order at subscription time, or over the network itself by using the REQUESTX procedure. The REQUESTX procedure can be entered from any display station.

The REQUESTX procedure has two modes of operation:

- When no parameters are specified, you are prompted for the requests.
- When you enter parameters, they indicate a library source member that contains one or more requests to be processed. This source member can be created by using the source entry utility (SEU), the Development Support Utility (DSU), or the \$MAINT utility program. See “Facility Request Source Member Specifications” later in this chapter for the format of these source statements.

A report is printed after the REQUESTX procedure has transmitted the specifications. The report shows every registration and cancelation request, the communications line over which the request was transmitted, and the status of the request. The report also shows the total number of requests, and the number of successful and unsuccessful requests.

The following conditions must exist before the REQUESTX procedure can request or cancel a network facility:

1. At least one line must be configured as an X.21 switched or short hold mode line.
2. The X.21 switched or short hold mode line associated with the facility being registered or canceled must be available. Therefore, the REQUESTX procedure should be run before running the communication component that requires the facility.

The system assumes that you are familiar with the specifications of the X.21 public data network to which the system is attached. You must enter the selection sequence in the proper format, using the proper field delimiters, and the correct numeric codes for the facility being registered or canceled.

Because the request and cancel specifications differ from network to network, the system does not check the syntax of the selection sequence. However, the system will verify that any characters entered match the following: The numeric digits 0 through 9, hyphens (-), periods (.), commas (,) and slashes (/). After the line number and the sequence have been entered, press the Enter key to transmit the specification to the network.

After the specification is transmitted, a message is displayed indicating whether the specification was successful. You then can transmit more specifications.

To end the REQUESTX procedure, press command key 7.

The REQUESTX procedure runs the #GCFR utility program.

Following are the REQUESTX Procedure prompt display and an explanation of the parameters:

```
                                REQUESTX PROCEDURE                                Optional-*
                                Runs the X.21 registration and cancellation utility
Name of source member . . . . . *
Name of library containing source member . . . . . #LIBRARY
Data entry required . . . . . NOENTRY,ENTRY NOENTRY

Cmd3-Previous menu (c) 1983 Corp.
```

**Name of source member**

Specify the library source member that contains registration and cancelation specifications. See "Facility Request Source Member Specifications" later in this chapter for the format of these specifications.

**Name of library containing source member**

Specify the library that contains the source member. If no name is specified, the current library is assumed.

### Data entry required

Specify whether the source entry utility is to be called.

*NOENTRY* specifies that the source entry utility (SEU) is not to be called, and that the specifications in the indicated source member are to be transmitted.

*ENTRY* specifies that the source entry utility (SEU) is to be called to create or change the source member before the specifications are transmitted by the REQUESTX procedure.

The following two examples use the REQUESTX procedure prompt. Refer to Appendix D for the format of this prompt.

#### Example 1

This example shows how to start the REQUESTX procedure, which will then prompt for the requests.

```
REQUESTX
```

#### Example 2

This example shows how to start the REQUESTX procedure, which will then process the library source member REQ from the current library (named MYLIB).

```
REQUESTX REQ
```

## Facility Request Source Member Specifications

The specifications can be entered by using SEU, DSU, or the \$MAINT utility program. See the manual *SEU Guide* for more information about SEU; see the manual *Development Support Utility Guide* for information about DSU; see the manual *System Reference* for information about \$MAINT. The specifications must be entered in positions 1 through 25 of the source member.

A display format is provided to allow you to enter or change the specifications using SEU; it is named REQX. However, this format is only available if you are using the REQUESTX Procedure prompt display or if you include format member name #GC@REQX on the SEU Sign-On display.

### Position(s) Contents

- |         |  |
|---------|--|
| 1       | The communications line number. This can be any number from 1 through 8.         |
| 2 to 25 | The registration or cancelation requests. The requests must start in position 2. |



## Chapter 9. Configuring for Advanced Program-to-Program Communications (APPC)

### What Is APPC?

Advanced program-to-program communications (APPC) is the System/36 implementation of the SNA LU6.2 architecture, which is the SNA-defined standard for program-to-program communications. The Communications feature supports the basic conversation part of APPC only; mapped conversations are supported by the SSP-ICF APPC subsystem. Refer to the *Interactive Communications Feature: Base Subsystems Reference* manual for information about the SSP-ICF APPC subsystem.

With APPC, System/36 can communicate with other products that use SNA LU6.2 protocols, such as another System/36, System/38, CICS/VS, 5520, or Displaywriter. APPC allows application programs on different products to communicate. The System/36 APPC subsystem supports both batch and interactive communications.

With APPC, communications occurs as peer communications, which means that no single system is the host (when System/36 communicates with CICS/VS, CICS/VS is considered to be a host for configuration and *bring-up* only.) One of the systems in the network must be the primary station, and all others must be secondary or negotiated. APPC supports point-to-point switched, point-to-point nonswitched, and multipoint nonswitched communications lines; X.21 communications; X.25 communications; and Token-Ring Network communications lines.

*Note:* APPC does not run with X.21 short hold mode.

## APPC Sessions

With APPC, no single system is responsible for the control of all the communications sessions. Control of the sessions is distributed among the systems in the network. For example, when two systems communicate using APPC, each starts (binds) and ends (unbinds) some sessions. Those sessions for which a particular system is responsible are *locally controlled* sessions, since that system is the initiator of those sessions. Sessions for which another system is responsible are called *remotely controlled* sessions.

The *Number of locally controlled sessions* prompt on display 43.0 for CNFIGICF allows you to specify the minimum number of locally controlled sessions that are to be initially allocated on the local system for a particular session group. The actual number of sessions will be negotiated (automatically) with the remote system and may be less. The STATUS APPC command can be used to determine the actual number of sessions. Also, the total number of locally controlled and remotely controlled sessions may be less than the number shown for the maximum allowed sessions field on the status APPC display. The remaining sessions (those not initially controlled by either system) are available on a first requester basis.

Remotely controlled sessions that have been bound but are still available may be used by the local system if a session is needed and no locally controlled sessions are available. For this to occur, you must respond to the *Acquire remotely controlled sessions?* prompt on display 44.0 with a Y (yes).

## Configuring an APPC Subsystem

An APPC subsystem must be configured if you intend to use:

- Communications and Systems Management (C & SM) alert support
- Distributed Data Management (DDM)
- Personal Services/36 (PS/36)
- SSP-ICF APPC subsystem
- Display Station Pass-Through (DSPT)

To configure an APPC subsystem, enter CNFIGICF.

## Defining an SSP-ICF Configuration Member

### Display 1.0 SSP-ICF Configuration Member Definition

```
1.0                      SSP-ICF CONFIGURATION MEMBER DEFINITION                      W1

1. Configuration member name . . . . . APPCSUB
2. Library name . . . . . #LIBRARY
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
   Option . . . . . 1-5 3
4. Existing member name . . . . .
5. Existing member library name . . . . . #LIBRARY

Cmd7-End      Cmd19-Cancel
```

#### 1. Configuration member name

Specify the name that identifies this configuration of the subsystem. This subsystem member name is used to store the subsystem configuration member in a library, and it is also used in the ENABLE and DISABLE procedures to start and stop the subsystem. APPCSUB is used in this example.

#### 2. Library name

Specify the name of the library in which the subsystem member is to be stored. The default is the current user library.

*Note: The line member and subsystem member must be in the same library.*

#### 3. Select one of the following:

For example, if you are *creating* a new subsystem member, select option 1.

#### 4. Existing member name

This prompt is displayed only if you selected option 3 for prompt 3. Enter the name of the existing subsystem member that is to be used to create the new member. (The existing member is not changed.)

#### 5. Existing member library name

This prompt is displayed only if you selected option 3 for prompt 3. Enter the name of the library that contains the existing member. The default is the library name specified for prompt 2.

## Selecting a Configuration Member Type

### Display 2.0 SSP-ICF Configuration Member Type

```
2.0                SSP-ICF CONFIGURATION MEMBER TYPE                APPCSUB  W1
Select one of the following options:
  1. INTRA
  2. BSC
  3. SNA
  4. Async
  5. PC Support/36

Option:  3

Cmd3-Previous display      Cmd5-Restart CNGIGICF
                          Cmd19-Cancel
                          COPR IBM Corp. 1986
```

On this display, select the type of configuration you are working with. Since you are defining a subsystem for APPC, select option 3, *SNA*.

## Display 4.0 SNA Configuration Member Type

```
4.0                      SNA CONFIGURATION MEMBER TYPE                      APPCSUB    W1

1. SNA member type . . . . . 1-4 1
  1. SNA subsystem member
  2. SNA/SDLC line member
  3. SNA/X.25 line member
  4. SNA/IBM Token-Ring Network line member

                                Cmd5-Restart CNFIGICF
                                Cmd19-Cancel                                COPR IBM Corp. 1986
```

On this display, you select the type of SNA member you are working with.

### 1. SNA member type

Specify the type of SNA member this subsystem is to use. Select option 1, *SNA subsystem member*.

*Note: A line member must be defined for APPC before a subsystem member can be defined.*

## Selecting an SNA Subsystem Member

### Display 21.0 SNA Subsystem Member Selection

```
21.0                SNA SUBSYSTEM MEMBER SELECTION                APPCSUB  W1

1. Select subsystem type from the following options:
  1. Peer
  2. SNA Upline
  3. SNA 3270
  4. Finance
  5. SNA MSRJE
  6. APPC
  7. APPN
Option . . . . . 1-7 6

2. Line member name . . . . . APPCLINE

                                Cmd5-Restart CNFIGICF
                                Cmd19-Cancel
                                COPR IBM Corp. 1986
```

On this display, you select the type of subsystem you are working with. Using APPC, your System/36 can communicate with another System/36, a System/38, CICS/VS, Displaywriter, or another system with compatible support.

**1. Select subsystem type from the following options:**

For APPC, specify option 6.

**2. Line member name**

Specify the name of the line member with which this subsystem member is to be associated. The line member name was specified on display 1.0 during line member configuration. The line member for this example is APPCLINE.

## Defining a Subsystem Member

### Display 22.0 Subsystem Member Definition

```
22.0                SUBSYSTEM MEMBER DEFINITION                APPCSUB   W1

1. Local location name . . . . .

5. Network ID . . . . .

                                Cmd19-Cancel
```

On this display, you supply the name of the local (your System/36) location and the identifier of the APPC network.

#### 1. Local location name

Specify the name of your location. Your location is considered the *local* location. This name is also used by the remote locations to identify your system. This name must match one of the remote location names specified on the remote system's configuration/definition.

If the remote system is a:

- System/36, must be the same as the *Remote location name* specified on display 29.0 during APPC configuration at the remote system.
- System/38, must match the value specified for the RMTLU parameter of the CRTDEVD (Create Device Description) command.
- CICS/VS, must be the same as that specified for the NETNAME parameter during CICS/VS terminal control table definition (using the DFHTCT macroinstruction).

- Displaywriter, must be the same as that specified for the *Destination LU name* prompt on the Document Distribution Setup menu.
- 5520, must be the same as that specified for the remote node name in the 5520 *Remote node profile* prompt.

This name appears in system messages at both the local and remote systems to help associate messages with a particular location.

#### **5. Network ID**

Specify the network ID to use to qualify the local location name during the activation sequence. This is only shown for remote system type *Host*.

*Note: If the network ID is not specified, the local location name will not be qualified.*

## Selecting and Defining the Remote Location

### Display 29.0 Remote Location Selection

```
29.0                                REMOTE LOCATION SELECTION                                APPCSUB    W1

1. Select from the following options:
   1-Create    3-Create from existing                                5-Review
   2-Edit      4-Remove
Option . . . . . 1
2. Remote location name . . . . .
3. Remote system name . . . . .
4. Existing location name . . . . .

-----
OPTION  LOCATION      REMOTE SYSTEM
                                APPCREMO
                                Page 1 of 1

                                Cmd8-Reset    Cmd19-Cancel    Roll-Page
No remote locations are configured
```

On this display, you select the remote systems this subsystem communicates with. This display shows the remote systems in the line member that are available to communicate with this subsystem. For each remote system that you select, you define its associated remote location(s).

Each previously defined remote location is listed along with the remote system with which the remote location is associated. You may edit, remove, or review any of these remote locations by entering the correct option number in the column to the left of the remote location with which you want to work. Use the Roll keys to page through the list of remote locations.

If no locations have been defined for any of the remote systems in the line member, the only option shown on display 29.0 is *1-Create*.

#### 1. Select from the following options:

Specify which of the available options you wish to use:

*1-Create* defines a new remote location.

*2-Edit* changes an existing remote location.

*3-Create from existing* defines a new remote location using an existing remote location as a base.

*4-Remove* removes a remote location. It will no longer exist in this member.

*5-Review* displays an existing remote location. The configuration member cannot be changed.

## **2. Remote location name**

Specify the name of the remote location associated with this remote system with which this subsystem is to communicate. This name is used in the ENABLE, DISABLE, STRTGRP, and STOPGRP procedure commands to start and stop communications with this remote location. This name is used by System/36 APPC to identify the remote location. This name appears in system messages to help the operator associate the message with a particular remote location.

No two remote location names in this subsystem member can be the same. This name must match the local location name specified in the remote system's configuration/definition.

If the remote system is a:

- System/36 with APPC, must be the same as the *Local location name* specified on display 22.0 during APPC configuration at the remote system.
- System/36 with APPN, must match the remote system name specified for prompt 3.
- System/38, must match the value specified for the LCLLU parameter of the CRTDEVD (Create Device Description) command.
- CICS/VS, must match the APPLID parameter specified during CICS/VS DFHTCT control table definition (using the DFHTCT macroinstruction).
- If the remote system is a Displaywriter, the name specified here must be the same as that specified for the *Origination LU name* prompt on the Document Distribution Setup menu.
- If the remote system is a 5520, you must define two remote location names (one for SEND and one for RECEIVE) with the same remote system name. The names specified here must match the names specified on 5520 for SEND and RECEIVE sessions of the Create Send and Receive Session function.

### **3. Remote system name**

Specify the name of the remote system for which this remote location is being defined.

### **4. Existing location name**

Specify the name of the existing remote location that is to be used as a base when creating a new remote location if you selected option 3 for the first prompt.

When you select option 1, a remote location definition is built by CNFIGICF. Display 29.0 is then redisplayed with the new remote location name listed with the associated remote system. If you want to change any of the values assigned for the remote location, you must *edit* the remote location using option 2. You can either key the option number (2), the remote location name, and the remote system name and then press the Enter key; or you can simply enter a 2 to the left of the remote location that you want to edit. If you simply want to view the definition, select option 5.

## Display 30.0 Remote Location Definition

```
30.0                REMOTE LOCATION DEFINITION                APPCSUB   W1
Remote system APPCREMO                Remote location REMOTE01
1. Activate location at ENABLE? . . . . . Y,N Y
2. Send alerts to this location? . . . . . Y,N N

Cmd3-Previous display    Cmd7-End    Cmd19-Cancel
```

This is the first of a set of displays that define a remote location for this remote system. On this display, you specify how you want the remote location started using the **ENABLE** procedure command and whether C & SM alerts will be sent to the remote location. The remote system and remote location names are shown for reference.

### 1. Activate location at **ENABLE**?

Specify whether this location should be activated (started) when an **ENABLE** procedure command is entered that specifies the subsystem member but no remote location name.

**Y** (yes) specifies that communications with this remote location can start when the **ENABLE** procedure command is entered without a remote location name being specified. Specify **Y** if this is the only remote location in this subsystem member.

**N** (no) specifies that communications with this remote location can start only when an **ENABLE** procedure command is entered specifying this remote location name.

## **2. Send alerts to this location?**

Specify whether alerts can be sent to this location. System/36 alerts are generated by the alert support portion of the Communications and Systems Management feature. This prompt is shown for a host or a peer remote system. For additional information about alerts, see the *Communications and Systems Management Guide*.

*Y* (yes) specifies that alerts can be sent to this remote location. Only one remote location within a remote system can be defined to receive alerts.

If you specify *Y* for this prompt, you have completed defining a remote location and display 29.0 is presented. You can then end CNFIGICF or select any of the options offered by display 29.0.

*N* (no) specifies that alerts are not sent to this remote location.

**Display 41.0 APPC and APPN Location Definition**

```
41.0                APPC AND APPN LOCATION DEFINITION                APPCSUB    W1
      Remote system APPCREMO                Remote location REMOTE01
1. Single-session location? . . . . . Y,N N
2. Stay operational? . . . . . Y,N Y

      Cmd3-Previous display    Cmd7-End    Cmd19-Cancel
```

On this display, you specify whether the remote location has a single session or can have multiple sessions, and whether the remote location will stay enabled after the line has been disconnected. The remote system and remote location names are shown for reference.

**1. Single session location?**

Specify whether the remote location is limited to one session.

*Y* (yes) specifies that this remote location is limited to one session group with a maximum session limit of 1. This may be required by the remote system with which you are communicating. For example, 5520 and Displaywriter, which are single session locations, both require that *Y* (yes) be specified.

*N* (no) specifies that this remote location can have up to eight session groups with a total of 64 sessions.

This prompt is not displayed if the remote system type is host (display 13.0) and there is more than one LU assigned to APPC (display 14.0).

**2. Stay operational?**

Specify whether you want the subsystem to remain active after the line has been disconnected.

*Y* (yes) specifies that the remote location stays enabled following a normal line deactivation. This allows reestablishing communications with the remote location at a later time.

*N* (no) specifies that the remote location is disabled when the line is disconnected.

## Selecting and Defining the Session Groups

### Display 42.0 Session Group Selection

```
42.0                      SESSION GROUP SELECTION                      APPCSUB   W1
Remote system APPCREMO      Remote location REMOTE01

1. Select from the following options:
  1-Create      3-Create from existing      5-Review
  2-Edit       4-Remove
Option . . . . .
2. Session group name . . . . .
3. Existing session group name . . . . .
4. Default session group name . . . . .      *BLANK
-----
OPTION  SESSION GROUP
        *BLANK
        NEWGRP

Cmd3-Previous display  Cmd7-End      Cmd8-Reset      Cmd19-Cancel
```

This display lists the session groups that are defined for this remote location. You can create a new session group, edit an existing session group, remove a session group, create a new session group from an existing session group, or review a session group. In addition, you specify the name of the session group that is to be used as the default. The remote system and remote location names are shown for reference.

#### 1. Select from the following options:

*1-Create* defines a new session group.

*Note:* If you had specified **Y** for **Single session location** on display 41.0, you will need to remove the **Default session group name**, **\*BLANK**, on the top half of this display before you can define a new session group.

*2-Edit* changes an existing session group.

*3-Create from existing* defines a new session group using an existing session group as a base.

*4-Remove* removes a session group. It will no longer exist in the member.

*5-Review* displays an existing session group. The configuration member cannot be changed.

## 2. Session group name

Each session group name must be unique within the remote location. There can be from one through eight (only one for a single session location) session groups for each remote location, with a maximum of 120 session groups for the entire APPC subsystem configuration. The names SNASVCMG and CPSVCMG cannot be used. To configure a session group name of blanks, the name \*BLANK must be specified.

The name specified here must match the corresponding value at the remote system. If the remote system is a:

- System/36, the *Session group name* prompt on display 42.0 during APPC subsystem member configuration.
- System/38, the *MODE* parameter on the ADDDEVMODE (Add Device Mode Entry) command.
- CICS/VS, the *MODENAM* parameters of the DFHTCT (Define Terminal Control Table) and referenced by the DFHPCT (Define Program Control Table) macroinstructions.
- Displaywriter, specify \*BLANK.
- 5520, the remote node name specified on the 5520 *Remote node profile* prompt.

## 3. Existing session group name

Specify the name of the existing session group to be used as a base when creating a new session group (option 3).

## 4. Default session group name

Specify that the default session group name will be used by the APPC subsystem whenever a local application program does not explicitly provide a session group name at session initiation. The default session group name must be a session group name already configured for this remote location.

All previously defined session groups for the given remote system and remote location are listed. You may edit, remove, or review any of these session groups by entering the correct option number in the column to the left of the session group you want to work with.

## Display 43.0 APPC and APPN Session Group Definition

```
43.0          APPC and APPN SESSION GROUP DEFINITION          APPCSUB      W1
Remote system APPCREMO          Remote location REMOTE01
          Session group NEWGRP
1. Session group type . . . . . 1
   1-Interactive          2-Batch
2. Maximum session limit . . . . . 1 - 64 08
3. Number of locally controlled sessions . . . . . 0 - 08 04
4. Number of pre-established sessions . . . . . 0 - 04 00

Cmd3-Previous display      Cmd7-End      Cmd19-Cancel
```

This is the first of a set of screens that you use to define the session groups. The remote system name, remote location name, and session group name are shown for reference.

### 1. Session group type

Specify whether the sessions are to be used for batch or interactive communications. This is used to select defaults at the local system for display 44.0.

*1-Interactive* should be used if the record exchange is in both directions, meaning that the systems alternate sending and receiving.

*2-Batch* should be used if the data record exchange is in a single direction. For example, you send a complete file to the remote system and then end communications.

*Note: The Session group type is used to determine the default values for display 44.0.*

### 2. Maximum session limit

Specify the maximum number of sessions that are allowed for this session group. The maximum number of sessions for all session groups in a single remote location is 64. The default is 8. This prompt is not displayed if the remote location is a single session location, and its value is automatically set to 1. Both Displaywriter and 5520 are single session locations.

For other than single session locations, the value specified here might be automatically negotiated with the remote system and therefore might change.

### **3. Number of locally controlled sessions**

Specify the number of locally controlled sessions that are requested for this session group. The range of available sessions is shown and the default is one-half of the maximum session limit. This value is actually negotiated with the remote system when the communications link is established. Therefore, the number specified here is not a guaranteed value.

If the remote system is a:

- Displaywriter, specify 1.
- 5520, specify:
  - 0 for the System/36 receive session
  - 1 for the System/36 send session
- CICS/VS and a single-session location is specified, specify:
  - 0 if either System/36 or CICS/VS can acquire a session
  - 1 if System/36 can acquire a session, but CICS/VS cannot acquire a session on System/36

### **4. Number of pre-established sessions**

Specify the number of sessions to be established and kept active while communications with the remote location is active. The default is 1 if the line type is nonswitched or switched without automatic disconnect. The default is 0 if the line type is switched with automatic disconnect.

Specify 0 if the remote system is a 5520.

Specify 1 for Displaywriter if the Displaywriter is secondary.

The number of sessions specified here is not guaranteed. It applies to locally controlled sessions only and negotiation between the systems may reduce the number.

## Display 44.0 APPC and APPN Session Group Additional Options

```
44.0          APPC AND APPN SESSION GROUP ADDITIONAL OPTIONS          APPCSUB      W1
          Remote system APPCREMO          Remote location REMOTE01
                  Session group NEWGRP
1. Receive pacing value . . . . .1-63 07
2. Maximum receive RU size . . . . .8-4096 1024
3. Acquire remotely controlled sessions? . . . . . Y,N N

          Cmd3-Previous display          Cmd7-End          Cmd19-Cancel
```

On this display, you define additional options that can affect performance for this session group. The remote system name, remote location name, and session group name are shown for reference.

### 1. Receive pacing value

Specify the number of request units (RUs) that may be sent from the remote location without an intervening pacing response. The default is 7 if the session group type is interactive and 3 if it is batch.

### 2. Maximum receive RU size

Specify the maximum RU size (in bytes) that can be received by the APPC subsystem. The default is 1024 if the session group type is interactive and 256 if it is batch.

*Note: **Maximum session limit, Receive pacing value, and Maximum receive RU size** are factors in how much storage C/SNA reserves for session buffers. The larger the values, the more storage C/SNA uses. You must be careful to not overcommit storage for your machine.*

### 3. Acquire remotely controlled sessions?

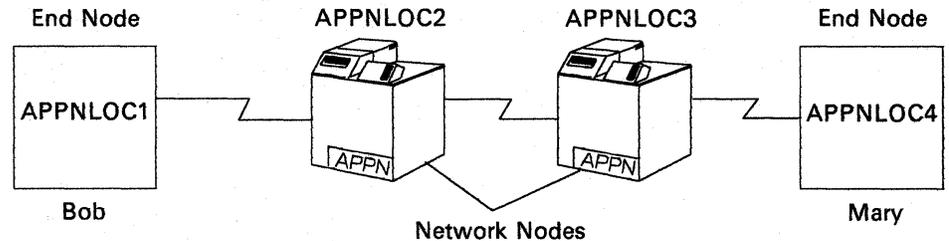
Specify whether, if there are no locally controlled sessions available, the subsystem should attempt to acquire a session controlled by the remote system. If the remote location is a single-session location, this prompt is not displayed; the value for this prompt is automatically set to yes.

*Y* (yes) specifies that if there are no locally controlled sessions available, the APPC subsystem will attempt to allocate a remotely controlled session to any local application program using this session group. The default is yes if the remote location is not a single session location.

*N* (no) specifies that the APPC subsystem will not attempt to allocate a remotely controlled session to any local application program using this session group.

## Defining End Nodes in an APPN Network

In order for a System/36 without APPN support to use the APPN support of an adjacent network node, special consideration must be taken in configuring the APPC subsystem member that connects to the APPN location. Figure 9-1 shows an example of two end nodes that use the services of their adjacent network nodes to communicate with each other.



R36J007-1

**Figure 9-1. End Nodes with Adjacent Network Nodes**

In Figure 9-1, APPNLOC1 and APPNLOC4 are end nodes; APPNLOC2 and APPNLOC3 are network nodes. Bob, who is located at APPNLOC1, would like to communicate with users at APPNLOC2, APPNLOC3, and APPNLOC4. Mary, who is located at APPNLOC4, would like to communicate with APPNLOC1 and APPNLOC3.

Figure 9-2 shows how location APPNLOC1 would be defined to satisfy the needs of Bob and Mary. Since APPNLOC1 has a direct link to APPNLOC2 only, all of the remote locations that APPNLOC1 needs to communicate with must be defined as though they were all located within the remote system APPNLOC2. In this case, APPNLOC2, APPNLOC3, and APPNLOC4 would be defined within APPNLOC2.

**Display 29.0 Remote Location Selection**

```

29.0                                REMOTE LOCATION SELECTION                                APPNLOC1  W1

1. Select from the following options:
   1-Create    3-Create from existing    5-Review
   2-Edit     4-Remove
Option . . . . .
2. Remote location name . . . . . APPNLOC2
3. Remote system name . . . . . APPNLOC2
4. Existing location name . . . . .

OPTION  LOCATION  REMOTE SYSTEM  Page 1 of 1
APPNLOC2  APPNLOC2
APPNLOC3  APPNLOC2
APPNLOC4  APPNLOC2

No remote locations are configured

```

**Figure 9-2. Defining APPNLOC1**

*Note: The parameters for Remote Location Selection (display 29.0) are explained earlier in this chapter.*

In the case of APPNLOC4, Mary only needs to communicate with APPNLOC1 and APPNLOC3. Since APPNLOC4 has a direct line to APPNLOC3, then APPNLOC1 and APPNLOC3 are defined as though they were both located within remote system APPNLOC3. The definition for APPNLOC4 is shown in Figure 9-3.

```

29.0                                REMOTE LOCATION SELECTION                                APPNLOC4    W1
1. Select from the following options:
  1-Create      3-Create from existing      5-Review
  2-Edit        4-Remove
Option . . . . . 1
2. Remote location name . . . . . APPNLOC3
3. Remote system name . . . . . APPNLOC3
4. Existing location name . . . . .

```

---

OPTION	LOCATION	REMOTE SYSTEM	Page 1 of 1
	APPNLOC1	APPNLOC3	
	APPNLOC3	APPNLOC3	

```

Cmd4-Display remote location list      Cmd5-Restart CNFIGICF
Cmd7-End      Cmd8-Reset      Cmd19-Cancel      Roll-Page  COPR IBM Corp. 1986
No remote locations are configured

```

**Figure 9-3. Defining APPNLOC4**

*Note: In addition, the adjacent network node must also have the same session group defined as the end node is using, along with the same destination. Therefore, if APPNLOC1 is using session group SG14 for a session to APPNLOC4, then SG14 must be defined on both APPNLOC2 and APPNLOC4.*

## Chapter 10. Starting and Stopping APPC Session Groups

### STRTRGRP Procedure

The STRTRGRP procedure command starts or activates an APPC session group.

*Notes:*

1. *The APPC subsystem must be enabled (by the **ENABLE** procedure command) and ready to communicate with the remote system before the STRTRGRP procedure command can be used to activate the session groups defined for the remote locations in the subsystem.*
2. *If you are using an APPN or APPC subsystem, you do not need to manually start session groups. Refer to the **Advanced Peer-to-Peer Networking Guide** for more information about how STRTRGRP is used with APPN.*
3. *To check the system status to see if the systems are communicating, use the **D A** command. Refer to the **System Reference** manual for information about this command.*

The STRTGRP procedure command can be used to start all configured session groups for a location, or to start one session group only. Following is the STRTGRP Procedure command prompt display and an explanation of the parameters:

```

                                STRTGRP PROCEDURE                                Optional-*
                                Starts a single session group or all configured
                                session groups for an enabled remote location.
Name of remote location . . . . .
Name of single session group to be started . . . . . *
```

Cmd3-Previous menu (c) 1985 IBM Corp.

**Name of remote location**

Specify the remote location for which one or more session groups are to be started. This name must have been previously specified for the *Remote location name* prompt on display 29.0 during APPC subsystem member configuration.

**Name of single session group to be started**

Specify the session group that is to be activated. The session group is started if it is not already active. The name specified here must have been previously specified for the *Session group name* prompt on display 42.0 when the location identified in the previous prompt was defined.

If no name is specified, all session groups within the location that are not currently active are started.

The following two examples use the STRTGRP procedure command. Refer to Appendix D for the format of this command.

**Example 1**

In the following example, the STRTGRP procedure command starts all session groups for the remote location APPCLOC1:

```
STRTGRP APPCLOC1
```

## Example 2

In the following example, the STRTGRP procedure command starts one session group (GROUP1) for the remote location APPCLOC1:

```
STRTGRP APPCLOC1, GROUP1
```

## STOPGRP Procedure

The STOPGRP procedure command closes one or more active APPC session groups. You can also specify how activities that have been requested on the remote system, but have not yet been performed, are to be handled.

Following is a copy of the STOPGRP Procedure prompt display and an explanation of the parameters:

STOPGRP PROCEDURE		Optional-*
Stops a single session group or all configured session groups for an enabled remote location.		
Name of remote location . . . . .		
Name of single session group to be stopped . . . . .		*
Complete requested activity before ending session in specified session groups(s)? . . . . .	.N, Y N	
Terminate all sessions . . . . .	IMMED, WAIT WAIT	*
Cmd3-Previous menu		(c) 1985 IBM Corp.

### Name of remote location

Specify the remote location for which one or more session groups are to be stopped.

### Name of single session group to be stopped

Specify the session group that is to be stopped (closed). If a name is specified here, only that session group is stopped; any other active session groups for the location remaining active.

If no name is specified, all active session groups for the remote location are stopped.

**Complete requested activity before ending session in specified session group(s)?**

If you specify N, requested activities currently in process at the remote location will complete; activities that have been requested but not yet started at the remote system will not be performed. Y specifies that all requested activities be allowed to complete before the session group is terminated. N is the default.

In either case, no new activities can be requested on the local system for the session group once the STOPGRP command has been entered.

**Terminate all sessions**

If you specify IMMED, all sessions are terminated immediately even if some sessions are active. If you use the default, WAIT, the session groups are stopped when the current activity stops.

The following three examples use the STOPGRP procedure command. Refer to Appendix D for the format of this command.

**Example 1**

In the following example, the STOPGRP procedure command stops all active session groups for the remote location APPCLOC1. All requested activities can complete before the session group terminates.

```
STOPGRP APPCLOC1,,Y
```

**Example 2**

In the following example, the STOPGRP procedure command stops one active session group (GROUP1) for the remote location APPCLOC1. Only requested activities that are in process complete:

```
STOPGRP APPCLOC1,GROUP1
```

**Example 3**

In the following example, the STOPGRP procedure command stops all session groups for remote location APPCLOC1 immediately.

```
STOPGRP APPCLOC1,,,Y
```

## Chapter 11. Asynchronous Communications Support

The IBM System/36 asynchronous communications support, part of the base Communications feature, lets System/36 use asynchronous communications to communicate with a remote station, either directly or over a packet-switched data network.

Asynchronous communications includes the following parts:

- The asynchronous communications subsystem

The asynchronous communications subsystem supports program-to-program communications between systems using the asynchronous and/or enhanced X.25 data link protocols. It also provides an internal X.25 Packet Assembler/Disassembler (PAD) function, which allows a terminal connected to System/36 to communicate with a host system over a packet-switched data network (PSDN). Refer to the *Using the Asynchronous Communications Support* manual for more information about the asynchronous communications subsystem.

- The file transfer subroutines (also used by other subsystems)

The file transfer subroutines let you send System/36 data files and library members through the data network. These subroutines are called from your application programs. See Chapter 12, "File Transfer Subroutines" for more information.

- The Interactive Terminal Facility

The Interactive Terminal Facility (ITF) allows System/36 to connect to applications such as the TELEMAIL service of the GTE Telenet data network.<sup>1</sup> Using ITF, you can send or receive not only simple memos, but also System/36 library members and data files. You can also send DisplayWrite/36 documents. Refer to the *Using the Asynchronous Communications Support* manual for more about ITF.

- The asynchronous communications support includes support for up to three X.25 lines on the 5360 and 5362 System Units and one X.25 line on the 5364 System Unit. Refer to the *Using the Asynchronous Communications Support* manual for more about the X.25 lines supported.

---

<sup>1</sup> TELEMAIL and Telenet are registered servicemarks of the GTE Telenet Communications Corporation.

## Some Notes on Asynchronous/X.25 Configuration

When you perform the CNFIGICF and CNFIGX25 procedures, you are describing to System/36 both your system and any remote systems with which you will be communicating. For an asynchronous/X.25 line, you are also describing the PSDN through which you will communicate.

Part of the process of describing these things is naming them: Your system, the remote system, the line member, the subsystem member, the X.25 network configuration member, the X.25 virtual circuit configuration member.

This section shows how these names are used together to allow communication to take place. The accompanying drawings show a sample system (S36A) and one of the remote systems with which it communicates (S36B).

1. When you define a communications line member (using CNFIGICF), you tell the system:
  - The name of the line member
  - The name of the X.25 virtual circuit configuration member that this line will use
  - How many remote systems this line member can communicate with
  - The names of remote systems that your system will call

### S36A Line Member

```
Line member name = LINE1
X.25 configuration member = X25VC1
Total number of remote systems = 10
Remote system names:
```

```
MNSYS
PASYS
TNSYS
NESYS
ALSYS
```

AAA001-1

The system assigns station addresses to all remote systems. If you name fewer remote systems than the total number of remote systems, the remainder become *generic remote systems*. The system assigns numbers to these. They are used for incoming calls to your system.

In the example, there are ten remote systems, but only five have been named by the user. The system treats the other five as generic remote systems. A remote system that calls in is assigned to an available generic remote system, and the calling system's name replaces the generic number for the length of the session. The calling system must be defined to the remote system using the **DEFINLOC** procedure. **DEFINLOC** is described later in this chapter.

*Note: You may use the **DEFINLOC** procedure to define more remote systems than are assigned as generics. It is best to allow for only as many generic remote systems as you want to be calling your system at the same time. In the example, there could be twenty systems defined in the **DEFINLOC** list; five of these may call at once.*

#### S36A Remote System Names

MNSYS	}	S36A uses these for outgoing calls to remote systems.
PASYS		
TNSYS		
NESYS		
ALSYS		
06	}	S36A uses these generic remote systems for incoming calls from remote systems.
07		
08		
09		
0A		

#### S36A DEFINLOC

Location Name	ID
1. MNSBS	MNID
2. PASBS	PAID
3. TNSBS	TNID
4. NESBS	NEID
5. ALSBS	ALID
6. FLSBS	FLID
7. SCSBS	SCID
.	.
.	.
20. CASBS	CAID

AAA002-0

2. When you define an asynchronous subsystem member, you tell the system:

- The name of the subsystem member.
- The name of the line member that this subsystem member uses. More than one subsystem member can be associated with the same line member, though only one subsystem member at a time can be enabled using that line member. The subsystem member name must be different from the line member name.
- The subsystem's location name and local ID. The remote system uses these names to recognize your system when your system calls; the remote system must have used the DEFINLOC procedure to list these names.
- The name of the remote locations and the name of the remote systems for each remote system that your system will be calling.

**S36A Subsystem Member 1**

```
Subsystem member name = SBS1
Line member name = [LINE1]
Location name = NCSBS
Local ID = NCID

Remote locations:      Remote systems:

  MNLOC                MNSYS
  PALOC                PASYS
  TNLOC                TNSYS
  NELOC                NESYS
  ALLOC                ALSYS

                        06
                        07
                        08
                        09
                        0A
```

**S36A Line Member**

```
Line member name = [LINE1]
```

**S36A Subsystem Member 2**

```
Subsystem member name = SBS2

Line member name = [LINE1]
•
•
•
```

AAA003-2

The location name, local ID, remote location name, and remote system name are all used by your system for outgoing calls to the remote system. Incoming calls from the remote system require a generic remote system name.

The location names defined by you and the other systems on the network must all be unique. In particular, you should be sure that the location name you specify for your system (for use in making calls to the remote system) is *not* the same as the name the remote system specifies as the remote location name (for use in making calls to your system).

**S36A**

Location name = NCSBS  
Local ID = NCID

Remote locations:            Remote systems:

MNLOC	MNSYS
PALOC	PASYS
TNLOC	TNSYS
NELOC	NESYS
ALLOC	ALSYS
	06
	07

DEFINLOC:

Location Name	ID
MNSBS	MNID
PASBS	PAID
FLSBS	FLID
.	.
.	.
.	.

**S36B**

Location name = MNSBS  
Local ID = MNID

Remote locations:            Remote systems:

NCLOC	NCID
PALOC	PAID
TNLOC	TNID
NELOC	NEID
ALLOC	ALID
	06
	07

DEFINLOC:

Location Name	ID
NCSBS	NCID
TNSBS	TNID
FLSBS	FLID
.	.
.	.
.	.

AAA004-1

- When you define an X.25 network configuration, you tell the system the name of the network configuration.

**S36A X.25 Network Configuration Member**

Network configuration member  
name = X25NET1

AAA005-0

4. When you define a virtual circuit configuration, you tell the system:

- The name of the virtual circuit configuration member
- The name of the associated X.25 network configuration member
- The name of the associated line member

**S36A Virtual Circuit Configuration Member**

Member name = X25VC1

Related RWS or line configuration member name = LINE1

X.25 network configuration member name = X25NET1

**S36A X.25 Network Configuration Member**

Network configuration member name = X25NET1

**S36A Line Member**

Line member name = LINE1

X.25 configuration member name = X25VC1

AAA006-1

As part of the virtual circuit configuration member, you define a virtual circuit for each of the remote systems defined using the CNFIGICF procedure. For generic remote systems, you can leave blank the remote network address parameter, thus creating generic virtual circuits. In both cases, the remote system must have been defined to your system through the DEFINLOC procedure.

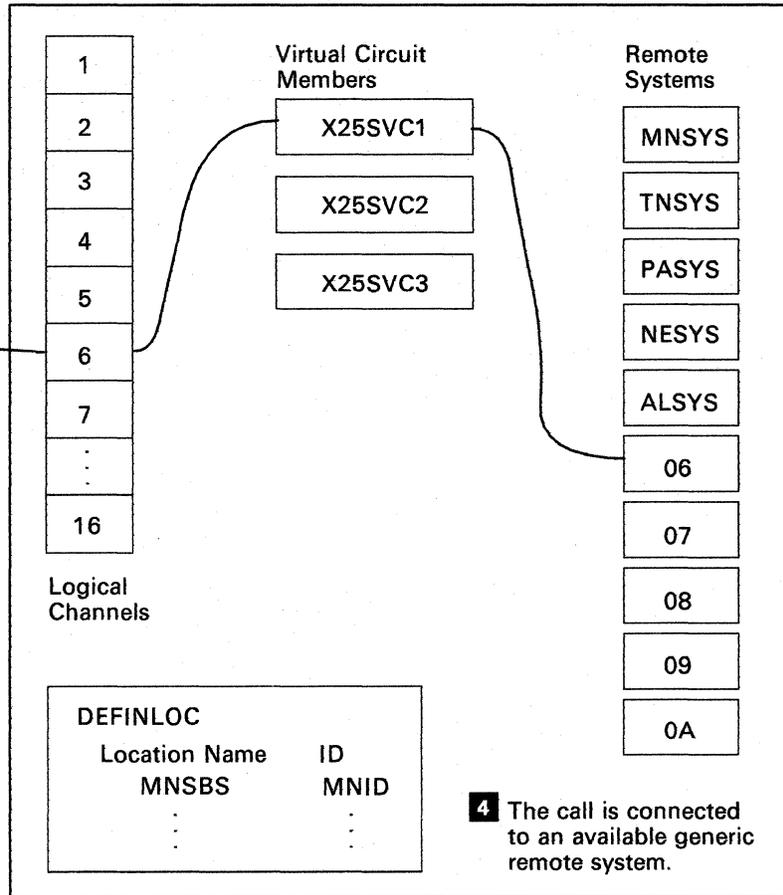
**1** S36B places a call to S36A.

**S36B**

Location Name = MNSBS  
Local ID = MNID

X.25  
Packet Switched  
Data Network

**S36A**



**2** The call is connected to the first available logical channel for incoming calls.

**3** S36A checks to see if the location name and ID are listed in DEFINLOC.

**4** The call is connected to an available generic remote system.

AAA007-1

- When you use the DEFINLOC procedure, you tell the system the location name and location ID of those remote systems that you allow to call your system. When a remote system calls, your system checks the names defined by DEFINLOC. If the location name matches one of these names, then the call is accepted and assigned to an available logical channel.

DEFINLOC must be used to define your system's location name and location ID to any remote system that your system will call if your station is not defined on the remote system's virtual circuit configuration as an IN caller.

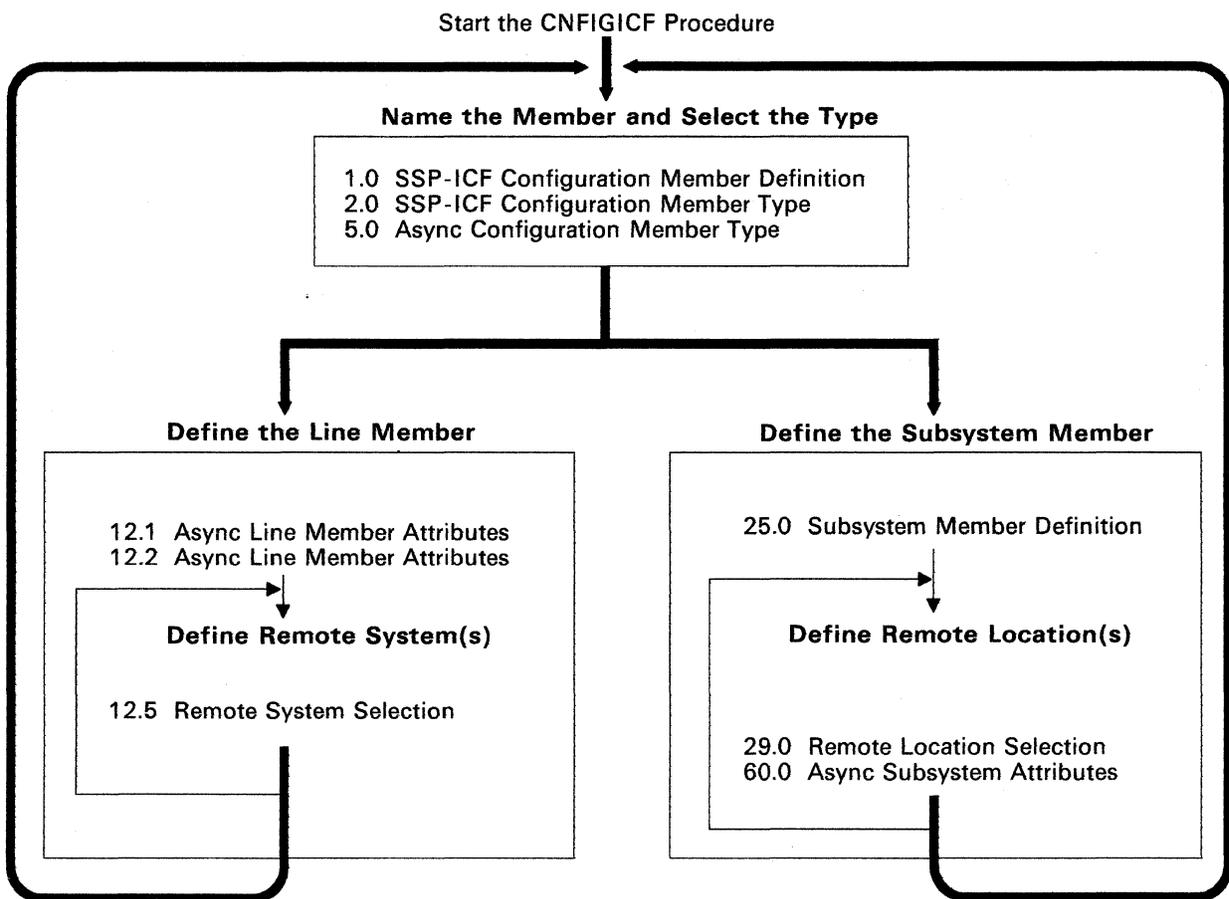
# Configuring an Asynchronous Subsystem

This section describes the displays and all the parameters (shown in prompt form) needed to define and create an asynchronous line member configuration, using the CNFIGICF procedure.

The following diagram shows the sequence in which the CNFIGICF displays are presented, and shows what displays you use to create a communications line member and what displays you use to create a subsystem member.

Refer to the *Using the Asynchronous Communications Support* manual for information about configuring the asynchronous communications subsystem.

*Note:* You **must** define a line member for the communications line support before you can define an asynchronous subsystem member. If the line member is later modified, its new attributes are reflected in your subsystem the next time it is enabled. Some changes to the line member, however, also require that you modify each subsystem member using that line member before the subsystem is enabled again. To ensure compatibility between the line and the subsystem, you should always edit (modify) all the subsystem members affected by the changed line member.



AAA008-1

## Explanation of Displays

On the following displays for the asynchronous CNFIGICF procedure:

- All of the prompts that *can be displayed* to define an asynchronous line member are shown on the displays and are described in the text. The prompts are shown for all the parameters that are needed either to create a new asynchronous configuration member or to change (edit), delete, or review an existing member.

*Note: The prompt lines that you **actually see** on succeeding displays depend on the task specified on display 1.0 and on the options that you select on other displays. Prompt lines that are not shown do not apply for the task or options previously selected.*

- For this set of example displays only, the values shown to the right of the prompts are:
  - Default values, supplied by the system. If the system provides a default value, that value is shown here. (You can enter a different value if you wish.)
  - Sample values, as typical examples. Note that once a value has been entered in a field, it becomes the default value for any related fields on the succeeding displays.

## Naming the Member and Selecting the Type

### Display 1.0 SSP-ICF Configuration Member Definition

On display 1.0, specify the name of the communications line configuration member you are creating or using in some way, and specify what is to be done with the member.

```
1.0          SSP-ICF CONFIGURATION MEMBER DEFINITION          W1

1. Configuration member name . . . . . ALN05
2. Library name . . . . . #LIBRARY
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
   Option . . . . . 1-5 3
4. Existing member name . . . . . ALN02
5. Existing member library name . . . . . #LIBRARY

Cmd7-End      Cmd19-Cancel
```

#### 1. Configuration member name

Enter the name that identifies this line configuration member. This name is used to store the line member in a library and is referenced in the subsystem configuration.

#### 2. Library name

Enter the name of the user library in which the line member is to be stored. The default is the library that you are currently using. For best results, do not store the member in the system library (#LIBRARY), because members you store in #LIBRARY may be lost if a release update is performed later.

*Note: The line member and the subsystem member must be in the same library.*

#### 3. Select one of the following:

1. *Create new member* lets you specify the configuration values for a new line member.
2. *Edit existing member* lets you view and/or change the values previously specified for a line member.

3. *Create new member from existing member* lets you use an existing line member as the basis for a new line member. You need change only those values necessary. The existing line member is unchanged by this option.
4. *Remove a member* lets you delete a line member from the library. Note that the definition is no longer available once it is removed. If any subsystem members reference the removed line member, an error occurs when you attempt to use the subsystem member.
5. *Review a member* lets you view the values specified for a line member. No changes can be made.

**4. Existing member name**

This prompt is displayed only if you select option 3 for prompt 3. Enter the name of the existing subsystem configuration member that is to be used to create the new member. (The existing member is not changed.)

**5. Existing member library name**

This prompt is displayed only if you select option 3 for prompt 3. Enter the name of the library that contains the existing member. The default is the library name specified for prompt 2.

**Display 2.0 SSP-ICF Configuration Member Type**

On display 2.0, specify the type of line member you want to define (or redefine).

```

2.0                SSP-ICF CONFIGURATION MEMBER TYPE                ASCLINE1    W1

Select one of the following options:
  1. INTRA
  2. BSC
  3. SNA
  4. Async
  5. PC Support/36

Option . . . . . 1-4 4

Cmd3-Previous display  Cmd7-End      Cmd19-Cancel

```

For an asynchronous communications support line member, specify option 4.

When you select option 4, *Async*, and press the Enter key, display 5.0 appears. On this display, you can select the type of asynchronous communications member you want to work with.

```
5.0                      ASYNC CONFIGURATION MEMBER TYPE                      ASCLINE1    W1
Async member type . . . . . 1,2,3 2
  1. Async subsystem member
  2. Async line member
  3. Async/X.25 line member

                               Cmd19-Cancel
                               COPR IBM Corp. 1986
```

**Async member type**

Specify the type of asynchronous communications member you want to work with. Refer to the *Using System/36 Asynchronous Communications Support* manual for information on configuring an asynchronous communications subsystem (option 1 on display 5.0). If you select option 2 or 3, display 12.1 appears.

In this example, specify option 2, *Async line member*.

## Defining the Line Member

### Display 12.1 Async Line Member Attributes

On display 12.1, enter information about the communications line that your asynchronous subsystem will use to communicate with a remote system.

```
12.1          ASYNC LINE MEMBER ATTRIBUTES          ASCLINE1  W1

1. Line rate (BPS) . . . . . 1200
  Choose one of the following:
      75          1200
     150         2400
     300         4800
     600         9600

2. Type of parity . . . . . 1-None,2-Odd,3-Even    1

3. Number of stop bits. . . . . 1,2                1

4. Number of retries . . . . . 1-255              016

5. Wait time for
   acknowledgment (seconds) . . . . . 1-65535      00010

Cmd3-Previous display      Cmd7-End          Cmd19-Cancel
```

#### 1. Line rate (BPS)

This prompt is not displayed for asynchronous/X.25 line members. Specify the line speed in bits per second. The default is 1200.

#### 2. Type of parity

This prompt is not displayed for asynchronous/X.25 line members. Specify the type of parity for error checking (a parity bit is a binary check digit inserted in each byte of data to make the arithmetic sum of all the digits, including the parity bit, always odd or always even). Enter a 1 for no parity, a 2 for odd parity, or a 3 for even parity. The parity that you specify must be the same as that specified by the remote station. The default is 1.

#### 3. Number of stop bits

This prompt is not displayed for asynchronous/X.25 line members. Specify the number of bits to be added to the end of each character. These bits are used to keep the local and remote ends of the line synchronized. The remote system must use the same number of stop bits as you specify here. Valid values are 1 or 2. The default is 1.

#### 4. Number of retries

Specify the number of times that System/36 will attempt to send or receive after an error has occurred before that error is considered permanent. This value applies only while you are using the file transfer subroutines. Enter a value from 1 through 255. The default is 16.

#### 5. Wait time for acknowledgment

Specify the length of time in seconds that System/36 will wait for an acknowledgment of a transmission before posting an error. This value applies only while you are using the file transfer subroutines. Valid values are from 1 through 65535. The default is 10.

### Display 12.2 Async Line Member Attributes

```
12.2          ASYNC LINE MEMBER ATTRIBUTES          ASCLINE1  W1
              Optional-*

1. Full duplex ? . . . . . Y,N Y
2. Local echo supported ? . . . . . Y,N N
3. Local XON/XOFF supported ? . . . . . Y,N N
4. Modem initialization command . . . . . *
5. Total number of remote systems . . . . . 1-64
6. X.25 configuration member name . . . . .

Cmd3-Previous display      Cmd7-End      Cmd19-Cancel
```

#### 1. Full duplex?

This prompt is not displayed if you are defining an asynchronous/X.25 line member. Specify whether data will be sent between System/36 and the remote system in both directions at the same time (full duplex). Specify a Y (yes) or an N (no). The default is Y.

You must specify a Y for the full duplex prompt if you specify a Y for either the *Local echo supported?* prompt or the *Local XON/XOFF supported/* prompt.

## **2. Local echo supported?**

This prompt is not displayed if you are defining an asynchronous/X.25 line member. Local echo causes System/36 to send back (echo) to the remote station all characters that it receives. Enter a Y or an N. The default is N.

Specify an N if you use this line member for file transfer to another System/36.

Specify a Y only if you are communicating with a remote terminal that requires echo. If you specify a Y for the Local echo prompt, you must also specify a Y for the full duplex prompt, and the line rate (specified on display 12.1) should be 2400 bps or less.

## **3. Local XON/XOFF supported?**

This prompt is not displayed if you are defining an asynchronous/X.25 line member. Local XON/XOFF causes the asynchronous communications line member to respond to the flow control characters XON and XOFF. If System/36 receives an XOFF character while sending data, it will automatically stop sending, and it will start sending data again only after receiving an XON character. Enter a Y or an N. The default is N.

Specify an N if you use this line member for file transfer to another System/36.

If you specify a Y for the local XON/XOFF prompt, you must also specify a Y for the full duplex prompt.

## **4. Modem initialization command**

This prompt is not displayed if you are defining an asynchronous/X.25 line member. Specify a character string to be sent to the modem to set the various modes or states for its operation. This character string is sent, exactly as entered, to the modem when the subsystem is enabled. See the modem documentation for the correct values. The default is no modem initialization data.

## 5. Total number of remote systems

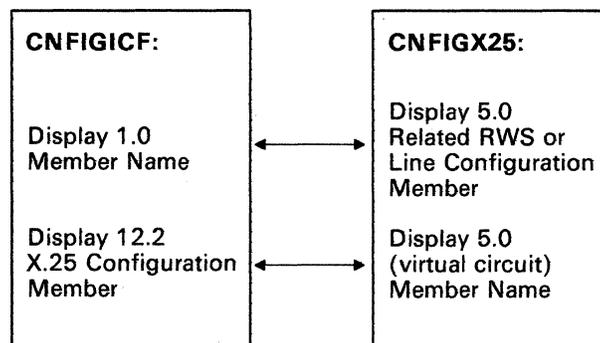
This prompt is displayed only if you are defining an asynchronous/X.25 line member. Enter a number from 1 through 64 that is the total number of remote systems that will communicate with this line member. You define remote systems on display 12.5. If you define fewer remote systems than the number specified on this prompt, the CNFIGICF procedure assigns the remainder as *generic remote systems*. They are used for remote stations that call your system. The remote systems must also be defined using the DEFINLOC procedure command (see “Using the DEFINLOC Procedure” later in this chapter for more information). For generic remote systems, no remote network address is required for the virtual circuit configuration.

The number that you specify for this prompt should be the sum of:

1. The number of remote systems that your system will call (you will name these systems on display 12.5)
2. The number of generic remote systems that you will allow to call your system at one time

## 6. X.25 configuration member name

This prompt appears only if you are defining an asynchronous/X.25 line member (option 3 on display 5.0). Specify the name of the X.25 virtual circuit configuration member that is associated with this asynchronous/X.25 line member. This configuration member contains X.25 information for each remote system you configure. You must define this configuration member using the CNFIGX25 procedure after you define the asynchronous/X.25 line member. See “Configuring for X.25 Support” later in this chapter for a description of the CNFIGX25 procedure. The following figure shows the relationship between the members created by the CNFIGICF and CNFIGX25 procedures.



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## Display 12.5 Remote System Selection

On display 12.5, enter information that defines the remote system. You may have to call someone at the remote location to get the remote system information.

For an asynchronous subsystem, you need only to define the remote system name.

```
12.5                REMOTE SYSTEM SELECTION                ASCLINE1  W1
1. Select from the following options:
   1-Create          4-Remove
Options . . . . .
2. Remote system name . . . . .

-----
OPTION  REMOTE SYSTEM    OPTION  REMOTE SYSTEM    OPTION  REMOTE SYSTEM    +
                                                                                                 +

Cmd7-End    Cmd8-Reset    Cmd19-Cancel    Roll-Page
```

On this display, you select the remote systems this subsystem communicates with. For an asynchronous line, you can define one remote system; for an asynchronous/X.25 line, you can define up to 64 remote systems.

For an asynchronous/X.25 line, the remote systems which you define by name will be used for outgoing calls to remote systems. If you define fewer than the total number of remote systems (specified in prompt 5 on display 12.2), the system automatically defines the remaining number as generic remote systems, assigning numerical station addresses to them. These station addresses are used for incoming calls from remote systems.

*Note: Before your system can accept an incoming call from a remote system, you must list its location name and local ID using the DEFINLOC procedure command. See "Using the DEFINLOC Procedure" later in this chapter for more information.*

All previously defined remote systems are listed. You may remove any of these remote systems by entering the correct option number in the column to the left of the remote system with which you want to work.

If no remote systems have been defined in the line member, the only option shown on display 12.5 is *1-Create*.

### 1. Select from the following options:

*1-Create* defines a new remote system.

*4-Remove* deletes a remote system. It will no longer exist in this member.

### 2. Remote system name

Enter the name you are using to identify the remote system. Then when you create a subsystem member that will use this line member and you want to include this remote system in the communications network, enter this remote system name on the *Select remote system name* prompt on display 29.0.

The plus signs (+) on the right side of the display indicate additional pages of remote systems. If a plus sign is on the top line, you can use the Roll Down key to display more remote systems at the top of the list. If a plus sign is on the bottom line, you can use the Roll Up key to display more remote systems at the bottom of the list.

## Configuring for X.25 Support

This section describes how to define and maintain the X.25 environment for the asynchronous subsystem using X.25 protocol.

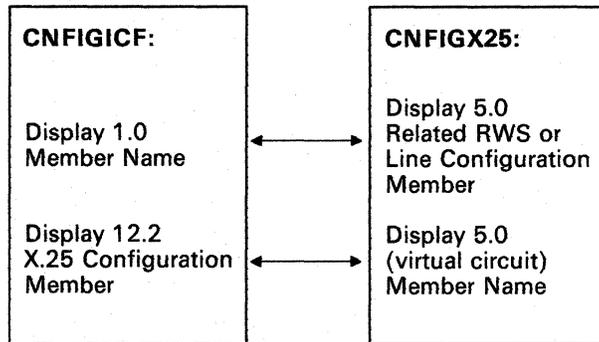
For an overview of X.25 communications, see the manual *Data Communications Concepts*.

This section assumes that you have already installed the asynchronous communications support and performed the CNFIGSSP and CNFIGICF procedures.

To define and maintain the X.25 environment, you use the following X.25 procedures.

- **CNFIGX25 Procedure (X.25 Configuration Utility):** Defines the X.25 network configuration, logical channel configuration, and virtual circuit configuration.

An asynchronous/X.25 line member is linked to an X.25 configuration member through common names. The *member name* specified on CNFIGICF display 1.0 during line member configuration must be the same as the *Related RWS or line configuration member* specified on CNFIGX25 display 5.0. Also, the *X.25 configuration member* specified on CNFIGICF display 12.2 must be the same as the virtual circuit *member name* specified on CNFIGX25 display 5.0. See the following figure.



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- **DEFINLOC Procedure:** Lets you create and maintain a list of the remote locations that are allowed to call your system.
- **MAINTX25 Procedure (X.25 Maintenance Utility):** Displays information about the X.25 links and lets you change certain virtual circuit parameters for active X.25 configurations.

*Note: You perform the CNFIGX25, MAINTX25, or DEFINLOC procedures **only** for an asynchronous/X.25 configuration, which uses X.25 support to communicate with a remote station directly through a PSDN. You do not need to perform these procedures for an asynchronous configuration without X.25 support.*

For more information on the CNFIGX25 procedure and the MAINTX25 procedure, refer to Chapter 4, "Defining and Maintaining an X.25 Configuration."

## Using the DEFINLOC Procedure

You use the DEFINLOC procedure to set up a list of the names and location IDs of remote locations that you allow to call your subsystem (an asynchronous subsystem using X.25 support only).

When your subsystem receives a connect request, the system checks the location ID of the calling system. If the location ID and location name are listed in DEFINLOC, the call is accepted; otherwise, the call is rejected. If the call is accepted, the remote system is connected through an available logical channel and assigned to a generic remote system.

When you use the DEFINLOC procedure, you enter information on a set of displays. From the DEFINLOC Main menu, you can choose to look at a list of locations already entered, add new locations, change (update) existing locations, or delete locations.

To start, enter the DEFINLOC procedure command, which has no parameters. The following menu appears:

```
1.0                                REMOTE LOCATION DEFINITION
```

```
Select one of the following options:
```

1. Display the remote locations
2. Add remote locations
3. Update remote locations
4. Delete remote locations

```
Option: _
```

```
Cmd7-End
```

```
COPR IBM Corp. 1986
```

**Select one of the following options:**

1. *Display the remote locations* to see the Display Remote Locations display shown in Figure 11-1.
2. *Add remote locations* to see the Add Remote Locations display shown in Figure 11-2.
3. *Update remote locations* to see the Update Remote Locations display shown in Figure 11-3.
4. *Delete remote locations* to see the Delete Remote Locations display shown in Figure 11-4.

On this display, you can view the remote location name, the location ID, and any comments entered about the location:

```
1.1          DISPLAY REMOTE LOCATIONS
To reposition list, type location name, press Cmd2.
ITEM          CHOICE    POSSIBLE CHOICES
Location name. . . . . Name of location to find

LOCATION      ID          LIST OF LOCATIONS
                        COMMENTS

Cmd2=Scan   Cmd7=End   Cmd19=Cancel   Roll=Page           COPR IBM Corp. 1986
```

Figure 11-1. Display Remote Locations Display

On this display, you can add new locations (name, ID, and comments):

```
1.2          ADD REMOTE LOCATIONS
Type remote location information, press Enter.
LOCATION      ID          COMMENTS

Cmd2=Scan   Cmd7=End   Cmd19=Cancel   Roll=Page           COPR IBM Corp. 1986
```

Figure 11-2. Add Remote Locations Display

On this display, you can update the remote location IDs and comments:

```
1.3                      UPDATE REMOTE LOCATIONS
To reposition list, type location name, press Cmd2.
ITEM                      CHOICE    POSSIBLE CHOICES
Location name. . . . .    Name of location to find

                      LIST OF LOCATIONS
Or type changes, press Enter.
LOCATION      ID      COMMENTS

Cmd2=Scan    Cmd7=End    Cmd19=Cancel    Roll=Page                COPR IBM Corp. 1986
```

Figure 11-3. Update Remote Locations Display

On this display, you can delete the existing remote locations:

```
1.4                      DELETE REMOTE LOCATIONS
To reposition list, type location name, press Cmd2.
ITEM                      CHOICE    POSSIBLE CHOICES
Location name. . . . .    Name of location to find

                      LIST OF LOCATIONS
Or type 'D' to delete a location, press Enter.
LOCATION      ID      COMMENTS

Cmd2=Scan    Cmd7=End    Cmd19=Cancel    Roll=Page                COPR IBM Corp. 1986
```

Figure 11-4. Delete Remote Locations Display



## Chapter 12. File Transfer Subroutines

The file transfer subroutines (FTS) allow a user application program to send or retrieve entire data files and library members from one System/36 to another. Two subroutines exist: SUBRF1, for Assembler and COBOL programs, and SUBRF2, for RPG II programs.

The file transfer subroutines allow communications with the APPC, asynchronous communications, BSCEL, or Peer subsystems. File transfer subroutines have a maximum user record length of 4075 and a minimum of 256. With BSCEL and Peer, you can configure the maximum user record length. However, with APPC and asynchronous communications, the maximum user record length is always used.

*Note: When you are using the asynchronous communications support, your modem has to be set to full duplex.*

The application program that calls the file transfer subroutines may either send a data file or library member or retrieve one from the remote location. The *target system* receives the file or library member. Thus, if system A in Figure 12-1 sends a data file to system B using the file transfer subroutines, system B is the target system; if system A retrieves a data file from system B using the file transfer subroutines, system A is the target system.

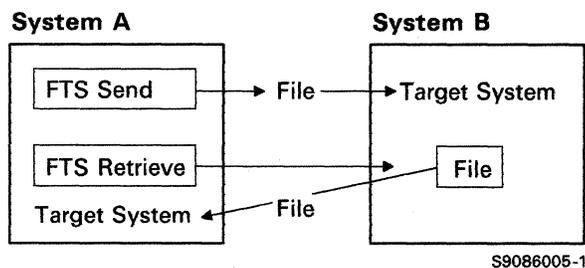


Figure 12-1. Example of File Transfer Subroutines

# Calling the File Transfer Subroutines

## Assembler

When you call the SUBRF1 subroutine from an Assembler program, you must use the EXTRN instruction to indicate that SUBRF1 is an external subroutine. A parameter list must be defined in the application program. The parameters must be listed in the order in which they are listed under the topic "File Transfer Subroutine Parameters" later in this chapter. See the example that follows.

```

*          ASSEMBLER MODULE MAIN CALLS FILE TRANSFER SUBROUTINE (SUBRF1)
*
MAIN      EXTRN   SUBRF1
          START   X'0000'
.
.
          B       SUBRF1          Call file transfer subroutine
          DC      AL2(PLIST)      Parameter list
                                   Control returns here after SUBRF1 execution
.
.
*          Parameter list
PLIST     EQU     *
          DC      AL2(SAVA)      Address of save area
          DC      AL2(FCODE)     Address of first parameter
          DC      AL2(QUAL1)     Address of second parameter
          DC      AL2(QUAL2)     Address of third parameter
          DC      AL2(QUAL3)     Address of fourth parameter
          DC      AL2(QUAL4)     Address of fifth parameter
          DC      AL2(QUAL5)     Address of sixth parameter
          DC      AL2(QUAL6)     Address of seventh parameter
          DC      AL2(REPL)      Address of eighth parameter
          DC      AL2(LOCNAM)    Address of ninth parameter
          DC      AL2(PWORD)     Address of tenth parameter
          DC      AL2(RCODE)     Address of eleventh parameter
          DC      AL2(ERRMIC)    Address of twelfth parameter
          DC      AL2(APPN)      Address of thirteenth parameter
          DC      XL2'FFFF'      End of parameter list indicator
.
.
*          Parameters
FCODE     EQU     *
          DS      XL1
QUAL1     EQU     *
          DS      XL8
QUAL2     EQU     *
          DS      XL6
QUAL3     EQU     *
          DS      XL8
QUAL4     EQU     *
          DS      XL8
QUAL5     EQU     *
          DS      XL6
QUAL6     EQU     *
          DS      XL8
REPL      EQU     *
          DS      XL1
LOCNAM    EQU     *
          DS      XL8
PWORD     EQU     *
          DS      XL4
RCODE     EQU     *
          DS      XL1
ERRMIC    EQU     *
          DS      XL8
APPN      EQU     *
          DS      XL1
.
.
*          Save area
SAVA-DC-XL1'B0'-Indicator byte - calling program is Assembler
          DC      CL6'MAIN'      Calling program's name
          END      MAIN

```



## File Transfer Subroutine Parameters

### *FCODE*

This 1-character field contains the file transfer function to be performed. This field is required. Valid values are as follows:

- S: Send a data file or library member to the remote system.
- R: Retrieve a data file or library member from the remote system.

### *QUAL1 through QUAL6*

These six fields tell the system whether you want to transfer a data file or a library member. They also allow you to give the data file or library member a different name on the target system.

General rules for naming data files, libraries, and library members are in the *System Reference* manual.

Figure 12-3 shows the meanings of the qualifiers for data files.

Figure 12-4 shows the meanings of the qualifiers for library members.

Qualifier	Value	Description
QUAL1	File name	The name of the data file (1 to 8 characters long). <b>This field is required.</b> Do not specify a group file name.
QUAL2	File date	The 6-digit decimal field representing the creation date of the file. This field is optional. If you do not specify a file date and more than one file exists with the specified name, the most recent file is used. The format of the file date must be the same as your system date format. If you use this field, make sure the system date format on the remote system is the same as the format on your system.
QUAL3	Blank	This field must be left blank.
QUAL4	Target file name	The name of the data file (1 to 8 characters long) at the target system. This field is optional. <ul style="list-style-type: none"> <li>• If you are replacing a file (REPL=Y), this is the name of the file to be replaced at the target system.</li> <li>• If you are adding a new file, this is the name to be assigned to the new file.</li> <li>• If you do not specify a target file name, the file name from QUAL1 is assumed.</li> </ul>
QUAL5	Target file date	The creation date (6 decimal digits long) of the file at the target system. This field is optional. The format of the file date must be the same as your system date format. If you use this field, make sure the system date format on the remote system is the same as the format on your system. <ul style="list-style-type: none"> <li>• If you are replacing a file (REPL=Y), this is the creation date of the file to be replaced at the target system.</li> <li>• If you are adding a new file, this is the date to be assigned to the new file.</li> <li>• If you do not specify a target file date, the file date from QUAL2 is assumed.</li> </ul>
QUAL6	Blank	This field must be left blank.

Figure 12-3. Qualifiers for Data Files

Qualifier	Value	Description
QUAL1	Library name	The name (1 to 8 characters long) of the library in which the member can be found. <b>This field is required.</b>
QUAL2	Library member type	Valid values are SOURCE, PROC (procedure), LOAD, and SUBR (subroutine). <b>This field is required.</b>
QUAL3	Library member name	The name of the library member (1 to 8 characters). <b>This field is required.</b>
QUAL4	Target library name	The name (1 to 8 characters long) of the library in which the member is to be stored. This field is optional. If you do not specify a target library name, the value from QUAL1 is assumed.
QUAL5	Blank	This field must be left blank.
QUAL6	Target library member name	The name (1 to 8 characters long) of the library member at the target system. This field is optional. <ul style="list-style-type: none"> <li>• If you are replacing a library member (REPL = Y), this is the name of the member to be replaced at the target system.</li> <li>• If you are adding a new library member, this is the name to be assigned to it.</li> <li>• If you do not specify a target library member name, the value from QUAL3 is assumed.</li> </ul>

Figure 12-4. Qualifiers for Library Members

#### *REPL*

This 1-character field tells whether or not you want to replace the data file or library member on the target system. Valid values are as follows:

*Y*: Replace an existing data file or library member on the target system.

*N*: Do not replace an existing data file or library member; indicate an error condition to the user if the file or member already exists.

The default is *N*.

*Note: If you specify REPL = Y for a library member, the library containing that member cannot be used for any other operation during the replace operation.*

#### *LOCNAM*

This 8-character name contains the name of the remote location with which you are communicating. This should be the same as the remote location name specified in display 29.0 of the CNFIGICF procedure.

#### *PWORD*

This 4-character field contains the password for signing on the remote system. This field is required only if the remote system has password security active.

### *RCODE*

This 1-character field contains the return code. The subroutine returns this value to the application program to indicate the result of the file transfer. Valid values are as follows:

- 0: Normal completion.
- 1: An error was detected at the local system.
- 2: An error was detected at the remote system.

For return codes 1 and 2, the specific error is logged to the history file of both systems, and the message identifier code (MIC) is returned to the user in the **ERRMIC** field.

### *ERRMIC*

If the value returned in the **RCODE** field is 1 or 2 (indicating an error), then this 8-character field contains the MIC for the specific error. (See the topic on “File Transfer Subroutine Messages” in this chapter.)

### *APPN*

This 1-character field tells whether or not you want to use the APPN capabilities of finding a remote location even though it may not be an adjacent node.

- Y: Allows APPN capabilities.
- N: Does not allow APPN capabilities.

The default is N.

## File Transfer Subroutine Messages

Messages returned by the file transfer subroutines contain the characters FTS as the first 3 characters. Refer to the *System Messages* manual for messages not listed here.

**FTS --1001    FTS started with [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support has begun an SSP-ICF session with the specified remote location.

**FTS --1002    FTS ended with [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support has ended the SSP-ICF session with the specified remote location. The transaction has completed normally.

**FTS --1003    FTS ended due to error with [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support has encountered an error which has caused the session with the remote system to be terminated. A previous message indicates the specific type of error encountered.

**FTS --1004    FTS could not be started ([ICF return-code])**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support tried to establish a session with a remote system. However, the session could not be started. The SSP-ICF return code given in the message indicates the specific error encountered. Refer to the appropriate SSP-ICF subsystem reference manual for a description of this return code.

**FTS --1005    FTS canceled by system operator**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** A user application program running the file transfer subroutine has been canceled by an operator at the system console. The transaction with the remote system has abnormally ended.

**FTS --1006    Permanent session error ([ICF return-code])**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support has encountered a permanent SSP-ICF session error. The session has abnormally terminated. The SSP-ICF return code given in the message indicates the specific error encountered. Refer to the appropriate SSP-ICF subsystem reference manual for a description of this return code.

**FTS --1007    Remote system error ([error-MIC])**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was communicating with a remote system and received an indication that the remote system detected an error. The session has been terminated. The specific error detected is given in the message and refers to the error message displayed at the remote system. Refer to the appropriate message guide to get a description of the error that caused the remote system to terminate the session.

**FTS --1008    #FTS cannot be started from the job queue/display station**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The IBM-supplied procedure #FTS can only be run through the use of the file transfer subroutine support. Any other use causes unpredictable results.

**FTS --1009    #FTS cannot be evoked by a user application**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The IBM-supplied procedure #FTS can only be evoked through the file transfer subroutine support. A user cannot try to explicitly evoke this procedure.

**FTS --1010    Received [data set name] FROM [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support on your system has successfully received a file or library member from the specified remote location. This is either the result of a retrieve request by your system or a send request from another system. The name of the file or member in the message consists of one to three parts separated by commas. If the name has one or two parts, it is a file name; if the name has three parts, it is a member name.

**FTS --1011    Sent [data set-name] to [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support on your system has successfully sent a file or library member to the specified remote location. This transaction is either the result of a send request to a remote system, or a retrieve request received from a remote system. The name of the file or member in the message consists of one to three parts separated by commas. If the name has one or two parts, it is a file name; if the name has three parts, it is a member name.

**FTS --1012    Error receiving [data set-name] from [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support encountered an error while receiving a file or library member from the specified remote location. A previous message indicates the specific error encountered. The file or member was not added or replaced on your system. The name of the file or member in the message consists of one to three parts separated by commas. If the name has one or two parts, it is a file name; if the name has three parts, it is a member name.

**FTS --1013    Error sending [data set-name] to [location-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support has encountered an error while sending a file or library member to the specified remote location. A previous message indicates the specific type of error encountered. The file or member was not completely sent. The name of the file or library member in the message consists of one to three parts separated by commas. If the name has one or two parts, it is a file name; if the name has three parts, it is a member name.

**FTS --1014    FTS has abnormally terminated**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support has abnormally terminated. A previous message indicates the specific error encountered during the SSP-ICF session. The session has been terminated.

**FTS --1020    [function-code] is an invalid function code**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid function code passed by a user program. The invalid code is given in the message. Valid codes are S for send a file or member, and R for retrieve a file or member. All other codes are considered invalid. The request was rejected and the session terminated.

**FTS --1021 [file-name] is an invalid file name**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid file name given as the first or fourth qualifier on a send or retrieve file request. This means either the file name contained characters other than A through Z, 0 through 9, #, \$, @, or &; or the first character of the file name is not alphabetic (A through Z, #, \$, or @). Also, the file name cannot be the word ALL. The request was rejected and the session terminated.

**FTS --1022 [library-name] is an invalid library name**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid file name given as a first qualifier on a send or retrieve file request. This means either the file name contained characters other than A through Z, 0 through 9, #, \$, @, or &; or the first character of the file name is not alphabetic (A through Z, #, \$, or @). Also, the file name cannot be the word ALL. The request was rejected and the session terminated.

**FTS --1023 [file-date] is an invalid file date**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid file date given as the second or fifth qualifier on a send or retrieve file request. A valid file date is 6 numeric digits in your system date format. The request was rejected and the session terminated.

**FTS --1024 [member-type] is an invalid member type**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid member type given as the second qualifier on a request to send or retrieve a library member. The second qualifier specifies the library member type and must be either SOURCE for source members, PROC for procedure members, LOAD for load members, or SUBR for subroutine members. The request was rejected and the session terminated.

**FTS --1025** [member-name] is an invalid member name

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid library member name given as the third or sixth qualifier on a send or retrieve library member request. This means that either the library member name contains characters other than A through Z, 0 through 9, #, \$, @, or &; or the first character of the library member name is not alphabetic (A through Z, #, \$, or @). Also, the library member name cannot be the reserved words ALL, DIR, NEW, or SYSTEM. The request was rejected and the request terminated.

**FTS --1026** [replace-option] is an invalid replace option

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support detected an invalid replace option passed by a user program. The invalid option is given in the message. Valid options are Y for replace existing file or member, and N for do not replace an existing file or member. If no value was given, N will be used as the default option. The request was rejected and the session terminated.

**FTS --1027** Cannot send folder [folder-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a file to a remote system. However, the name specified in the message is the name of a folder, and the file transfer subroutine does not support the sending of folders. The session has been terminated.

**FTS --1028** Cannot replace folder [folder-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to replace a file on your system. However, the name specified in the message is the name of a folder on your system, not a file. The file transfer subroutine does not allow a folder to be replaced by a file. The session has been terminated.

**FTS --1029    Cannot send remote file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a file to a remote system. However, the file specified in the message does not exist on your system; it is identified in your system's network resource directory as a remote file. The file transfer subroutine does not support the sending of remote files. The session has been terminated.

**FTS --1030    File [file-name] already exists**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the file specified in the message already exists on your system, and the REPLACE-Y option has not been specified for this transaction. The session has been terminated.

**FTS --1031    File [file-name] is in use**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to either send a file to a remote system or replace a file on your system. However, the file specified in the message is currently being updated by another program. The session has been terminated.

**FTS --1032    Not enough space to create file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, there is insufficient disk space to create the file specified in the message. The session has been terminated. To create more disk space on your system, you can run the COMPRESS procedure to create more contiguous space, delete unneeded files, or save seldom used files on diskette.

**FTS --1033 VTOC is full; cannot create file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the disk VTOC is full, and the file specified in the message cannot be added to your system. The session has been terminated. To make room for new files, you can save seldom used files on diskette and delete them from disk, or run the CNFIGSSP procedure to increase the number of VTOC entries allowed on your system.

**FTS --1034 User [user-ID] not authorized to access file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to either send a file to a remote system or replace a file on your system. However, the user specified in the message is not allowed to use the file. The session has been terminated.

**FTS --1035 File [file-name] cannot be allocated ([error-MIC])**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a file to a remote system or to receive a file from a remote system. However, the file specified in the message could not be allocated. The session has been terminated. The code in the message refers to a system message number indicating the specific error encountered during file allocate. Refer to the *System Messages* manual for a description of this error.

**FTS --1036 File [file-name] not found**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a file to a remote system. However, the file cannot be found on your system. The session has been terminated.

**FTS --1037 File [file-name] cannot be opened ([error-MIC])**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a file to a remote system or to receive a file from a remote system. However, the file specified in the message cannot be opened. The session has been terminated. The code in the message refers to a system message number indicating the specific error encountered during file open. Refer to the *System Messages* manual for a description of this error.

**FTS --1038 Disk error while opening file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a file to a remote system or to receive a file from a remote system. However, the file specified cannot be opened because a disk I/O error occurred during disk file open. The session has been terminated. Use the BUILD procedure to try to correct the error on disk.

**FTS --1039 Cannot send library [library-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a file to a remote system. However, the name specified is a library on your system, not a file. The file transfer subroutine does not send libraries. The session has been terminated.

**FTS --1040 Cannot send alternative index file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a file to a remote system. However, the file specified in the message is an alternative index file, and the file transfer subroutine does not send this type of file. The session has been terminated.

**FTS --1041 Disk error while creating file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, a disk I/O error occurred while writing to this file. The session has been terminated. If a new file was being added to your system, the partial file was deleted. If a file was being replaced, only part of the file was replaced.

**FTS --1042 Disk error while reading file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a file to a remote system. However, a disk I/O error occurred while the file was being read. The file was not completely sent, and the session was terminated. Use the BUILD procedure to try to correct the error on disk.

**FTS --1043 File [file-name] is full**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to replace a file on your system. However, the file became full before all data could be replaced. This means either the file was not extendable or there was not enough disk space to extend the file. The session has been terminated. You can run the COMPRESS procedure to create more contiguous disk space, delete unneeded files, or save seldom used files on diskette. To correctly replace the file, delete the file being replaced on your system, and let your remote system attempt to replace it again.

**FTS --1044 Record length for file [file-name] does not match definition**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the file specified in the message is externally described and the file's record length is different from the record length specified by the file definition in the dictionary. The record length of the file must match the file definition in order for the file to be linked to its associated dictionary. The session has been terminated.

**FTS --1045    File level for file [file-name] does not match definition**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the file specified in the message is externally described and the change level of the file definition differs from the change level of the definition at the source system. This means that the definition or dictionary at your system has been changed in some way that does not match that of the source system. The session has been terminated.

**FTS --1046    Dictionary or definition not found for file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a file to a remote system or to receive a file from a remote system. However, the file specified in the message is externally described and its dictionary or file definition was not found on the system. When an externally described file is sent by file transfer to a remote system, its associated dictionary name and file definition name are also sent. When this type of file is received, it is automatically linked to the same dictionary and file definition. Because the file could not be linked to its associated dictionary or definition, the session has been terminated.

**FTS --1047    Dictionary or definition is in use for file [file-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the file specified in the message is externally described and its dictionary or file definition is currently being updated by another program. When this type of file is received, it is automatically linked to its dictionary and file definition, and it requires dedicated use of these resources. The session has been terminated.

**FTS --1048 Dictionary for file [file-name] cannot be opened  
[MIC-number]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the file specified in the message is externally described and its dictionary could not be opened. The session has been terminated. The code in the message refers to a system message number indicating the specified error encountered while the system was trying to open the dictionary. Refer to the *System Messages* manual for a description of this error.

**FTS --1049 File [file-name] exists as a remote file**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a file from a remote system. However, the file specified in the message does not exist on your system; it is identified in your system's network resource directory as a remote file. A local file cannot be created with the same name as a file defined at your system as a remote file. Also, the file transfer subroutines cannot replace a file defined as a remote file on your system. The session has been terminated.

**FTS --1050 Library [library-name] not found**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a library member to a remote system or to replace a library member on your system. However, the library name specified for the transaction could not be found on your system. The session has been terminated.

**FTS --1051 User [user-ID] not authorized to access library  
[library-name]**

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a library member to a remote system or to replace a library member on your system. However, the user specified in the message is not allowed to use this library. The session has been terminated.

**FTS --1052** [member-type]-[member-name] already exists in library  
[library-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a library member from a remote system. However, the member of the specified type already exists in this library, and the REPLACE-Y option has not been specified for this transaction. The session has been terminated.

**FTS --1053** [member-type]-[member-name] not found in library  
[library-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a library member to a remote system. However, the member of the specified type was not found in this library. The session has been terminated.

**FTS --1054** Not enough space in library [library-name] to create  
[member-type]-[member-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a library member from a remote system. However, there is not enough disk space allocated for this library to add the member. The session has been terminated. You can make more space available by removing unnecessary members using the REMOVE procedure and then running the CONDENSE procedure, or by increasing the space allocated for this library with the ALOCLIBR procedure.

**FTS --1055** Directory full; cannot create  
[member-type]-[member-name] in library  
[library-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to receive a library member from a remote system. However, there is not enough space in the library directory to contain the entry for the member given in the message. The session has been terminated. You can make more space available in the directory either by removing unnecessary members using the REMOVE procedure or by increasing the directory size using the ALOCLIBR procedure.

**FTS --1056** [member-type]-[member-name] in library  
[library-name] is in use

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested either to send a library member to a remote system or to replace a library member on your system. However, the member of the specified type in the message is currently being updated by another program. The session has been terminated.

**FTS --1057** [member-type]-[member-name] in library  
[library-name] is an IBM member

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send a library member to a remote system. However, the file transfer support does not allow the sending or receiving of IBM-supplied members. The session has been terminated.

**FTS --1058** Disk error while opening  
[member-type]-[member-name] in library  
[library-name]

**Severity:** N/A

**Auto Response:** N/A

**Explanation:** The file transfer subroutine support was requested to send or receive a library member from a remote system. However, a disk error occurred while the system was reading the directory of the member in the specified library. The session has been terminated. The disk could be defective, or there could be a problem in the disk I/O control handler. The library cannot be used with an error in the directory. You should rebuild the library using the RELOAD or RESTLIBR procedure if it is the system library, or the BLDLIBR or RESTLIBR procedure if it is a user library.

**FTS --1059    Disk error while closing**  
**[member-type]-[member-name] in library**  
**[library-name]**

**Severity: N/A**

**Auto Response: N/A**

**Explanation:** The file transfer subroutine support was requested to send or receive a library member from a remote system. However, a disk error occurred while the system was writing the directory of the member in the specified library. The session has been terminated. The disk could be defective, or there could be a problem in the disk I/O control handler. The library cannot be used with an error in the directory. You should rebuild the library using the RELOAD or RESTLIBR procedure if it is the system library, or using the BLDLIBR or RESTLIBR procedure if it is a user library.

**FTS --1060    [APPN-option] is an invalid APPN option**

**Severity: N/A**

**Auto Response: N/A**

**Explanation:** The file transfer subroutine support detected an invalid APPN option passed by a user program. The invalid option is given in the message. Valid options are Y for using APPN capabilities, and N for not using APPN capabilities. If no value was given, N will be used as the default option. The request was rejected and the session terminated.

## Chapter 13. Configuring for PC Support/36

PC Support/36 is a subsystem that allows you to perform the following functions:

- Use disk storage on the System/36 the same way you would use personal computer disk storage, by using the virtual disk facility.
- Use disk storage in the form of a folder, by using the shared folders facility.
- Use printers attached to the System/36 the same way you would use a personal computer printer, by using the virtual printer facility.
- Transfer data from the System/36 to the personal computer, and from the personal computer to the System/36, by using the transfer facility.
- Send and receive messages, by using the message facility.
- Use both host and PC applications, eliminate the need for the hot key, and customize a menu (using SDA), by using the organizer menu.

For more information about each of these functions, see the *PC Support/36 User's Guide*.

### Defining a PC Support/36 Configuration Member

Before PC Support/36 can be started on a Token-Ring Network (TRN) line, you must define a PC Support/36 subsystem member on the System/36 using the CNFIGICF procedure.

Multiple PC Support/36 configuration members can be created and stored in the system, and more than one PC Support/36 configuration can be active and in use at the same time. Each of the PC Support/36 configurations made active must be enabled on different TRN lines.

*Note:* A line member does not have to be defined for PC Support/36.

Refer to Chapter 3, "Configuring for Communications," for more information about configuring PC Support/36. Refer to the appropriate personal computer manual to configure your personal computer.

## Display 1.0 SSP-ICF Configuration Member Definition

```
1.0          SSP-ICF CONFIGURATION MEMBER DEFINITION          W1

1. Configuration member name . . . . . PCSSUB
2. Library name . . . . . #LIBRARY
3. Select one of the following:
   1. Create new member
   2. Edit existing member
   3. Create new member from existing member
   4. Remove a member
   5. Review a member
   Option . . . . . 1-5 3
4. Existing member name . . . . .
5. Existing member library name . . . . . #LIBRARY

Cmd7-End      Cmd19-Cancel
```

### 1. Configuration member name

Specify the name that identifies this configuration of the subsystem. This subsystem member name is used to store the subsystem configuration member in a library, and it is also used in the ENABLE and DISABLE procedures to start and stop the subsystem. PCSSUB is used in this example.

### 2. Library name

Specify the name of the library in which the subsystem member is to be stored. The default is the current user library.

### 3. Select one of the following:

For example, if you are *creating* a new PC Support/36 subsystem member, select option 1.

### 4. Existing member name

This prompt is displayed only if you selected option 3 for prompt 3. Enter the name of the existing subsystem member that is to be used to create the new member. (The existing member is not changed.)

### 5. Existing member library name

This prompt is displayed only if you selected option 3 for prompt 3. Enter the name of the library that contains the existing member. The default is the library name specified for prompt 2.

## Display 2.0 SSP-ICF Configuration Member Type

```
2.0                      SSP-ICF CONFIGURATION MEMBER TYPE          PCSSUB  W1
Select one of the following options:
  1. INTRA
  2. BSC
  3. SNA
  4. Async
  5. PC Support/36

Option: 5

Cmd3-Previous display      Cmd5-Restart CNGIGICF
                          Cmd19-Cancel
                          COPR IBM Corp. 1986
```

On this display, select the type of configuration you are working with.  
Because you are defining a subsystem for PC Support/36, select option 5.

## Display 19.0 PC Support/36 Subsystem Member

```
19.0          PC SUPPORT/36 SUBSYSTEM MEMBER          PCSSUB  W1

1. Maximum number of PCs . . . . . 1-50  1
2. Source service access point (SSAP) value . . . . . 0C

Cmd5-Restart CNFIGICF          Cmd7-End
Cmd19-Cancel

COPR IBM Corp. 1986
```

On this display, you specify the maximum number of personal computers that you will be communicating with and your service access point value.

### 1. Maximum number of PCs

Specify the number (from 1 to 50) of personal computers you are planning to communicate with. This prompt is used to control the number of users on the system.

### 2. Source service access point (SSAP) value

Specify the hexadecimal logical channel address used for routing to System/36 functions. This value must be non-zero, divisible by 4, and must match the remote system's destination service access point (DSAP) that you specified on the TRLI entry of the configuration file on the personal computer. It is recommended that you specify values from hex 04 through hex EC; the default for this prompt is hex 0C. The value specified for the SSAP must be different for each subsystem or function sharing the same line.

## Starting and Stopping PC Support/36

### Enabling PC Support/36

After you have configured the PC Support/36 subsystem, you must enable (start) the subsystem configuration that you want to use.

The ENABLE procedure command performs the following functions for PC Support/36:

- Ensures compatibility between the configuration and the communications hardware
- Determines whether the requested communications line is available
- Loads the PC Support/36 subsystem support if it is not already active
- Loads the configuration information for PC Support/36 for that line

Refer to Chapter 6, “Starting and Stopping Communications Subsystems,” for information about the ENABLE procedure command.

To automatically enable PC Support/36 at the time of the initial program load (IPL), refer to the description of the #STRTUP2 procedure in the *System Reference* manual.

## Disabling PC Support/36

You must use the DISABLE procedure command to stop PC Support/36. When PC Support/36 is disabled, it no longer exists in the TRN environment.

The DISABLE procedure command performs the following functions for PC Support/36:

- If no conversations (dialogs between systems) are active for the line being disabled, disables the PC Support/36 subsystem and frees the main storage being used. Also, if PC Support/36 is not active on another line, terminates the subsystem support.
- If no conversations are active between PC Support/36 and the personal computer being disabled, terminates communications with a personal computer. To disable one personal computer, specify to disable one personal computer location. This location name is determined by the TRLN entry in the configuration file on the personal computer.
- If conversations are active between PC Support/36 and a personal computer being disabled, issues a message to the operator who issued the DISABLE procedure command.
- If a disable request is pending (waiting to be performed) or is in progress, issues a message indicating that the operator can specify either that the subsystem or personal computer be immediately disabled (option 2) or that this DISABLE procedure command be canceled and the pending disable request be allowed to complete normally (option 3).

Refer to Chapter 6, "Starting and Stopping Communications Subsystems," for information about the DISABLE procedure command.

## Appendix A. X.25 Network Types by Country

The table in Figure A-1 shows, by country and network, the network type to specify on display 2.0, X.25 Network Configuration, when defining a network and logical channel configuration using the CNFIGX25 procedure. Refer to Chapter 4 for information on CNFIGX25.

For any network not shown in the table, specify network type A.

Country	Network	Type
Australia	AUSTPAC	D
Belgium	DCS	D
Denmark	DATAPAK	C
Israel	ISRANET	C
Italy	ITAPAC	D
Japan	DDX-P	B
Mexico	TELEPAC	C
Norway	DATAPAK	C
Singapore	TELEPAC	D
United Kingdom	SWITCHSTREAM 1	C
United States	TELENET	C

Figure A-1. X.25 Network Types by Country



## Appendix B. Considerations for CICS/VS and System/38

This appendix discusses the considerations needed to use System/36 APPC to communicate with a system that is running CICS/VS or with a System/38. The information is shown in a format familiar to the other system (CICS/VS or System/38). If you are intending to use System/36 APPC to communicate with a Displaywriter or another System/36, the information provided in Chapter 3, "Configuring for Communications" and Chapter 9, "Configuring for Advanced Program-to-Program Communications (APPC)" should suffice.

### ACF/NCP/VTAM Generation Considerations

ACF/NCP/VTAM generation consists of defining the parameters for peer-to-NCP transfers and NCP-to-System/36 (logical unit) transfers. The macroinstructions used for the definitions are GROUP, LINE, SERVICE, PU, and LU. The GROUP macroinstruction defines the characteristics of the nonswitched lines connected to the system; the LINE macroinstruction defines the characteristics for a particular line; the SERVICE macroinstruction defines the order in which the lines are to be serviced; the PU macroinstruction defines the physical unit; and the LU macroinstruction defines the logical unit sessions that can be active from the associated physical unit.

The nonswitched line and switched line considerations are presented separately.

The value supplied in response to prompt 8, *SSCP identification*, on the Remote System Attributes display (display 13.0) is the same value specified for SSCPID in the VTAM START procedure. If this line member is to be used for communications with multiple host systems (cross domain or multi-system networking), specify zeros in response to prompt 8.

When you define CICS to ACF/VTAM, you should include the following options on the VTAM APPL statement:

```
CICS APPL AUTH=(ACQ,VPACE),MODETAB=LOGMOD36,VPACING=7
```

**AUTH=(ACQ,VPACE)** ACQ is required to allow CICS to acquire LUTYPE 6 sessions. VPACE specifies that pacing is allowed for the intersystem flow.

**MODETAB=LOGMOD36** specifies the LOGMODE table to be used to associate each mode name with a set of parameters for the session to CICS/VS.

**VPACING=7** specifies the maximum number of normal flow requests that another logical unit can send on an intersystem session before a response is required.

Too low a value for VPACING can cause poor throughput because of the number of line turnarounds required; too high a value can cause excessive storage requirements.

## ACF/NCP/VTAM Generation for Nonswitched Lines

### Defining the GROUP Macroinstruction for NCP/VTAM

The GROUP macroinstruction defines characteristics of the type of communications that are to occur between NCP/VTAM and any of the attached physical units and logical units. The following illustrates an example of the GROUP macroinstruction as used for the System/36 definition:

```
SAMPGRP  GROUP      LNCTL=SDLC,
                   CLOCKING=EXT,
                   DIAL=NO,
                   DISCNT=NO,
                   DUPLEX=HALF,
                   ISTATUS=ACTIVE,
                   MAXDATA=265,
                   MAXOUT=7,
                   MODE=PRIMARY,
                   NRZI=YES,
                   PACING=(7,1),
                   PASSLIM=7,
                   POLLED=YES,
                   PUTYPE=2,
                   RETRIES=(5,1,2),
                   SPEED=9600,
                   SSCPFM=USSSCS,
                   TYPE=NCP,
                   USE=NCP,
                   VPACING=8
```

**LNCTL=SDLC** defines the type of line control that is to be used for this group. For APPC communications with a System/36, this value is always SDLC.

**CLOCKING=EXT/INT** specifies whether the modem or the system provides the data clock for the line. **CLOCKING=EXT** indicates that the modem must provide the data clocking; **CLOCKING=INT** specifies that the system must provide the data clocking.

**DIAL = YES/NO** defines the type of line as being a switched line (YES) or a nonswitched line (NO). The value specified here must correspond to the value entered for the *Line type* prompt on display 12.0 during System/36 line member configuration. If **DIAL = YES** is specified, 2 must be entered for the *Line type* prompt. If **DIAL = NO** is specified, 1 must be entered for the *Line type* prompt.

**DISCNT = YES/NO** specifies whether VTAM is to disconnect the physical unit when the last logical session ends. **DISCNT = NO** allows the communications link to remain active when no logical sessions are active; the physical unit is deactivated when the System/36 terminates the communications link. A session is terminated by the System/36 when ended by the user program. The communications link is terminated by the System/36 when a **DISABLE** procedure command ends communications.

**DISCNT = YES** indicates that when no sessions are active on the line (physical unit), NCP will automatically terminate the communications link.

**DUPLEX = HALF/FULL** specifies whether communications is to occur in a half-duplex or full-duplex mode. For the System/36, this parameter is specified as **DUPLEX = HALF**.

**ISTATUS = ACTIVE/INACTIVE** specifies whether the physical unit should be activated when the major node is activated (**ISTATUS = ACTIVE**) or activated by an operator command (**ISTATUS = INACTIVE**).

**MAXDATA = 265** specifies the maximum amount of data, including the transmission header and request/response header, that the physical unit can receive. The value specified, 265, defines a 256-byte buffer plus 9 bytes for the transmission header and request/response header.

**MAXOUT = x** specifies the number of frames that NCP will send to the System/36 before an SDLC response is requested. A value of 1 specifies that a response is required after every frame; a value greater than 1 specifies that no response is required until that number of frames have been sent. This value can affect performance on the communications link. A value of 7 is recommended to optimize performance; but a value less than 7 may be required due to buffer limitations at the system or a high line-error rate.

**MODE = PRIMARY** specifies that this is to be the primary station.

**NRZI = YES/NO** specifies whether the non-return-to-zero inverted data transmission method is to be used. The value specified for the **NRZI** parameter in the **SETCOMM** procedure command on the System/36 must match the value specified here.

**PACING = count** specifies how pacing is to be handled between NCP and all logical units in this group. The value specified here can affect performance of the communications link. It also depends on the amount of buffer space available at the system.

The value specified here should be the same as the value specified for the *Receive pacing value* prompt on the APPC Session Group Additional Options display (display 44.0) during subsystem configuration at the System/36.

**PASSLIM = value** specifies how many frames are to be sent to a station before NCP goes to the service order table to service one of the other stations on the line. PASSLIM and MAXOUT parameters work in conjunction to determine how frames are passed to a station. MAXOUT specifies how many frames are to be sent to a station before an SDLC response is requested. For example, if MAXOUT is 7, NCP will send seven frames to the station before a response is required. If PASSLIM is 2, NCP will send two frames to the station and then go to the service order table to service another station. Once seven frames have been sent to the first station, a response is requested from that station.

**POLLED = YES/NO** specifies whether NCP is to poll the physical units within this group. YES is specified for the nonswitched line example.

**PUTYPE = 2** specifies the type of physical units that are included in the group. Physical unit type 2 is required for the System/36.

**RETRIES = (value)** specifies the number of transmission error retries that are to be attempted.

**SPEED = value** specifies the minimum line speed in bps that is acceptable for this group.

**SSCPFM = USSSCS** specifies what type of messages will be used to communicate with VTAM. SSCPFM = USSSCS specifies character-coded messages using SCS characters as delimiters.

**TYPE = NCP** specifies the type of network control.

**USE = NCP** specifies that NCP is controlling the network.

**VPACING = value** specifies the rate of flow between the system and NCP. Based on the VPACING value, VTAM provides pacing to control the rate of flow between the system and NCP for a given logical unit. This value prevents NCP from being overloaded by path information units (PIUs) for a given LU when NCP is restricted as to how fast PIUs can be transmitted on the link. The value specified for VPACING is dependent on the rate of pacing between the NCP and remote LU and the speed of the link.

## Defining the LINE Macroinstruction for NCP/VTAM

The LINE macroinstruction is used to define the characteristics of a line within a group during NCP/VTAM generation. The following is an example of a LINE macroinstruction used to define a line to a System/36 during NCP/VTAM generation.

```
SAMPLNE  LINE      ADDRESS=028 ,
                PUTYPE=2 ,
                SPEED=9600 ,
                ISTATUS=ACTIVE
```

**ADDRESS = value** specifies the local address of the line for NCP/VTAM (the 3705 LIB address).

**PUTYPE = 2** specifies the type of physical units that are supported on the line. For APPC communications with a System/36, specify **PUTYPE = 2**.

**SPEED = value** defines the minimum speed in bps for the line.

**ISTATUS = ACTIVE/INACTIVE** specifies whether the line is to be activated when the NCP major node is activated (**ISTATUS = ACTIVE**) or activated by operator command (**ISTATUS = INACTIVE**).

## Defining the SERVICE Macroinstruction for a Multipoint Line

The SERVICE macroinstruction defines the order in which multiple devices on a multipoint line are to be serviced. This macroinstruction applies only if the System/36 is a station on a multipoint line and the line type parameter of the SETCOMM procedure command specified **MULTTRIB** for the System/36 communications line. The following is an example of the SERVICE macroinstruction:

```
SERVICE ORDER(SAMPPUA,SAMPPUB,...,SAMPPUX)
```

The SERVICE macroinstruction has only one parameter: **ORDER**. A sequence is defined for each multipoint line, with the order being a list of the names of the stations (physical units) in the order they are to be serviced. The list can be constructed in a manner that favors the more active stations on the line by specifying that station's name more than once in the list.

## Defining the PU (Physical Unit) Macroinstruction for NCP/VTAM

The System/36 must be defined during NCP/VTAM generation. Each communications line from the System/36 to the system is considered, by the system, to be a physical unit and requires a physical unit definition in the NCP/VTAM generation. The PU macroinstruction is used during NCP/VTAM generation to define the physical units. The following is an example of the PU macroinstruction as used to define the System/36.

```
SAMPPUA  PU  ADDR=C1
```

**ADDR = xx** specifies the SDLC station address of the System/36. The value specified here, as 2 hexadecimal digits, must be unique within the physical units definitions at the system. This value is used as the *Local system's station address* (prompt 5 on the SNA Line Member Attributes display) during line member configuration at the System/36.

### Defining the LU (Logical Unit) Macroinstruction for NCP/VTAM

Each communications session with NCP/VTAM corresponds to an SNA logical unit. A logical unit definition in the NCP/VTAM generation is required for each session. The following is an example of the LU macroinstruction as it applies to the System/36:

```
SAMPAPPC  LU      LOCADDR=01
              LOGAPPL=CICS
              MODETAB=LOGMOD36
```

**LOCADDR = address** specifies the local address of the session and is equivalent to a logical unit number. The value entered here identifies the logical unit that is to be assigned to APPC on the Remote System Logical Unit Assignments display (display 14.0) during line member configuration at the System/36.

**LOGAPPL = CICS** specifies that the name of the system that the logical unit will be attached to is CICS. This parameter is required for APPC because the explicit LOGON used for SNUF does not apply. This parameter tells VTAM that the logical unit being defined will communicate with CICS.

**MODETAB = LOGMOD36** specifies the name of the LOGMODE table to be used for APPC. For System/36 APPC-to-CICS/VS communications, the session group name defined at the System/36 on the Session Group Selection display (display 42.0) must have a matching MODEENT entry in the VTAM LOGMODE table. The following illustrates a LOGMODE table with one entry for APPC:

```
LOGMOD36 MODETAB
SAMPMODE MODEENT      LOGMODE=SAMPMODE
MODEEND
```

Note that CICS does not use the bind-image part of any VTAM LOGMODE entry for APPC.

## ACF/NCP/VTAM Generation for Switched Lines

The following is an example of generating ACF/NCP/VTAM for use with a System/36 on a switched line network. The first macroinstruction statement, VBUILD, must be specified as VBUILD=SWNET. Also note that the IDBLK and IDNUM parameters (in the PU macroinstruction) must be specified since this is a switched line.

```
SAMPSWA VBUILD TYPE=SWNET,
                MAXNO=5,
                MAXGRP=5
SAMPPUA PU      ADDR=C1,
                BATCH=NO,
                DISCNT=NO,
                IDBLK=03E,
                IDNUM=42721,
                MAXDATA=265,
                MAXOUT=7,
                PACING=(7),
                PASSLIM=7,
                PUTYPE=2,
                ISTATUS=ACTIVE,
                SSCPFM=USSSCS,
                VPACING=(7)
SAMPAPPC LU     LOCADDR=1,
                MODETAB=LOGMOD36,
                ISTATUS=ACTIVE
                LOGAPPL=CICS
SAMPLU2 LU      LOCADDR=2,
                ISTATUS=ACTIVE
SAMPLU3 LU      LOCADDR=3,
                ISTATUS=ACTIVE
SAMPLU4 LU      LOCADDR=4,
                ISTATUS=ACTIVE
```

The following describes the parameters within the PU macroinstruction that are unique for a switched line. Those parameters with the PU macroinstruction that are the same as for a nonswitched line are not described. In addition, the parameters for the LU macroinstruction are not described since they are the same as for a nonswitched line.

**IDBLK = 03E and IDNUM = number** make up the SDLC exchange ID. These parameters are specified only for a switched line. The IDBLK is always 03E for System/36. The value specified here for IDNUM must match the value specified for prompt 6, *Local system's station XID in hexadecimal*, on display 12.0 during System/36 line member configuration.

# CICS/VS APPC Generation Considerations

When a CICS/VS system is generated to communicate with a System/36 using APPC, entries must be placed in four tables to define the System/36 as a APPC system. These tables are the terminal control table (TCT), program control table (PCT), processing program table (PPT) and the system initialization table (SIT).

In addition to the tables, certain options must be included for CICS/VS so that it can communicate with System/36 APPC. The following must be specified:

```
DFHSG TYPE=INITIAL,VTAM=YES
DFHSG PROGRAM=TCP,ACCMETH=VTAM,VTAMDEV=LUTYPE6
DFHSG PROGRAM=EIP
DFHSG PROGRAM=ISC
```

## Terminal Control Table (TCT)

The terminal control table contains the information used by CICS/VS to define the remote system or terminal.

The following is an example of the DFHTCT macroinstruction used to define the terminal control table for CICS/VS to System/36 APPC communication:

```
DFHTCT TYPE=SYSTEM,
        TRMTYPE=LUTYPE62,
        ACCMETH=VTAM,
        SYSIDNT=S36I,
        FEATURE=SINGLE,
        CONNECT=ALL,
        MODENAME=SAMPMODE,
        NETNAME=SAMPAPPC,
        RUSIZE=256,
        BUFFER=256,
        TRMSTAT=(TRANSCIVE)
```

**TYPE=SYSTEM** specifies that the definition is for an attached system, not necessarily an APPC system.

**TRMTYPE=LUTYPE62** specifies that the attached system will use APPC peer-to-peer communications.

**ACCMETH=VTAM** specifies that the access method used is Virtual Telecommunications Access Method (VTAM).

**SYSIDNT=S36I** specifies a 1- to 4-character alphanumeric name to identify the remote APPC system to CICS/VS.

**FEATURE=SINGLE** specifies that only single session support is generated for this APPC system.

**CONNECT = ALL** specifies that CICS/VS will attempt to bind the single session when CICS/VS is initialized or when the CEMT SET VTAM OPEN command is issued. If the session cannot be bound (because, for example, the System/36 is not available or the APPC subsystem has not been enabled), or if **CONNECT = ALL** is not specified, CICS/VS attempts to bind the session when the CEMT SET SYSTEM(name) INS ACQUIRED command is issued or when the System/36 initiates communications. CICS attempts to bind contention loser sessions as well as contention winner sessions.

*Note: CICS/VS attempts to bind as the contention winner, but will accept a negotiation to contention loser. This negotiation is done by the System/36 if 1 is specified for the Number of locally controlled sessions prompt on the APPC Session Group Definition display (display 43.0), during subsystem member configuration, or if the APPC subsystem has not been enabled.*

**MODENAME = SAMPMODE** specifies a 1- to 8-character mode name to be used with this single session. The name will be passed to ACF/VTAM as the LOGMODE name. On the System/36 this name is specified as the *Session group name* prompt on display 42.0, Session Group Selection, during subsystem member configuration at System/36. You must not, however, use the reserved name SNASVCMG.

**NETNAME = SAMPAPPC** specifies a 1- to 8-character network name to identify the remote APPC system to ACF/VTAM. On the System/36 this name is specified for the *Location name* prompt on the Subsystem Member Definition display (display 22.0).

**RUSIZE = 256** specifies the size to be used to receive the request/response unit (RU) from the remote APPC system.

**BUFFER = 256** specifies the size of the request/response unit (RU) to be sent to the remote APPC system. On the System/36, the request/response unit size is specified by the *Maximum receive RU size* prompt on the APPC Session Group Additional Options display (display 44.0). Valid values for System/36 are from 8 through 4096

**TRMSTAT = (TRANSCIVE)** specifies that the APPC system can both transmit and receive data from the CICS/VS system.

*Note: The DFHTCT TYPE = SYSTEM macroinstruction has several additional parameters (not shown above) which are not necessary for CICS/VS to System/36 APPC communications. CHNASSY, INDSYS, RECEIVE, SEND, and TIOAL should not be coded for APPC communications.*

## Program Control Table (PCT)

The program control table contains the information to be used by CICS/VS for identifying and initializing a transaction. This table is required by CICS/VS to verify the incoming transaction request.

The following are examples of the DFHPCT macroinstructions used to define the program control table for CICS/VS for System/36 APPC communication:

```
DFHPCT  TYPE=ENTRY,  
        TRANSID=SAMP,  
        PROGRAM=TESTPROG
```

**TYPE = ENTRY** specifies a transaction entry to the CICS/VS system.

**TRANSID = SAMP** specifies a 1- to 4-character transaction name which the remote APPC program may evoke. If the remote program attempts to evoke a name longer than 4 characters, CICS/VS will only use the first 4 characters to determine which transaction to start. The remaining characters will have no meaning to CICS/VS, but may be retrieved by the CICS/VS application using an **EXTRACT PROCESS** command and used for application defined purposes.

**PROGRAM = TESTPROG** specifies a 1- to 8-character program name that relates to the program name in the processing program table (PPT). This name is not known to the remote APPC program.

```
DFHPCT  TYPE=PROFILE,  
        PROFILE=S36PROF1,  
        MODENAM=SAMPMODE
```

**TYPE = PROFILE** specifies a profile to be used for APPC sessions. This is not a required field; you can use the system default.

**PROFILE = S36PROF1** specifies a profile name that will be used in the **ALLOCATE** command by CICS/VS transactions.

**MODENAM = SAMPMODE** specifies the mode name that will be used with sessions that use this profile. On the System/36 this name is specified for the *Session group name* prompt on the Session Group Selection display (display 42.0), during subsystem member configuration.

```
DFHPCT  TYPE=GROUP  
        FN=(ISC)
```

**TYPE = GROUP** specifies a group entry to the CICS/VS system.

**FN = (ISC)** specifies the generic function name that generates the required entries for intercommunication support.

## Processing Program Table (PPT)

The processing program table allows you to describe the control information for all user written and CICS/VS supplied application programs.

The following are examples of the DFHPPT macroinstructions used to define the processing program table for CICS/VS for System/36 APPC communication:

```
DFHPPT  TYPE=ENTRY ,  
        PROGRAM=TESTPROG ,  
        PGMLANG=COBOL
```

**TYPE = ENTRY** specifies a program entry to the CICS/VS system.

**PROGRAM = TESTPROG** specifies a 1- to 8-character program name that relates to the program name in the program control table (PCT).

**PGMLANG = COBOL** specifies that TESTPROG is written in the COBOL language.

```
DFHPPT  TYPE=GROUP  
        FN= (ISC)
```

**TYPE = GROUP** specifies a group entry to the CICS/VS system.

**FN = (ISC)** specifies the generic function name that generates the required entries for intercommunication support.

## System Initialization Table (SIT)

The system initialization table contains information used to initialize CICS/VS for your unique environment.

The following is an example of the DFHSIT macroinstructions used to define the system initialization table for CICS/VS for System/36 APPC communications:

```
DFHSIT  TYPE=CSECT,  
        APPLID=CICS,  
        EXEC=YES,  
        ISC=1$,  
        TCP=V1,  
        TCT=(V4,COLD)
```

**TYPE=CSECT** specifies that the assembler generate a control section for the SIT.

**APPLID=CICS** specifies the name by which your CICS system will be known. The value specified here for APPLID must match the value specified for prompt 2 on Remote Location Selection (display 29.0) during System/36 subsystem member definition.

**EXEC=YES** indicates that command (EXEC) level support is desired. This is required for APPC application program support.

**ICS=1\$** indicates the module suffix for the intersystem communications program group. This group of programs is required for APPC communications.

**TCP=V1** indicates the module suffix for the terminal control program. The program is required for communications.

**TCT=(V4,COLD)** indicates which terminal control table is to be loaded and how it is to be initialized. This is a required entry.

## System/38 Considerations

The following paragraphs define the considerations needed for System/36 and System/38 to communicate as APPC devices. System/38 defines the communications environment with four commands:

CRTLIND (Create Line Description)

CRTCUD (Create Control Unit Description)

CRTDEV (Create Device Description)

ADDDEVMODE (Add Device Mode Entry)

CHGNETA (Change Network Attributes)

The terminology used by the System/38 differs from System/36. For example, a System/36 *session group* corresponds to a System/38 *mode*.

Refer to the *IBM System/38 Data Communications Programmer's Guide*, SC21-7825, for a complete description of the System/38 implementation of APPC.

## System/38 Communications Attributes

The following paragraphs give only the System/38 attributes that must match a corresponding value at the System/36. For a complete description of the commands with all the attributes, see the *IBM System/38 Data Communications Programmers Guide*.

### Create Line Description (CRTLIND) Command Attributes

**Line Type (TYPE)** For APPC, the line type (protocol) can be either \*SDLCP or \*SDLCS. Only one line in the APPC network can be designated as being the primary; all others must be secondary. Specify \*SDLCP only if this System/38 is to be the primary station in the APPC network. Otherwise, specify \*SDLCS.

The protocol is specified at the System/36 by the *Data link protocol* prompt on the SNA Line Member Attributes display (display 12.0), during SNA line member configuration.

If there is one System/36 and one System/38 in the network, one must be the primary and the other secondary. If there are more than two systems in the network, one must be primary and all others must be secondary.

**Connection Type (CNN)** can be point-to-point switched (\*SWT), point-to-point nonswitched (\*PP), or multipoint nonswitched (\*MP).

The line type is specified at the System/36 by the *Line type* prompt on the SNA Line Member Attributes display (display 12.0), during SNA line member configuration.

**NRZI Decoding (NONRTNZ)** indicates whether the data communications equipment on the line requires the NRZI (non-return-to-zero-inverted) transmission method. You must use this method if you are using the System/38-provided clock. (All data communications equipment on the line must use the same transmission method.)

The value specified here must correspond to the value specified by the NRZI data encoding parameter of the SETCOMM procedure command at the System/36.

**Station Address (STNADR)** For APPC communications, this is the SDLC station address by which the System/38 is known to the remote system. This parameter is valid only if the System/38 line type is \*SDLCS (SDLC secondary).

Because the System/36 is the primary station, the value specified here must match the value specified at the System/36 for the *Remote system's station address* on the Remote System Attributes display (display 13.0), during SNA line member configuration.

**System/38 Exchange Identifier (EXCHID)** specifies the exchange identifier, if any, of the local System/38 for APPC communications. The identifier must be specified as *022xxxx*, where *022* is the System/38-assigned block number and *xxxxx* is any combination of the hexadecimal characters 0 through 9 and A through F. If you do not specify an exchange ID, the System/38 generates one using the internal CPU serial number. You use the DSPLIND command to determine the exchange identifier.

For System/38 APPC communications with System/36, the value specified here for the exchange identifier must match the values specified at the System/36 for the *Remote system's block ID in hexadecimal* and *Remote system's station XID in hexadecimal* prompts on the Remote System Attributes display (display 13.0), during SNA line member configuration. Note that the System/38 block ID is always hex 022.

### Create Control Unit Description (CRTAUD) Command Attributes

**Control Unit Type (TYPE)** For APPC communications with System/36, the type is \*PEER.

**Control Unit Address (CTLADR)** The control unit's unique address is expressed as 4 hexadecimal digits in the format *yyzz*.

For APPC communications on an SDLC primary line (TYPE(\*SDLCP) specified in the line description), *yy* is the SDLC station address of the remote system (the *Local system's station address* prompt on display 12.0 at the System/36). When System/38 is the secondary (TYPE(\*SDLCS) specified in the line description), *yy* can be any hexadecimal value from 01 to FE.

zz represents the operational unit number. For communications on a nonswitched line, the value entered must be the same as the value entered for the operational unit number of the line port (LINNBR parameter) on the CRTLIND (Create Line Description) command. For switched lines, zz is always 00.

The control unit address is used only when the control unit is attached to an SDLC primary line. On an SDLC secondary line, the value specified for the STNADR parameter in the line description is used.

**Exchange Identifier (EXCHID)** specifies the 8-digit hexadecimal value used to identify the remote control unit on an SDLC line.

The value is specified as *yyyxxxxx*, where *yyy* is the block number of the remote system and *xxxxx* equals the identifier of the remote system. The block number for a System/36 is 03E; the identifier is specified by the *Local system's station XID in hexadecimal* prompt on display 12.0 during System/36 SNA line member configuration.

### **Create Device Description (CRTDEV) Command Attributes**

**Device Type Code (DEVTYPE)** For APPC communications, this value is always \*PEER.

**Local System Name (LCLLU)** specifies name (8 characters maximum) by which the local System/38 is known to other devices in the network. Each system (logical unit) in the network must have a unique name.

\*SYS, the default name, specifies that the name assigned to System/38 is to be used. That name can be changed using the CHGNETA (Change Network Attributes) command.

*Note: The default, \*SYS, cannot be used if more than one peer device is attached to the control unit.*

The value specified here must match the value specified for the *Remote location name* prompt on the Remote Location Selection display (display 29.0) during APPC subsystem member configuration at the System/36.

**Remote System Name (RMTLU)** specifies the name (8 characters maximum) of the remote system (the name of the remote system must be unique within the network) that this device description defines. The name specified here must be different from the LCLLU name specified for the same device description. The name specified here is checked against the name received from the remote system when the peer link is established.

The name specified here must match the name specified for the *Location name* prompt on the Subsystem Member Definition display (display 22.0) during APPC subsystem member configuration at the System/36.

## Add Device Mode Entry (ADDDEVMODE) Command Attributes

**Mode Entry Name (MODE)** specifies the name that is to be used by both ends of the communications link to refer to this group of sessions. The name specified here must match the name specified at the System/36 for the *Session group name* prompt on the Session Group Selection display (display 42.0), during subsystem member configuration.

**Maximum Number of Concurrent Sessions (MAXSSN)** specifies the maximum number (1 through 494) of concurrent sessions that can be active with the remote system for this mode. The value specified here should be at least as large as the value specified for the maximum number of source sessions (MAXSRCSSN) parameter plus the number of source sessions specified at the remote system. When the connection with the remote system is established, the maximum number of sessions is negotiated with the remote system, so the number of sessions will be less than or equal to this value.

*Note: Each session requested requires system storage resources. You should not configure more sessions than you will need so that you can maximize use of the system resources.*

The value specified here should match the value specified for the *Maximum session limit* prompt on the APPC Session Group Definition display (display 43.0) during APPC subsystem member configuration at the System/36.

**Pre-Bound Sessions (PREBNDSSN)** specifies the number of concurrent sessions that are to be established when the connection with the remote system is established. Once the connection has been established, additional sessions will be established on an as-needed basis.

The name specified here must match the name specified at the System/36 for the *Number of pre-established sessions* on the APPC Session Group Definition display (display 43.0) during subsystem member configuration.

If a switched line is used, a value of zero specified here allows the System/38 to automatically disconnect the line when there are no active sessions (no synchronous conversations). A value greater than zero keeps the line active until the device is varied offline or a CHGSSNMAX (Change Session Maximum) command is entered to change the maximum number of sessions to zero.

The value specified here must be less than or equal to the value specified for the maximum number of source sessions (MAXSRCSSN) parameter.

**Maximum Number of Source Sessions (MAXSRCSSN)** specifies the maximum number of concurrent source sessions that can be established by this system for this mode. The value must be less than or equal to the value specified for the maximum number of concurrent sessions (MAXSSN) parameter.

The name specified here must match the name specified at the System/36 for the *Number of locally controlled sessions* on the APPC Session Group Definition display (display 43.0) during subsystem member configuration.

It is possible for the number of active source sessions shown on the Line Status display to exceed the number specified in this parameter if all source sessions are in use. If this were true, an available bound target session would then be used by an application requiring a session.

**Maximum Number of Concurrent Conversations (MAXCNV)** specifies the maximum number (1 through 494) of concurrent conversations with the remote system that are allowed by this mode entry.

A conversation is the temporary connection of a program to a session, and can be either synchronous (both the source and target system are communicating) or asynchronous (the source has completed and detached from the session, but the target is still attached and has access to all the data sent by the source program). The value specified for MAXCNV is the sum of the synchronous and asynchronous conversations. The value specified here must be at least as large as the value specified for the MAXSSN parameter.

**Inbound Pacing (INPACING)** specifies the pacing value to be used for incoming request/response units (RUs). Valid values are 0 through 63. This parameter specifies the maximum number of RUs that are to be received by this mode before a response is sent to the remote system.

This parameter can be used to tune performance. If the value is increased, fewer pacing transmissions are required.

For System/36, a value of 7 is suggested.

**Outbound Pacing (OUTPACING)** specifies the pacing to be suggested for outgoing request/response units (RUs). Valid values are 0 through 63. This parameter suggests the maximum number of RUs that are to be sent to the remote system before a response is expected from that system. The remote system may choose to use a smaller value than specified here.

This parameter can be used to tune performance. If the value is increased, fewer pacing transmissions are required.

The value specified here should match the value specified at the System/36 for the *Receive pacing value* prompt on the APPC Session Group Additional Options display (display 44.0), during APPC subsystem member configuration.

**Maximum Request/Response Unit Size (MAXLENRU)** specifies the maximum size of the request/response units that can be received by the local system. Valid entries are 256 through 4096 in increments of 256.

This parameter can be used to tune performance. Fewer transmissions are needed if the normal data block size is larger than 256 and you use a value of 512 or larger.

The value specified here should match the value specified at the System/36 for the *Maximum receive RU size* prompt on the APPC Session Group Additional Options display (display 44.0), during APPC subsystem member configuration. It is recommended that if the remote system supports an RU size of 512 or larger, that you specify MAXLENRU(512), or larger.

### **Change Network Attributes (CHGNETA) Command Attributes**

**System Name (SYSNAM)** specifies the 1 to 8 character name to be assigned to the System/38 the next time an IMPL is performed. This name overrides the default system name that the System/38 constructs from its serial number. This name is used by APPC applications such as SNA Distribution Services (SNADS).

## **Appendix C. Security and APPC**

Security for APPC occurs at two levels: Session establishment time (BIND security) and transaction establishment time (ATTACH security).

*Note: This information on security for APPC also applies to APPN.*

### **SECEDIT COMM Procedure**

The location profile is defined using the SECEDIT COMM procedure. The profile is created within the user ID file for each location (including the local location) within the secure network. The location profile consists of the name of the remote location, the location password, an indicator that specifies whether a user password is required to start procedures at the remote location, and a space in which you can enter comments.

*Note: Only a master security officer can use the SECEDIT procedure.*

Following are the SECEDIT COMM display and an explanation of the parameters:

```

                                SECEDIT COMM                                W1
                                Edit location profiles in the user identification file
                                Mode: Add - Key in profile information and press Enter

                                Remote location name . . . . . Optional-*
                                Location password . . . . .
                                Require user password to start each procedure? . . . . . Y,N Y
                                Comment . . . . . *

Roll keys-Page          Cmd2-Scan          Cmd3-Restart          Cmd4-Remove
Cmd5-Add mode          Cmd6-Create password          Cmd7-End
                                COPR IBM Corp. 1985

```

**Remote location name**

Specify the name assigned to the remote location. This name must be the same as the corresponding *Remote location name* specified on display 29.0 during subsystem member configuration using CNFIGICF.

**Location password**

Specify the password that is to be exchanged when communicating with this location. The value specified here must be the same as the value specified at the remote system for your (the local) location.

The password can be from 2 through 16 hexadecimal characters, or \*NULL. A password of \*NULL allows either non-secure or secure locations to establish sessions with a secure location.

**Require password for starting procedure**

Specify whether the remote location can verify the user when a procedure is requested or whether the local security manager will verify the user.

If you specify *No*, the local security manager does not verify the user ID. If the remote security manager indicates that the user is already verified on an evoke operation (the userid is all blanks), the local system assumes that the remote location system manager has verified the security level of the requesting user.

If you specify *Yes*, the local security manager verifies the user. The already verified indicator (AVI) is not accepted.

**Comment**

You can enter a comment of up to 60 characters.

# Session Establishment Security

When you use APPC in a communications network that has security active, you must define a location profile for each remote location with which you will communicate. When a session is established, each location's security manager then verifies that the other location is valid and can access secure resources.

On the SECEDIT COMM procedure display, the *Location name* and *Location password* prompts are used during session establishment.

Figure C-1 shows the results of not specifying and specifying a password at the local and at the remote system at session establishment time (BIND security).

Local System	Remote System		
	Location Password Is Specified for Remote Location (Note 1)	No Location Password Is Specified for Remote Location (Note 2)	*NULL Password Is Specified for Remote Location (Note 1)
Location password is specified for the remote location (Note 1)	BIND is secure if the passwords match	BIND is rejected – Configurations do not match	BIND is rejected – Configurations do not match
No location password is specified for the remote location (Note 2)	BIND is rejected – Configurations do not match	BIND is accepted, but is not secure	BIND is accepted, but is not secure
*NULL is specified for the remote location (Note 1) password	BIND is rejected – Configurations do not match	BIND is accepted, but is not secure	BIND is secure
<p><i>Notes:</i></p> <ol style="list-style-type: none"> <li><i>Security must be active for location passwords to be used.</i></li> <li><i>Password security need not be active.</i></li> </ol>			

**Figure C-1. APPC Security**

## Security at Transaction Establishment

When an EVOKE is issued, security information can be sent with the EVOKE request. When the local system issues an EVOKE, the following parameters can be supplied:

- User ID
- Password
- Profile ID (can only be specified if the local application is using externally defined data formats as generated by IDDU)

For a complete description of the EVOKE operation, see the *Interactive Communications Feature: Base Subsystems Reference* manual.

The parameters passed on the EVOKE operation are handled as follows:

- If the remote location does not have a security manager, no security information is passed with the EVOKE.
- If the remote location has a security manager, two types of security information can be sent with the EVOKE:
  - Security information supplied by the application program
  - Security information supplied by the APPC subsystem

If the user ID is not all blanks, the user ID, password, and profile ID are passed with the attach request. If the user ID is all blanks and the entry for *Required password for starting procedure* is:

N

- AVI is sent by the local system.
- AVI is accepted by the remote location.

Y

- Nothing (AVI or userid) is sent by the local system.
- AVI is not accepted by the local system.

## Security Considerations

Following are considerations for using BIND and ATTACH security on the System/36.

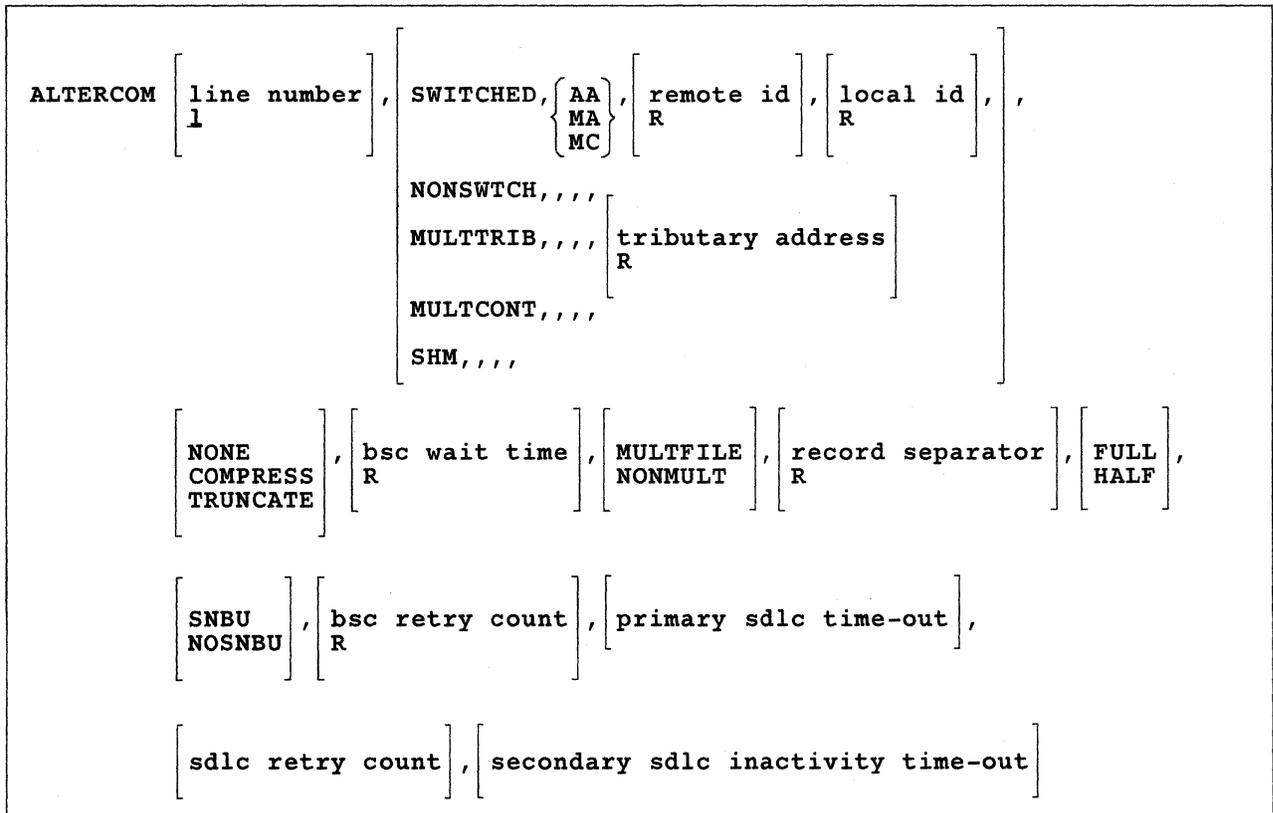
- The user ID or password can be sent on an attach request only when the BIND is secure.
- An application program interface (API)-supplied user ID and/or password on an evoke operation will be ignored if the BIND is unsecure.
- If the BIND is secure, in order to specify only the sign-on user ID-AVI(already verified indicator) = YES(SEcurity = SAME), the user ID specified on the evoke operation must be eight blanks. The remote location must specify N for *Required password for starting procedure*.
- If the BIND is not secure, or if the remote location does not allow the AVI (Y for *Require password for starting procedure*) and SECURITY = SAME is specified (user ID = eight blanks) on an evoke operation, no user ID or password is sent with the attach request.
- If no password or user ID is specified with an attach request received by a System/36, the user ID and password used to start the procedure on the System/36 default to \*NULL and four blanks, respectively. Therefore, you must define \*NULL as a valid userid, using the SECEDIT USERID command, before the attach request completes successfully.



## Appendix D. Syntax Diagrams

This appendix contains the System/36 syntax diagrams for all of the procedures used in this book. These diagrams are in alphabetical order.

### ALTERCOM Procedure



S9020049-4

Refer to Chapter 2 for an explanation of this procedure and a description of the parameters.

## DEFINEID Procedure

DEFINEID { DISPLAY UPDATE DELETE }
--

S9020099-0

Refer to Chapter 5 for an explanation of this procedure and a description of the parameters.

## DEFINEPN Procedure

DEFINEPN
----------

S9020100-0

This procedure has no parameters. Refer to Chapter 5 for an explanation of this procedure.

## DEFINLOC Procedure

```
DEFINLOC
```

S9020516-0

This procedure has no parameters. Refer to Chapter 11 for an explanation of this procedure.

## DEFINX21 Procedure

```
DEFINX21 [ NONSHM  
          SHM ]
```

S9020101-1

Refer to Chapter 5 for an explanation of this procedure and a description of the parameters.

## DEFINX25 Procedure

```
DEFINX25
```

S9020102-0

There are no parameters for this display. Refer to Chapter 5 for an explanation of the procedure.

## DISABLE Procedure

```
DISABLE subsystem configuration name, [ location name ], [ line number ]
```

S9020109-1

Refer to Chapter 6 for an explanation of this procedure and a description of the parameters.

## ENABLE Procedure

```
ENABLE  subsystem configuration name, [ library name  
                                       current library ], [ line number ],  
  
      [ NOSHOW  
        SHOW ], [ location name ], [ line member name ]
```

S9020113-2

Refer to Chapter 6 for an explanation of this procedure and a description of the parameters.

## ICFDEBUG Procedure

```
ICFDEBUG { ON  
           OFF  
           CRT  
           CRT, job name  
           PRINT  
           PRINT, job name }
```

S9020134-0

Refer to Chapter 7 for an explanation of this procedure and a description of the parameters.

## PASSTHRU Procedure

```
PASSTHRU  remote location name, [ session group name ], [ node list member name ],  
          [ node list member library ], [ virtual control unit name ]
```

S9020510-2

Refer to Appendix G for an explanation of this procedure and a description of the parameters.

## REQUESTX Procedure

```
REQUESTX [ source member name ], [ library name  
current library ], [ NOENTRY  
ENTRY ]
```

S9020197-1

Refer to Chapter 8 for an explanation of this procedure and a description of the parameters.

## SETCOMM Procedure

```
SETCOMM [ line number ], [ SHM  
1         MULTCONT  
         MULTTRIB  
         NONSWTCH  
         SWITCHED ], [ CLOCK  
         NOCLOCK ], [ NRZI  
         NONRZI ], [ CONCAR  
         NOCONCAR ], [ TONE  
         NOTONE ],  
  
[ SEP  
NOSEP ], [ EON  
NOEON ], [ primary sdlc time-out ], [ sdlc retry count ],  
  
[ IBMLPDA  
IBMWRAP  
NONIBM ], [ X25  
NOX25 ], [ 2400BPS  
4800BPS  
9600BPS  
56KBPS ], [ secondary sdlc inactivity time-out ],  
  
[ token-ring network adapter address override ]
```

S9020242-5

Refer to Chapter 2 for an explanation of this procedure and a description of the parameters.

## STARTM Procedure

```
STARTM line number, { E  
A }, station address
```

S9020257-0

Refer to Chapter 7 for an explanation of this procedure and a description of the parameters.

## STATEST Procedure

STATEST

S9020258-0

There are no parameters for this procedure. Refer to Chapter 7 for an explanation of this procedure.

## STOPGRP Procedure

STOPGRP location, [group], [  $\frac{N}{Y}$  ], [  $\frac{WAIT}{IMMED}$  ]

S9020260-1

Refer to Chapter 10 for an explanation of this procedure and a description of the parameters.

## STOPM Procedure

STOPM line number

S9020259-0

Refer to Chapter 7 for an explanation of this procedure and a description of the parameters.

## STRTRGRP Procedure

STRTRGRP location, [group]

S9020261-0

Refer to Chapter 10 for an explanation of this procedure and a description of the parameters.

## TRNMGR Procedure

TRNMGR { OFF  
MIN  
MED  
MAX }, { 9  
10 }

S9020620-0

Refer to Chapter 7 for an explanation of this procedure and a description of the parameters.

# Appendix E. Connection Values for Configuration (Switched Lines)

## BSCEL and CICS Subsystems

Appendix E provides a chart of possible valid combinations for switched line member configurations.

If you want to:	Enter on Display 10.0:			
	With Autocall Feature		With X.21 Feature	
	Prompt 4 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 4 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation
<b>Call Manually or Call Automatically</b> (if a phone list exists) When the: Subsystem is enabled *Session is acquired	Not valid (You must first acquire a session.)		Not valid (You must first acquire a session.)	
	1-Inactive <sup>1</sup> or *2-Answer <sup>2</sup>	1-Manual call <sup>1</sup>	1-Inactive or *2-Answer	2-Autoanswer (you must specify a phone list)
<b>Answer Manually</b> When the: Subsystem is enabled Session is acquired Session is remotely started	Not valid (You must first acquire a session.)		Not valid (You cannot answer manually with the X.21 feature.)	
	1-Inactive or *2-Answer	3-Manual answer <sup>2</sup>		
	1-Inactive <sup>4</sup> or *2-Answer	3-Manual answer <sup>2</sup>		
<b>Answer Automatically</b> When the: *Subsystem is enabled Session is acquired Session is remotely started	2-Answer	*1-Manual call <sup>3</sup> (Message appears when you initiate a session.) or 2-Autoanswer <sup>3</sup> (No message appears when you initiate a session.) or 3-Manual answer <sup>3</sup> (Message appears when you initiate a session.)	2-Answer	2-Autoanswer (No message appears when you initiate a session.)
	1-Inactive or *2-Answer	2-Autoanswer	1-Inactive or *2-Answer	2-Autoanswer
	1-Inactive <sup>4</sup> or *2-Answer	2-Autoanswer	1-Inactive <sup>4</sup> or *2-Answer	2-Autoanswer
*Recommended choices.				
<sup>1</sup> The Autocall feature allows you to call manually or automatically. Your call is made automatically, <i>if</i> you specify a phone list. If no phone list exists, a message appears and you must call manually. <sup>2</sup> A message will appear, and you must answer the call manually. <sup>3</sup> The value you specify for prompt 4, when you enable the subsystem, is overridden when you acquire a session. However, you must enter a value. <sup>4</sup> System/36 will not answer calls when you enable the subsystem. You must first acquire a session.				

# CCP Subsystem

		Enter on Display 10.0:			
		With Autocall Feature		With X.21 Feature	
If you want to:		Prompt 4 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 4 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation
<b>Call Manually or Call Automatically</b> (if a phone list exists)  When the:  Subsystem is enabled  Session is acquired	Subsystem is enabled	Not valid (You must first acquire a session.)		Not valid (You must first acquire a session.)	
	Session is acquired	1-Inactive or *2-Answer	1-Manual call <sup>1</sup>	1-Inactive or *2-Answer	2-Autoanswer
<b>Answer Manually</b>  When the:  Subsystem is enabled  Session is acquired  Session is remotely started	Subsystem is enabled	Not valid (You must first acquire a session.)		Not valid	
	Session is acquired	1-Inactive or *2-Answer	3-Manual answer		
	Session is remotely started	1-Inactive <sup>2</sup> or *2-Answer	3-Manual answer		
<b>Answer Automatically</b>  When the:  Subsystem is enabled  Session is acquired  Session is remotely started	Subsystem is enabled	2-Answer	*1-Manual call <sup>1</sup> or 2-Autoanswer <sup>1</sup> or 3-Manual answer <sup>1</sup>	1-Inactive or *2-Answer	2-Autoanswer
	Session is acquired	1-Inactive or *2-Answer	2-Autoanswer	1-Inactive <sup>2</sup> or *2-Answer	2-Autoanswer
	Session is remotely started	1-Inactive <sup>2</sup> or *2-Answer	*1-Manual call (A message may appear when you initiate a session.) or 2-Autoanswer or 3-Manual answer (A message may appear when you initiate a session.)	1-Inactive <sup>2</sup> or *2-Answer	2-Autoanswer
*Recommended choices.					
<sup>1</sup> The Autocall feature allows you to call manually or automatically. Your call is placed automatically, if you specify a phone list. If no phone list exists, a message will appear and you must call manually. <sup>2</sup> System/36 will not answer calls when the subsystem is enabled. You must first acquire a session.					

## Finance Subsystem

If you want to:	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:
	<i>With Autocall Feature</i>		<i>With X.21 Feature</i>		<i>With X.25 Feature</i>	
	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 3	Prompt 5
<b>Call Manually or Call Automatically</b> (if a phone list exists)  When the:  Subsystem is enabled	1-Inactive  4-Manual call	1-Call or (prompt does not appear)	Not valid		1-Inactive or 2-Autoanswer	1-Call
Session is acquired	Not valid (You must call when the subsystem is enabled.)				Not valid	
<b>Answer Manually</b>  When the:  Subsystem is enabled	1-Inactive  3-Manual answer	3-Manual answer (prompt does not appear)	Not valid		Not valid	
Session is acquired	Not valid (You must answer when the subsystem is enabled.)					
Session is remotely started	Not valid (You must answer when the subsystem is enabled.)					
<b>Answer Automatically</b>  When the:  Subsystem is enabled	1-Inactive or 2-Autoanswer	2-Autoanswer	2-Autoanswer	*1-Call <sup>1</sup> or 2-Autoanswer <sup>1</sup> or 3-Manual answer <sup>1</sup>	1-Inactive or 2-Autoanswer	2-Autoanswer
Session is acquired	Not valid (You must answer when the subsystem is enabled.)		Not valid (You must answer when the subsystem is enabled.)		Not valid (You must answer when the subsystem is enabled.)	
Session is remotely started	Not valid (You must answer when the subsystem is enabled.)		Not valid (You must answer when the subsystem is enabled.)		Not valid (You must answer when the subsystem is enabled.)	
*Recommended choices.						
<sup>1</sup> The value you specify for prompt 7, when you acquire a session, is ignored. However, you must enter a value.						

## APPC Subsystems: Primary and Secondary SDLC Support

	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:
If you want to:	<i>With Autocall Feature</i>		<i>With X.21 Feature</i>		<i>With X.25 Feature</i>	
	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation
<b>Call Manually or Call Automatically</b> (if a phone list exists) When the: Subsystem is enabled	4-Manual call (cannot use a phone list) <sup>1</sup>	Ignored <sup>2</sup>	Not valid		Not valid	
*Session is acquired <sup>1</sup>	2-Autoanswer	1-Call	2-Autoanswer	1-Call	1-Inactive or 2-Autoanswer	1-Call
Session is remotely started	Not valid		Not valid		Not valid	
<b>Answer Manually</b> When the: Subsystem is enabled	3-Manual answer	Not valid	Not valid		Not valid	
Session is acquired	1-Inactive	3-Manual answer				
Session is remotely started	Not valid					
<b>Answer Automatically</b> When the: Subsystem is enabled	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	Ignored <sup>2</sup>	Not valid	
Session is acquired	Not valid		Not valid			
*Session is remotely started	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	1-Call or 2-Autoanswer

\*Recommended choices.

<sup>1</sup>If a phone list exists and you specify a phone list name, your system will call automatically. For X.25, you must specify a phone list name.

<sup>2</sup>In some cases this prompt is not shown.

## Peer Subsystems: Primary and Secondary SDLC Support

	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:
	<i>With Autocall Feature</i>		<i>With X.21 Feature</i>		<i>With X.25 Feature</i>	
	<b>Prompt 3</b> Switch Type at ENABLE	<b>Prompt 5</b> Switch Type for Session Initiation	<b>Prompt 3</b> Switch Type at ENABLE	<b>Prompt 5</b> Switch Type for Session Initiation	<b>Prompt 3</b> Switch Type at ENABLE	<b>Prompt 5</b> Switch Type for Session Initiation
<b>If you want to:</b>  <b>Call Manually or Call Automatically</b> (if a phone list exists)  When the:  Subsystem is enabled  *Session is acquired <sup>1</sup>  Session is remotely started	4-Manual call (cannot use a phone list) <sup>1</sup>	Ignored <sup>2</sup>	Not valid		Not valid	
	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	1-Call	1-Inactive of 2-Autoanswer	1-Call
	Not valid		Not valid		Not valid	
	Not valid		Not valid		Not valid	
<b>Answer Manually</b>  When the:  Subsystem is enabled  Session is acquired  Session is remotely started	3-Manual answer	Not valid	Not valid		Not valid	
	Not valid		Not valid		Not valid	
	3-Manual answer		Not valid		Not valid	
<b>Answer Automatically</b>  When the:  Subsystem is enabled  Session is acquired  *Session is remotely started	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	Ignored <sup>2</sup>	Not valid	
	Not valid		Not valid		Not valid	
	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	Ignored <sup>2</sup>	2-Autoanswer	1-Call or 2-Autoanswer
*Recommended choices.						
<sup>1</sup> If a phone list exists and you specify a phone list name, your system will call automatically. For X.25, you must specify a phone list name. <sup>2</sup> In some cases this prompt is not shown.						

# SNUF, SNA MSRJE, and SNA 3270 Subsystems

If you want to:	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:	Enter on Display 12.0:	Enter on Display 13.0:
	<i>With Autocall Feature</i>		<i>With X.21 Feature</i>		<i>With X.25 Feature<sup>4</sup></i>	
	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation	Prompt 3 Switch Type at ENABLE	Prompt 5 Switch Type for Session Initiation
<b>Call Manually or Call Automatically</b> (if a phone list exists)  When the:  Subsystem is enabled  Session is acquired	  4-Manual call (cannot use a phone list) <sup>2</sup>	  (prompt does not appear)	  4-Manual call (cannot use a phone list) <sup>2</sup>	  (prompt does not appear)	Not Valid	
	1-Inactive or *2-Autoanswer	1-Call <sup>2</sup>	1-Inactive or *2-Autoanswer	1-Call <sup>3</sup>	1-Inactive or 2-Autoanswer	1-Call <sup>1</sup>
<b>Answer Manually</b>  When the:  *Subsystem is enabled  Session is acquired  Session is remotely started (not valid for SNA MSRJE or SNA 3270)	  3-Manual answer	  (prompt does not appear)	Not valid		Not valid	
	1-Inactive <sup>2</sup> or *2-Autoanswer	3-Manual answer				
	1-Inactive or *2-Autoanswer	3-Manual answer				
<b>Answer Automatically</b>  When the:  *Subsystem is enabled  Session is acquired  Session is remotely started (not valid for SNA MSRJE or SNA 3270)	  2-Autoanswer <sup>3</sup>	  *1-Call or 2-Autoanswer or 3-Manual answer	  2-Autoanswer	  *1-Call or 2-Autoanswer or 3-Manual answer	  2-Autoanswer	  *1-Call <sup>1</sup> or 2-Autoanswer
	1-Inactive <sup>2</sup> or *2-Autoanswer	2-Autoanswer	1-Inactive or *2-Autoanswer	2-Autoanswer	1-Inactive or 2-Autoanswer	2-Autoanswer
	1-Inactive or *2-Autoanswer	2-Autoanswer	1-Inactive or *2-Autoanswer	2-Autoanswer	1-Inactive or 2-Autoanswer	2-Autoanswer

\*Recommended choices.

<sup>1</sup> If a phone list exists and you specify a phone list name, your system will call automatically. For X.25, you must specify a phone list name.

<sup>2</sup> If you do not specify 0 for the number of program start logical units on display 31.0, you will get a message when you enable the subsystem. The message will indicate how to connect the line.

<sup>3</sup> The value you specify for prompt 3, when you enable the subsystem, is overridden when you start a session. However, you must enter a value.

<sup>4</sup> System/36 always attaches to an X.25 network using a nonswitched line. The values specified here define how the virtual circuits will be used.

## SC MSRJE Subsystem

The values in this chart apply after you enable the BSC MSRJE subsystem and enter the MSRJE command.

	Enter on Display 10.0:	
	<i>With Autocall Feature</i>	<i>With X.21 Feature</i>
<b>If you want to:</b>	<b>Prompt 5</b> Switch Type for Session Initiation	<b>Prompt 5</b> Switch Type for Session Initiation
<b>Call Manually or Call Automatically</b> (if a phone list exists) <sup>1</sup>	1-Manual call	2-Autoanswer <sup>2</sup>
<b>Answer Manually</b>	3-Manual answer	Not valid
<b>Answer Automatically</b>	2-Autoanswer	2-Autoanswer
<sup>1</sup> Your system will call automatically if a phone list exists, no matter what you specify for prompt 5. <sup>2</sup> You must specify a phone list.		



## **Appendix F. APPC Implementation of the LU6.2 Architecture**

This appendix contains a description of System/36 APPC implementation of the SNA Logical Unit Type 6.2 (LU6.2) architecture. It presents LU6.2 *verbs*, programming-like statements that define the interactions between programs and LUs for conversation resources. The verbs and their parameters are described in detail in the *SNA Transaction Programmer's Reference Manual for LU6.2*.

This appendix briefly describes each verb for basic conversations. It then gives the SSP-ICF operations that perform the equivalent functions for System/36.

### **Basic Conversations**

This section describes the LU6.2 verbs for basic conversations.

#### **Specifying the Session ID**

The RESOURCE parameter for LU6.2 verbs is specified in System/36 by the session ID. The session ID is specified in the SYMID parameter of the SESSION OCL statement and in the TERMID parameter of the \$WSIO macro or the \$DTFW macro in Assembler.

#### **ALLOCATE Verb**

The LU6.2 verb ALLOCATE builds a conversation to a named partner program at another logical unit (LU). For the APPC subsystem, it is specified by the combination of the acquire and evoke operations.

The acquire operation, with its associated SESSION OCL statement, corresponds to the following ALLOCATE parameters:

<b>ALLOCATE</b>	<b>Acquire or SESSION</b>
LU_NAME	Specified by the location parameter of the SESSION statement
MODE_NAME	Specified by the group parameter of the SESSION statement
RESOURCE	The session ID (see "Specifying the Session ID")
RETURN_CODE	Specified by the SSP-ICF return code

The evoke operation corresponds to the following ALLOCATE parameters:

<b>ALLOCATE</b>	<b>Evoke</b>
TPN (transaction program name)	Remote process name parameter specified on the evoke operation
SECURITY(SAME)	User ID parameter must be eight blanks
SECURITY(PGM[variable])	User ID, password, and profile parameters (The profile parameter is valid for IDDU only.)
SYNC_LEVEL	Synchronization level parameter specified on the evoke operation
TYPE	Conversation type parameter specified on the evoke operation
PIP(NO) (process information parameters)	No process information parameters specified on the evoke operation
PIP(YES)	Process information parameters specified on the evoke operation
RESOURCE	The session ID (see "Specifying the Session ID")
RETURN_CODE	Specified by the SSP-ICF return code

## CONFIRM Verb

CONFIRM ends a message and asks the remote transaction program to confirm that no errors have been detected in the message.

For APPC, CONFIRM can be specified as a modifier (confirm) to the following operations:

- Put
- Get, in send state
- Evoke

CONFIRM can be specified in assembler using the OPM-CONFIRM modifier to the operations, or by the confirm indicator in an IDDU format.

The table that follows shows how CONFIRM parameters are specified in operations.

CONFIRM	APPC
RESOURCE	The session ID (see "Specifying the Session ID")
RETURN_CODE	Specified by the SSP-ICF return code
REQUEST_TO_SEND_RECEIVED	Specified by the SSP-ICF return code

## CONFIRMED Verb

CONFIRMED sends a confirmation reply to the remote program. By sending CONFIRMED, the local application program takes responsibility for any data it has received. This verb is valid only in response to a CONFIRM request.

For System/36, a program responds to a CONFIRM request by issuing any valid operation other than fail or end of session (abnormal). The RESOURCE parameter of the CONFIRMED verb is specified by the session ID (see "Specifying the Session ID" on page F-1).

## DEALLOCATE Verb

The DEALLOCATE verb ends a conversation.

System/36 APPC uses the put- or evoke-end-of-transaction, release, and end-of-session operations (in various combinations) to perform the functions of the DEALLOCATE verb.

Deallocation requires two steps:

1. The local program must issue an evoke-end-of-transaction or put-end-of-transaction operation, or it must receive a return code indicating end of transaction.
2. The local program must issue an end-of-session or a release operation to complete the deallocation. The release operation can be used only if the local program acquired the session.

<b>DEALLOCATE</b>	<b>Put- or Evoke- End-of-Transaction</b>	<b>Release or End-of-Session</b>
RESOURCE	The session ID (see "Specifying the Session ID")	The session ID (see "Specifying the Session ID")
TYPE (SYNC_LEVEL), when the synchronization level for this conversation is NONE; or TYPE (FLUSH)	For assembler, specified by the OPM-ZERO parameter	
TYPE (SYNC_LEVEL), when the synchronization level for this conversation is CONFIRM	For assembler, specified by the OPM-CONFIRM parameter; or a synchronization level of CONFIRM may be specified using IDDU	
TYPE (ABEND_PROG)		For abnormal termination, an end of session operation during an active transaction
TYPE (LOCAL)		End of session or release operation after APPC receives a return code indicating end of transaction
RETURN_CODE	Specified by the SSP-ICF return code	

## FLUSH Verb

The FLUSH verb causes all buffered data and control information to be sent.

System/36 APPC uses the put operation with a data length of zero and no modifiers to perform this operation. The RESOURCE parameter of the FLUSH verb is specified in the TERMID parameter of the \$WSIO macro for assembler.

## GET\_ATTRIBUTES and GET\_TYPE Verbs

The GET\_ATTRIBUTES verb requests information about the conversation by which the program was started. GET\_TYPE requests only the conversation type.

For APPC, these functions are performed by the get-status operation. The RESOURCE parameter of the LU6.2 verbs is specified by the session ID (see "Specifying the Session ID").

The values are returned in the record buffer associated with this DTF (define the file). The length of the record buffer must be at least 128 bytes. The following values are returned in the record buffer, starting at byte 11:

Field	Length (bytes)	Description
Subsystem	1	Subsystem type (APPC)
Synchronization level	1	NONE (0), or CONFIRM (1)
Conversation type	1	Mapped (M) or basic (B)
Reserved	3	
Own fully qualified LU name	17	Local location name qualified by network ID
Partner LU name	8	Remote location name
Partner fully qualified LU name	17	Remote location name, qualified by network ID
Mode name	8	Session group name
User ID	8	User ID
Reserved	54	

## POST\_ON\_RECEIPT Verb

The POST\_ON\_RECEIPT verb causes the LU to post the specified conversation when information is available for the program to receive. The information can be data, conversation status, or a request for confirmation.

APPC uses the invite operation to perform this function.

<b>POST_ON_RECEIPT</b>	<b>Invite</b>
<b>RESOURCE</b>	The session ID (see "Specifying the Session ID")
<b>LENGTH</b>	Specified in the DTF

## PREPARE\_TO\_RECEIVE Verb

The PREPARE\_TO\_RECEIVE verb changes the conversation from send state to receive state so that the local program can receive data.

APPC performs this function using the put-then-invite and put-then-get operations with data length of zero.

The put-then-invite operation performs the LU6.2 functions of PREPARE\_TO\_RECEIVE and then POST\_ON\_RECEIPT. The following table relates the LU6.2 verb to the put-then-invite operation:

PREPARE_TO_RECEIVE	Put-Then-Invite
RESOURCE	The session ID (see "Specifying the Session ID")
TYPE (SYNC_LEVEL), when the synchronization level for this conversation is CONFIRM	For assembler, specified by the OPM-CONFIRM modifier on the \$WSIO macro; on the CONFIRM indicator when using IDDU
TYPE (SYNC_LEVEL), when the synchronization level for this conversation is NONE; or TYPE (FLUSH)	For assembler, OPM-ZERO
LOCKS (SHORT)	Implied by the use of the put-then-invite operation

The put-then-get operation performs the LU6.2 functions of PREPARE\_TO\_RECEIVE and then RECEIVE\_AND\_WAIT. The following table relates the LU6.2 verb to the put-then-get operation:

PREPARE_TO_RECEIVE	Put-Then-Get
RESOURCE	The session ID (see "Specifying the Session ID")
TYPE (SYNC_LEVEL), when the synchronization level for this conversation is CONFIRM	For assembler, OPM-CONFIRM; CONFIRM may be specified using IDDU
TYPE (SYNC_LEVEL), when the synchronization level for this conversation is NONE; or TYPE (FLUSH)	For assembler, OPM-ZERO
LOCKS (LONG)	Implied by the use of the put-then-get operation

## RECEIVE\_AND\_WAIT Verb

The RECEIVE\_AND\_WAIT verb waits for information to arrive on the specified conversation and then receives the information. If information is already available, the program receives it without waiting. The information can be data, conversation status, or a request for confirmation. Control is returned to the program with an indication of the type of information.

APPC uses the get operation to perform this function. The following table relates the LU6.2 parameters to the operation:

RECEIVE_AND_WAIT	Get
RESOURCE	The session ID (see "Specifying the Session ID")
FILL (BUFFER)	Implied in the get operation
LENGTH	Specified in the INLEN parameter of the \$WSIO macro for assembler
DATA	Data buffer in the DTF
WHAT_RECEIVED	Specified by the SSP-ICF return code
REQUEST_TO_SEND_RECEIVED	Specified by the SSP-ICF return code
RETURN_CODE	Specified by the SSP-ICF return code

## REQUEST\_TO\_SEND Verb

The REQUEST\_TO\_SEND verb tells the remote program that the local program requests to enter send state for the conversation. The conversation is changed to send state when the local program receives a SEND indication from the remote program.

APPC uses the request-to-change-direction-then-invite and request-to-change-direction-then-get operations to perform this function. The LU6.2 RESOURCE parameter is specified by the session ID (see "Specifying the Session ID").

## SEND\_DATA Verb

The SEND\_DATA verb sends data to the remote transaction program. APPC uses the put operation to perform this function. The following table relates the LU6.2 parameters to the operation:

SEND_DATA	Put
RESOURCE	The session ID (see "Specifying the Session ID")
DATA	Data buffer in the DTF
LENGTH	Specified in the OUTLEN parameter of the \$WSIO macro for assembler
RETURN_CODE	Specified by the SSP-ICF return code
REQUEST_TO_SEND_RECEIVED	Specified by the SSP-ICF return code

## SEND\_ERROR Verb

The SEND\_ERROR verb informs the remote transaction program that the local program detected an error. APPC uses the fail operation for this function. The following table relates the LU6.2 parameters to the operation:

SEND_ERROR	Fail
RESOURCE	The session ID (see "Specifying the Session ID")
TYPE(PROG)	Implied in the FAIL operation
RETURN_CODE	Specified by the SSP-ICF return code
REQUEST_TO_SEND_RECEIVED	Specified by the SSP-ICF return code

## WAIT Verb

The WAIT verb waits for data or information from one or more active conversations. APPC uses the accept operation to wait for input from one or more previously invited sessions. The following table relates the LU6.2 parameters to the operation:

<b>WAIT</b>	<b>Accept</b>
RESOURCE_LIST	Implied by the previous invite
RETURN_CODE	Specified by the SSP-ICF return code
RESOURCE_POSTED	Specified in the TERMID parameter of the \$WSIO macro, for assembler

## Appendix G. Display Station Pass-Through (DSPT)

When using Display Station Pass-Through (DSPT), you can, while working at a display station attached to a System/36 or a System/38, sign on another System/36 or a System/38 and run applications on the remote system. While you are using a pass-through session, your display appears as if it were attached to the remote system.

Before you can use DSPT, you must configure and activate an APPC link between the local, remote, and intermediate node systems. Refer to Chapter 9, "Configuring for Advanced Program-to-Program Communications (APPC)" for more information on APPC on the System/36. For the System/38, see the *System/38 Data Communications Programmer's Guide*. Refer to the *Advanced Peer-to-Peer Networking (APPN) Guide* if you are planning to use System/36 networking capabilities and DSPT.

Refer to Appendix C, "Security and APPC" for information about DSPT security for the System/36. Refer to *System/38 Data Communications Programmer's Guide* for information about security for display station pass-through for the System/38.

# PASSTHRU Procedure

Following are the PASSTHRU Procedure prompt display and an explanation of the parameters:

```

                                     PASSTHRU PROCEDURE
                                     Sign on a remote system
                                     Optional-*

Remote location name . . . . . _____
Session group name . . . . . _____ *
Node list member name . . . . . _____ *
Node list member library . . . . . _____ *
Virtual control unit . . . . . _____ *

Cmd3-Previous menu                                     COPR IBM Corp. 1986
```

### Remote location name

Specify the remote location that you wish to sign on. This required parameter may refer to a System/36 or a System/38.

### Session group name

Specify the APPC session group to be used by DSPT. If you do not specify a name, the session group name configured as the default is used. If a session group name of blanks is desired, \*BLANK must be specified.

### Node list member name

Specify the name of a source member that contains a list of the System/38 location names that act as intermediate nodes to complete the pass-through connection. If you leave this parameter blank, DSPT assumes that there are no System/38s that need to act as intermediate nodes to complete the pass-through connection. Refer to "Display Station Pass-Through in a Network" later in this chapter for information on creating a node list member.

### Node list member library

Specify the library that contains the System/38 node list member. If you do not specify a library, the default is the current library.

### **Virtual control unit**

Specify the virtual control unit on the remote System/38 that is to be used for the pass-through. This name is the same virtual control unit name that was created using the CRTAUD command on the System/38. This parameter is required when you are passing through to a System/38 and ignored if you are passing through to a System/36.

After you enter this procedure, a pass-through session is started for the evoking display, and the sign-on display from the remote system appears. At this time, you can sign on the remote system.

*Note: If password security is active on the remote system, you must have a valid user ID and password for the remote system in order to sign on.*

## **The Display Station Pass-Through Session**

The DSPT session looks very much like you are working at a display station attached to the remote system. The command display that you see is from the remote system, entered procedures will be run on the remote system, the status displays are from the remote system, and printed output will be routed to a printer on the remote system. Operational differences that you will see when you are signed on a DSPT session are described in the next section.

On the System/36, a display station ID unique to the remote system is generated when the DSPT session is started. You will see this ID in the upper right corner of your display, and any jobs you create during the pass-through session will have job IDs which start with this display station ID.

## Operational Differences during a Pass-Through Session

If you are working at a subconsole and you press the Sys/Req and Enter keys during the session, the display functions as the subconsole for the local system only. When you press the Sys Req and Enter keys again, you will continue with your pass-through session.

If you enter the PASSTHRU procedure on a System/36 display station that is configured as an alternative console for the local system, the display station also acts as an alternative console for a remote System/36 during the DSPT session. For the System/38, the attached display station always acts as an alternate console for a remote System/36.

When you go from the command display to the console or subconsole display, your data is saved. When you return to the command display, your data is restored.

When you press the Sys/Req and Enter keys on the System/36, the Display Station Pass-Through Special Key Options display is shown. On this display, you can request that the special key be processed on the local or the remote system.

Following are the Display Station Pass-Through Special Key Options display and an explanation of the options:

### DISPLAY STATION PASS-THROUGH SPECIAL KEY OPTIONS

0. Resume normal Display Station Pass-Through processing
1. Process ATTN key at the local system
2. Process ATTN key at the remote system
3. Process SYS/REQ at the local system
4. Process SYS/REQ at the remote system

Enter number to select option \_

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0. *Resume normal Display Station Pass-Through processing* resumes normal DSPT processing.

1. *Process ATTN key at the local system* interrupts the DSPT session and displays the inquiry options display from the local system.

2. *Process ATTN key at the remote system* allows you to process the ATTN key at the remote system.

*Note: If you choose option 2, the display from which you originally pressed the ATTN key temporarily reappears. Then, after a short delay, the ATTN key is processed at the remote system.*

3. *Process SYS/REQ at the local system* interrupts the DSPT session and displays the console display from the local system.

4. *Process SYS/REQ at the remote system* allows you to process the Sys/Req key at the remote system.

*Note: If you choose option 4, the display from which you originally pressed the ATTN key temporarily reappears. After a short delay, the Sys/Req is processed at the remote system.*

Extended (EXTN) aids are only processed at the local system. When you enter an EXTN aid, the characters displayed are obtained from the EXTN file on the local system. The EXTN file on the local system is also used for output to displays. However, for output to printers located on the remote system (Print key output), the extended characters are obtained from the remote system's EXTN file. It is possible that you could get different character images for the same code points for the printed output as compared to the images displayed on the screen when the Print key was pressed. You will need to keep the extended characters on both the remote and local systems the same.

If the message light comes on and you enter the MSG command, no messages may be displayed if the message originated from the local system. To display messages from the local system, you will have to process system inquiry for the local system.

For a System/36-attached display station, the owner type shown in the work station error messages is always *SRT*. The available options are always 2 and 3. Therefore, when the command display is shown from the remote system and the display station is powered off, message SYS-7300 appears with options 2 and 3 rather than with options 1 and 3. Option 2 gives a permanent I/O return code back to the remote application, and option 3 cancels the DSPT session. Refer to the *System Messages* manual for an explanation of this message.

It is possible that an error message could be issued by the local system concerning the user program running at the remote system. If this message has options 2 and 3 that result in the end of the step or end of the job, it will be the display station pass-through session that is ended rather than the remote user program.

On a System/36, the Print key and the print operation processing both issue a read display. If you are in non-pass-through mode and a read display was rejected, it would be treated as a permanent error and the printer output would not be generated. If this occurred during a pass-through session, the read display would be saved in the reject file and would be processed later when the Error Reset key was pressed. The printer output would be generated in this case.

On a System/36, option 2 is suppressed for double-byte character set support (DBCS) messages SYS-5497, SYS-5498, and SYS-5499. If you take this option during a non-pass-through session, you will get an error code back to the user program. This error code will not be returned during a pass-through session.

On a System/36, SYS-5490 is issued if you try to get input from a DBCS display that is missing a shift-in character at the end of a field.

System/36 issues a read immediate operation to reclaim data that is lost because of a cancel invite or if data is not returned with a function key.

The System/38 base local work station controller does not support the read immediate operation. Therefore, for a display station attached to the System/38 base local work station controller, the System/36 pass-through support emulates a read immediate operation by writing an error message (SYS-4717) to line 24, which requests the operator to press the Error Reset key followed by the Enter key.

## **Features While in Display Station Pass-Through**

While on the local system, you may access a feature that is installed on the remote system but not on the local system, if the local system has the necessary hardware to support the feature. For example, if DW/36 is on the remote system but not on the local system, and the work station controller on the local system supports text, you may access DW/36 from the source display while in DSPT.

## Error Handling

For the System/36, display station hardware and programming error messages issued while you are in pass-through mode are sent to the system console at the local system. If you select option 2 in response to the error message on the system console, the program running on the remote system is given a permanent I/O error return code. If you select option 3, the DSPT session is ended. For the System/38, display station programming error messages are sent to the system console on the remote System/36.

Error message SYS-4704 is issued by the source program whenever a permanent communications error occurs on the System/36. This message contains a return code to aid you in identifying the type of error. Only options 2 and 3 are available; both end the pass-through session.

If the pass-through session is running on a nonswitched line, and the line attached to the primary location disconnects while the line attached to the secondary location remains intact, the secondary location may remain unaware of the error situation. If this occurs during a pass-through session, the following occurs:

- The display remains if the source system is the secondary location. You are still able to process system inquiry at the local system to cancel the pass-through session.
- The pass-through logical displays remain on the remote system if the target side is the secondary location. The displays can be removed by canceling the target program.

*Note: This situation can be prevented by specifying a secondary SDLC inactivity time-out value. See the information about SETCOMM and ALTERCOM in Chapter 2.*

If your pass-through display is the currently active master console for a remote System/36 and your DSPT session ends abnormally, the console check light turns on at the remote System/36. When the console check light is on, commands may be entered at an alternate console to establish a new master console.

## Alternative Console Support with Display Station Pass-Through

For a System/36-attached display station, if the display station at which the DSPT session is initiated is configured as a master or alternative console for the local system, it functions as an alternative console for a remote System/36 during the DSPT session.

For a System/38-attached display station, the display always functions as an alternative console for a remote System/36 during the DSPT session.

## Display Station Pass-Through in a Network

At release 5, DSPT is able to participate in a network consisting of multiple System/38s and System/36s. For System/36 networking, the APPN feature is used to perform the routing of requests through multiple System/36s. Refer to the *Advanced Peer-to-Peer Networking (APPN) Guide* for additional information concerning System/36 networking capabilities.

If System/36 DSPT is to participate in a network where System/38(s) must perform routing of the pass-through requests to other systems in the network, a *node list* data stream is used to create the routing path through the System/38(s).

If you are using System/36 DSPT, you are responsible for creating a Node List Member on the source System/36 that contains the necessary information to create the routing path of any intermediate System/38(s). The Node List Member is created as follows:

- You may use any editor on the System/36 (such as SEU or DSU) to create the source member.

*Note: Both SEU and DSU provide prompt formats to assist you in creating the Node List Member. Refer to the appropriate manual or help text for more information concerning the usage of prompt formats.*

- The Node List Member is column dependent; thus the names of the intermediate systems must be entered as follows:

```
If the system names are: ABC, DEFGHIJK, MNOPQ
You would enter --      ABC      DEFGHIJK MNOPQ
Column number ---> 123456789123456789123456789
                   |           |           |
                   Blank Separator
```

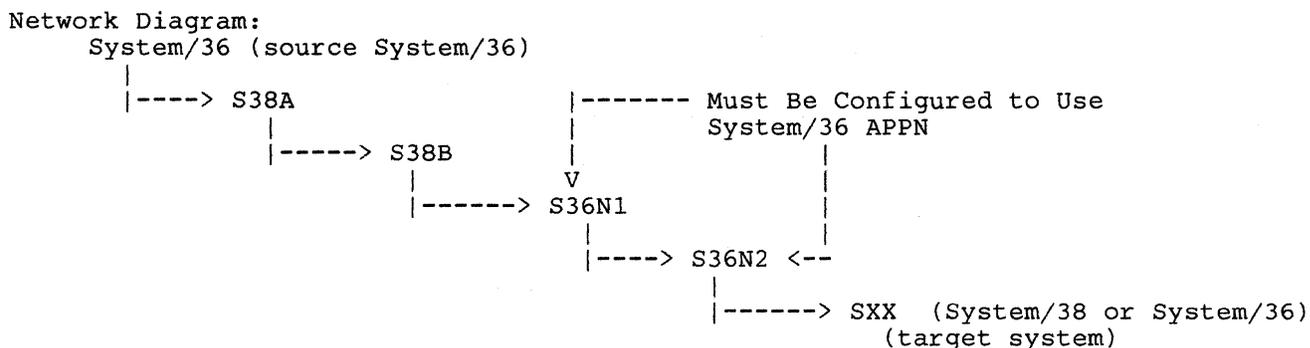
- You may enter up to 16 system names in no more than two records in the member.
- Beginning and ending system names in the network are not to be entered.
- Each system name can be up to 8 characters long.

- The following rules are used to determine which system names are allowed:
  - The first name in the node list member is the remote location name of the first System/38 as configured on the source System/36.
  - The rest of the names are the device names (as configured on the System/38 using the CRTDEVD command) of the next system in the network.

*Note: A device name on the System/38 does not necessarily match the remote LU (remote location) name configured for the remote system. Also, device names can be up to 10 characters in length, but because the System/36 uses only 8 characters, you should not create device names that are longer than 8 characters. Any current device names that are longer than 8 characters will have to be changed to be 8 characters or less in length.*

- Instead of using a remote location name as the first parameter on the PASSTHRU command, use the device name that the last System/38 in the network has configured for the target system.

Following is an example of a network and the node list member necessary to pass-through to the target system:



- The source System/36 configures a remote location name of S38A.
- S38A is a System/38 and configures a device name of S38ATOB and a remote LU name of S38B.
- S38B is a System/38 and configures a device name of S38ATOXX and a remote LU name of SXX.

*Note: Because the systems between S38B and SXX are APPN systems, S38B does not need to configure remote LU names for these systems unless S38B intends to use either of these systems as a target system.*

- S36N1 and S36N2 are System/36s configured to use APPN.

The node list member (name - NODELIST, library - NODELIBR) would then contain the following information:

```
S38A      S38ATOB
|          |
|          |--- Column 10
|
|--- Column 1
```

To pass through to the target system, use the following command:

```
PASSTHRU S38ATOXX, ,NODELIST,NODELIBR,VIRTCU
```

*Note: VIRTCU is only required if the target system is a System/38. This parameter is the name of the virtual control unit that was created using the CRTAUD command on the System/38.*

## Signing Off a Display Station Pass-Through Session

You drop or hold a pass-through session to a System/36 by using the OFF command. Figure G-1 shows the syntax of the OFF command:

```
OFF [ DROP ]
    [ HOLD ]
```

S9082010-0

**Figure G-1. Syntax of the OFF Command**

The OFF DROP or OFF command signs you off the remote system and ends the pass-through session. At this time, the command display of the local system reappears.

*Note: If your pass-through display is the currently active master console for a remote System/36 and you enter the OFF DROP or OFF command, an implied (automatic) CONSOLE GIVE command is also performed. The CONSOLE GIVE command allows the system console function to be transferred to an alternative system console.*

The OFF HOLD command signs you off the remote system, but does not end the pass-through session. At this time, the sign-on display of the remote system reappears.

You end a DSPT session to a System/38 by using the ENDPASTHR command. Refer to the *System/38 Data Communications Programmer's Guide* for more information.

## Varying Off a Display Station Pass-Through Session

You end a System/36 pass-through session by using the VARY OFF command. Following is the syntax of the VARY OFF command:

```
VARY OFF,display station ID
```

You vary off a pass-through session just as you do a remote display. However, unlike the remote, pass-through sessions can be varied off only one at a time by specifying the display station pass-through ID on the VARY OFF command. If the line is being shared by remote devices as well as pass-through sessions, and if that line is varied off, then only the signed-off remote devices will be varied off. The pass-through sessions will remain intact. These pass-through sessions cannot be reestablished with the VARY ON command; they can only be restarted with the PASSTHRU procedure.

A pass-through session to a System/36 cannot be varied off while you are signed on the remote system. The CANCEL session command can be used to cancel the pass-through session while you are signed on.

If neither of these commands remove the pass-through session, all pass-through sessions can be varied off by canceling the target program running at the remote system.

## Considerations and Restrictions for Using System/36 Display Station Pass-Through

Following are some considerations that you should know about when you are using DSPT:

- The local system may have some functions that do not exist at the remote system; therefore, these functions do not work during a DSPT session.
- You should avoid configuring devices with IDs that begin with the symbols #, @, and \$, because these symbols are the first characters used in generating DSPT display station IDs. It would be possible that the DSPT display station ID generated might match a display station ID currently configured on the local system. This does not create a problem, but there will be duplicate names on the system.
- When the local and remote systems are identical in their national language support, DSPT imposes no new considerations. However, if differences do exist in national language support on the systems, then you must be aware of these considerations. If differences do exist, in some cases, it may be impossible for displays attached to a local system to operate correctly with applications on the remote system.

Following are restrictions for using System/36—System/36 DSPT:

- You cannot use DSPT if you are already in a DSPT session.
- You cannot pass through from a non-IGC display station to an IGC-preferred system.
- DisplayWrite/36 cannot be run when you are passing through from a Release 4.1 or higher System/36 to a Release 4.0 System/36.
- System/36 can be an intermediate node only if it is an APPN intermediate node.
- You cannot pass through to a pre-Release 4 System/36 from a DHCF or a 3270 Remote Attach display station.

Following are restrictions for using System/36—System/38 DSPT:

- In order for you to use the System/36—System/38 support, the System/36 must be at Release 5 or higher and the System/38 must be at Release 8 or higher.
- DSPT from the System/36 to System/38 on the 5360's 16K local work station controller is not supported.
- You cannot run DisplayWrite/36 from a System/38-attached display.
- *Digits only* fields are not supported on a local System/38 display station.

- The System/38 has a DDS keyword called UNLOCK that will not work when you are passing through to a System/38 from a System/36 attached-display station.
- System/38 Screen Design Aid and the System/38 office utilities cannot be run from a System/36 DHCF or 3270 Remote Attach display station.
- The local System/38 allows magnetic stripe input fields to be a maximum of 125 bytes long. The number of input fields allowed by DSPT is reduced by 1/6 the length of the longest magnetic stripe specified as well as by 1/2 the total number of magnetic stripe fields specified. For example, if one magnetic stripe field 125 characters long is specified, only 106 input fields are allowed.

The local System/36 allows magnetic stripe input fields to be a maximum of 128 bytes long. The number of input fields allowed is reduced by 1/4 the length of the longest magnetic stripe field specified as well as by 1/2 the total number of magnetic stripe fields specified on the format. For example, if one magnetic stripe field 128 characters long is specified, only 95 input fields are allowed.

On the 5251 Model 2 and Model 12, the number of input fields specified is not affected by the length of the longest magnetic stripe field. The number of input fields allowed is only reduced by 1/2 the total number of magnetic stripe fields specified on the format. For example, if two magnetic stripe fields of any length are specified, only 126 input fields are allowed.

For information about System/38 pass-through, see the *System/38 Data Communications Programmer's Guide*.



## Appendix H. X.21 Short Hold Mode

X.21 short hold mode (SHM) with Single Port Sharing (SPS) is the sharing of an X.21 circuit-switched connection by one or more remote controllers or subsystems. SHM is characterized by a series of connections and disconnections with each remote device on a line. Where there is no data traffic, the data link connection is broken, but the SNA session remains intact. When either side has data to send, the connection is re-established.

In some cases, you may be able to reduce line usage, which could cut your communications costs in countries where Postal Telephone and Telegraph (PTT) tariffs are based on the amount of time that an X.21 line is in use.

X.21 SHM with SPS is application-sensitive; it is intended to be used only with interactive applications that require short periods of data traffic and long periods of inactivity. X.21 SHM may not be cost-effective with batch applications if they are run for long periods of time on a periodic basis.

## Configuring X.21 Short Hold Mode

### Procedures

The following procedures must be run to configure X.21 SHM:

- **SETCOMM** defines the line as an X.21 SHM line.
  - SETCOMM should be run before the other procedures.
  - The lines must be configured with NRZI=NO for SHM.

Refer to Chapter 2 for information on the SETCOMM procedure.

- **ALTERCOM** temporarily changes an X.21 SHM line configuration to X.21 switched, until Initial Program Load (IPL). After IPL, the line defaults to SHM.

Refer to Chapter 2 for information on the ALTERCOM procedure.

- **DEFINX21** sets the local system's X.21 SHM timers, retries, and other configuration information for a particular line.

Refer to Chapter 5 for information on the DEFINX21 procedure.

- **CNFIGSSP** configures the remote 5294 or 3274 phone numbers for remote work stations for X.21 SHM. This is for remote work stations only.
- **CNFIGICF** configures the remote subsystem phone number and node ID for ICF-Peer or Upline support for X.21 SHM.

Refer to Chapter 3 for information on configuring a communications subsystem.

## **XID Node ID**

The exchange identifier (XID) node ID is used on each connection and reconnection to verify the caller or called device's identity. The node ID for:

- The local system is defined via DEFINX21 SHM
- A remote ICF-Peer or Upline subsystem is defined via CNFIGICF
- A remote 5294 or 3274 is the SDLC station address

The node ID and dial digits defined by the system for the remote device must agree with those received from the remote device in the XID, or an error will occur.

## **Call-Retry Rules for All Devices on an X.21 SHM Line**

No two call-retry delays should be configured with the same value on a line. The system and remote devices must all have different values. The primary or the host system should have the shortest call-retry delay of all the devices on a line. Use DEFINX21 for setting the local system call delay.

If multiple remote controllers are on a line, then the number of call retries for all devices must be large (something greater than 15), or number busy errors (CPS21) will result in the loss of sessions. (The more devices on a line, the greater the number of call retries). If the number of call retries is restricted to a small value (less than 15), it may not be feasible to allow multiple remote controllers per line.

## Special Subsystem Considerations for an X.21 SHM Line

Only one subsystem is allowed per line.

- Remote work stations: Multiple remote 5294s and 3274s are allowed per line.

*Note: The RWS auto-reconnect function provides for automatic retries at the SNA level after an error. In the case of a subsequent call error after the initial connection, the auto-reconnect function may force the link level to retry a failed call more than the PTT's allowable maximum of call retries for that country. The auto-reconnect function will thus override the call retries set during configuration for X.21 SHM.*

- ICF-Peer: Multiple remote subsystems are allowed per line; however, this depends on the customer applications being used. ICF-Peer applications are batch and should not be used on a SHM line with other batch applications.
- SNA Upline (MSRJE, SNUF, 3270 Device Emulation): Special Considerations, see "DEFINX21" in Chapter 5.

*Note: APPC does not run on an X.21 SHM line.*

## Initial Connection Call Failure

If the initial call fails when a primary or secondary subsystem is enabled or when a remote work station is varied on, the system waits for a call from the remote device.

For example, you may vary on all the remote 5294 controllers for a line even though none of them are powered on. All calls will fail, and the system will go into answer mode. As remote devices are powered on later in the day the calls will be accepted by the system.

## Incompatible Network Facilities

Some network facilities are incompatible with X.21 SHM.

No facility should be chosen for SHM if it prevents incoming and outgoing calls at the local or remote system or the remote controller.

The connect-when-free facility should not be used with X.21 SHM when multiple remote controllers are configured for the same line. If it is used, sessions may be lost during peak traffic periods. With a single remote 5294 configured for a line, you may choose to use the connect-when-free facility, although it may increase network charges.

## Workload Balancing

If there is more than one X.21 SHM line available and if multiple remote controllers are used on each line, you should try workload balancing as follows:

- To determine traffic per line, use the Error Recovery Analysis Procedure (ERAP) for SDLC, and look at the total number of transmitted and received I-frames.

For more information on ERAP, refer to the *System Reference* manual.

- To determine call collisions and retries for a line, use ERAP for X.21.
- To determine traffic and calls per remote controller, use ERAP for each remote work station controller.

In order to improve response time on slower lines, all of the traffic and call collisions and call retries should be equally distributed across all lines if possible.

## International and National/Regional Considerations

All remote controllers configured for an X.21 SHM line must be able to call the System/36 using the same phone number. (The system's local phone number is configured with DEFINX21.) This means that international calls (which require a country code prefix) may not be received on the same line as national calls. The user must check with the PTT on this subject.

One solution is to place all international remote controllers on one line and all remote controllers within the host system's country on a separate line.

If the PTT allows the dial digits to be preceded by its country code prefix, then it is possible to put all remote controllers on a single line. Check with the PTT to make sure that all calls will not be charged as international calls.

If the country contains regional codes, then the same considerations may apply within the host system's country.



## Appendix I. Establishing an APPC Communications Link

To use the advanced program-to-program communications support on your system, you need to establish an APPC communications link between your system and another location. When this link is set up, you can use the following:

- File transfer subroutines (FTS)
- Display Station Pass-Through (DSPT)
- Personal Services/36

Other System/36 features use APPC communications links. For information on these features, refer to the appropriate reference manual.

**This appendix contains the form that you could use to fill in** so you know the steps to use to establish a communications link with the communications support that is on your system.

# Using Advanced Program-to-Program Communications Support

## To Establish the Communications Link

1. At a display station, perform the following steps:

---

---

---

---

---

---

2. At the system console or the display station where the job is being run, one of the following messages may be displayed if a switched line is being used:

- SYS-3401 SDLC (line number) Operator dial is required...

You must call a remote location. Perform the following steps:

---

---

---

---

---

- SYS-3400 SDLC (line number) Operator answer is required...

You must answer a call from a remote location. Perform the following steps:

---

---

---

---

---

---

- *Other messages*

See the *System Messages* manual for an explanation of the message and the steps that you should follow.

## **To End the Communications Link**

To end or terminate the communications link, perform the following steps:

---

---

---

---

---



## Appendix J. 3270 Remote Attachment

The System/36 3270 Remote Attachment (3270RA) provides support to 3274 controllers and attached 3270 displays and printers. All emulators that conform to 3274(31c) protocol are also supported.

Using the System/36 remote work station (RWS) support with the 3270RA support, you can have a 3277, 3278, or 3279 display station operate as a remote work station and a 3287, 4224, or intelligent printer data stream (IPDS) printer operate as a remote printer.

The System/36 3270 remote attachment also provides the capability to attach APPC sessions, 5251 or 5294 remote controllers and devices, and 3274 remote controllers or 3274 emulators on the same line. This can be either an SDLC primary line, an X.25 line, or an X.21 short-hold mode line.

The 3270RA supports up to 32 devices per controller. A system limitation of 64 total remote devices is still in effect. Both switched line and leased line (multipoint or point-to-point) configurations are supported.

### *Notes:*

- 1. In this appendix, 3270 refers to the keyboards used by any 3277, 3278, or 3279 Display Station. Where there are specific differences among these types, the appropriate number is used instead.*
- 2. In this appendix, the discussions of keyboard use assume that the original 3270-supplied key assignments are unchanged. If you change the default keyboard mapping values (for example, PF keys and PA keys), you must translate the references to specific key assignments (such as PF1 calling the Help function). For information regarding assignable keys, see Appendix K, "3270RA Keyboard Mapping and the KEYS Procedure."*

For information about using SNA System/36 3270 device emulation on 3270RA displays, see the manual *3270 Device Emulation Guide*.

# Operation

To operate a 3270 remote device, you must enter the CNFIGSSP procedure command and define the following:

- Characteristics for the communications line to which the 3274 is attached
- Remote controllers for your remote displays/printers
- Display stations and printers (devices) attached to your controller

## Operation of the 3270 Work Station

1. Use the VARY procedure to vary on the line, controller, or device.
2. Sign on the System/36 from the 3270 work station.
3. Operate the remote work station as if it were a 5251.

*Note: The 3270 device is viewed by the System/36 and the user application as a 5251 remote work station. No screen or application changes should be necessary for the 3270 device to act as a remote work station. When the 3270 is signed on the System/36, the operator is able to access all System/36 features and functions allowable to a similarly configured and authorized 5251 remote work station including the remote alternative console.*

If the 3270 device operator wishes to be the console operator, a CONSOLE GIVE command done from the console and a CONSOLE TAKE command done from the 3270 device allow assignment of the alternative console to the 3270 device.

4. Sign off the System/36 from the 3270 work station.
5. Use the VARY procedure to vary off the line, controller, or device.

## Operation of the Remote Printer

1. Use the VARY procedure to vary on the line, controller, or device.
2. If the device is a 3287 printer, operate as if it were a 5256 printer attached to a 5251 or 5294 Control Unit.
3. Use the VARY procedure to vary off the line, controller, or device.

## Operating 3277, 3278, or 3279 Display Stations

To successfully use your 3270 device as though it were a 5250 device, you should review and understand the differences in keyboard operation between 3270 devices and 5250 devices. See “3270 and 5250 Keyboard Differences” on page J-5.

An operator at a 3277, 3278, or 3279 *data entry* keyboard can use most features and functions that are available on a similarly configured and authorized 5250 work station. (However, the device is still limited by the number of PF keys on its keyboard.) The 3270RA display station has the same capabilities and limitations as any remote 5250 with the following exceptions:

- Only EBCDIC *typewriter* keyboards are fully supported. Other keyboards might be used (such as data entry keyboards), but with limited function.
- Only EBCDIC character transmission is supported.
- Some keys on the 3277, 3278, and 3279 keyboards are in different locations than those on the 5251 keyboard.
- Error messages appear on line 24 of the display. The cursor is positioned to the field in error.
- Field marks in the 3270 data stream are changed to blanks.
- 3279 Display Stations that are capable of graphics display, in reverse image, the second and subsequent lines of an extended attribute field.
- No display attributes are shown on either a 3278 or a 3279 when the field is defined as a nondisplay field.
- Depending on model and feature, the 3270 displays present different symbols for undefined characters generated by code in the range of hex 40 through FE.
- Characters with a value less than hex 40 that are not display commands, orders, dup characters, field marks, or nulls (hex 00) are displayed as question (?) marks.
- Monocase, right-adjust, and duplicate (DUP) fields appear on the 3270 display as they are keyed, but they appear to the application as if they came from a 5250 work station.

- All nulls are suppressed by the 3270 when it sends data. This differs from the 5250, which sends all preceding and embedded nulls. Therefore, you must be aware that the data sent could be different if the cursor movement keys are used within a field.

All preceding and embedded nulls sent by the 5250 are changed to blanks for the 3270. This could impose a restriction when insert-capable fields are indicated by the 5250. All trailing nulls in a field, however, are sent as nulls.

- Numeric-only fields that are used for negative numbers act differently on the 3270 than on the 5250. If the 3270 operator enters a negative number in the field, the sign occupies the first position of the field, followed by the number. This causes the maximum size of the field to decrease by one position and should be considered when designing the displays and fields. The data in a numeric field is adjusted to appear to the application as if it came from a 5250 work station.
- Unpredictable results can occur when data is entered in an input field that is involved in a roll command if all lines involved in the roll do not have the same type field attributes and location.
- All hex FF characters are replaced by blanks (hex 40) before being sent to a 3270 display. You should be aware that any FF characters sent as data in a field will not be returned as FF characters.
- Other characters displayed as one thing on a 5250 device could be displayed as a different character on a 3270 device. For example, hex 41 (used in DisplayWrite/36 applications), which displays as a blank on a 5250, is displayed as a hyphen on a 3277 and as a bracket on a 3278 or 3279.

## 3270 and 5250 Keyboard Differences

The 5250 keyboards and 3270 keyboards have the following differences:

- The 3270 Clear key causes the loss of all data on the display. Therefore, you should perform the Clear operation by pressing PF3 (5250 Clear). If the Clear function is not enabled when PF3 is pressed, an error message is presented, indicating that an invalid key was used, but the data on the display is not lost. The 3270 CLEAR causes a loss of presentation space. The application, command, or sign-on display is automatically restored.
- The functions of the 5250 Reset key cannot be performed by the 3270 Reset key. Instead, you perform 5250 reset by pressing the 3270 PF10 key. When an error condition requires that the 5250 Reset key be used to reset the condition, columns 76 through 79 of the message line contain the character string 'b\*\*b'. This also applies when the 5250 message light is emulated. A **Message waiting** message is sent to line 24 of the 3270 display. The 5250 Reset key function is required before the 3270 user can take the necessary steps to view messages sent.

This is an example of an error message requiring the 5250 Reset key:

```
COMMAND KEY NOT VALID
```

76  
|  
b\*\*b  
|  
79

Data entry errors caused by error conditions in *System/36 applications* require use of the 5250 Reset key (PF10 on the 3270). However, keyboard lockup caused by attempting data entry into an *input-inhibited field* is reset by use of the 3270 Reset key.

- The 3270 Home key positions the cursor in the first unprotected position of the display. The 5250 Home key positions the cursor to row 1, column 2 unless an order is given in the 5250 data stream to place the cursor at some specific cursor position.
- The 5250 Tab, Back Tab, and New Line keys place the cursor in row 1, position 2 when an input field does not exist. Row 1, position 2 is the home position.
- The 3270 Field Mark key is displayed as a semicolon (;) and printed as an asterisk (\*). On the 5250 keyboard, this key is both displayed and printed as a back slash (\).
- Field Exit, which is required on the 5250 keyboard, is emulated on the 3270 keyboard by setting the ending attribute (SBA, SF) to not auto skip. To emulate Field Exit, press the Erase EOF key and then the Forward Tab (→) key.

- The 3270 devices do not have Field Exit + or Field Exit - keys, which right-adjust the field and add the sign. Because of this, 3270 devices present a plus (+) sign in the first position of the field. If necessary, replace the plus sign with a minus (-) sign, and type in the numeric value of the field. When the Enter key is pressed, the field is right-adjusted and filled with the necessary blanks. If a numeric character is entered in the sign position of the field, the desired result will not be received when the Enter key is pressed.
- The 3277 Display Station does not support numeric-only fields. 5250 numeric-only fields (allowing characters 0 through 9, and symbols + . , - and space) have numeric and unprotected attributes on the 3270. If the Numeric Lock feature is installed on a 3278 or 3279 terminal, the combination of numeric and unprotected attributes cause the NUM symbol to appear on these displays, and the only keys acceptable are the characters 0 through 9 and the symbols + . - and DUP. Any other keys lock the keyboard, requiring it to be reset with the 3270 Reset key. If either the + or space character is required in a field, the numeric lock must be overridden with the Shift key.
- The 3270 Erase Input key clears all unprotected positions on the display to null characters, resets all modified data tags (MDT) bits in unprotected fields, and positions the cursor to the first unprotected position. The 5250 Erase Input key clears only modified fields to null characters and positions the cursor to row 1, column 1, unless an order is given in the 5250 data stream to place the cursor at some specific cursor position.
- The 3270 Insert Mode key inhibits the movement of the cursor from field to field via the Field Advance or Field Backspace keys. The insert mode must be reset with the 3270 Reset key to allow the normal 3270 movement.

## Field Attributes

The 3270 field attributes are supported by 3270RA. The 3278 and 3279 extended attributes (blink, reverse image, underscore, and color) are supported with the following limitations:

- Only the red attribute blinks on the 3279.
- Blink, reverse image, and underscore appear, but only if nondisplay is not selected.
- Blink, reverse image, and underscore are mutually exclusive and are set on in the following order:
  1. Blink (3278 only)
  2. Reverse image
  3. Underscore

If both reverse image and underscore are selected, only reverse image is displayed.

The following table gives the relationships between combinations of attributes displayed on the 5251 and those displayed on the 3279.

3279 Color Attributes	5251 Column Separator	5251 High Intensity	5251 Blink
Green	No	No	No
White	No	Yes	No
Turquoise	Yes	No	No
Yellow	Yes	Yes	No
Red	No	No	Yes
Blinking Red	No	Yes	Yes
Pink	Yes	No	Yes
Blue	Yes	Yes	Yes

*Note: When the 5250 column separator attribute is encountered on the 3278 or 3279, the 3270 underline replaces it if there is no conflict with other attributes.*

## Operator Error Message Codes

Error Code	Description
0003	An invalid key followed the PA key.
0007	An entry is missing from a mandatory enter field.
0008	A nonalphabetic character is in an alphabetic-only field.
0009	A nonnumeric character is in a numeric-only field.
0010	An unsigned numeric character is in a signed numeric field.
0011	An invalid character is in the sign position of a signed numeric field.
0014	A mandatory fill field is not filled.
0019	The DUP key was pressed in a non-DUP field.
0024	Only characters 0 through 9 are allowed.

## 3270 Printer Support

The 3270 remote support translates the 5250 data stream to and from the 3270 data stream. No System/36 user code changes are required to use 3270 remote support unless the application uses a nonsupported or restricted function.

The SNA Character String (SCS) printer data stream generated for a 5256 printer attached to a 5251 or 5294 Control Unit is the only data stream translated. IPDS printers and data streams are also supported. This does not preclude a data stream generated for another printer type if the data stream is the same as that accepted by a 5256 printer.

The 3287 (Models 1, 1C, 2 and 2C) can attach to a 3274 Control Unit. The 3274 SCS feature is required for operation of the 3287 as an SNA Logical Unit Type 1 (LU1) Printer. Non-SCS mode is not supported. This does not preclude use of another printer type if the printer accepts the same SCS commands and operates in the same manner as a 3287.

## Functions Not Supported

The following functions are *not* supported by 3270RA:

- Magnetic stripe reader
- Selector light pen

*Note: Data streams that contain magnetic stripe reader, selector light pen, or self-checking functions are valid, even though the functions themselves are not supported.*

- Blinking cursor set from a System/36 application program
- Field Exit, Field-, and Field+ keys on 5250 keyboards
- The following field format functions:
  - I/O
  - Auto enter
  - Self check
- The following display attributes:
  - 5250 column separator (changed to underline for 3278 and 3279 if no attributes conflict)
  - Blink for 3277
  - Underscore for 3277
  - Reverse image for 3277
- Any display that does not have 1920 character positions or greater (80 columns and 24 rows)
- Explicit locking of the 3270 keyboard
- Explicit unlocking of the keyboard



## Appendix K. 3270RA Keyboard Mapping and the KEYS Procedure

When you first sign on a System/36 3270 Remote Attachment (3270RA), the System/36 automatically assigns the *RMT3270-supplied defaults* to your 3277, 3278, or 3279 keyboard (unless a *user-defined* keyboard map has been set up to be automatically included in your 3270RA sign-on procedure). This provides the mapping (or translation) needed for the 3270 keyboards to perform most of the same functions as their 5250 keyboard equivalents perform.

If you are satisfied with the default keyboard mapping, you need not read the remainder of this appendix.

*Note: In this appendix, 3270 refers to the keyboards used by any 3277, 3278, or 3279 Display Station. Where there are specific differences among these types, the appropriate number is used instead.*

If you want to have a different arrangement of 3270-to-5250 keyboard mapping, the **KEYS procedure** must be used to define, and then select, the keyboard mapping version.

*Note: The remainder of this appendix explains the KEYS procedure as used by 3270RA.*

*For more information on the KEYS procedure when used for DHCF, see the **Communications and Systems Management Guide**.*

# KEYS Procedure

The KEYS procedure performs the following functions:

- Displays the current keyboard map, which could be an IBM-supplied default or a user-defined map
- Defines or redefines a different set of values for the 3270-to-5250 keyboard
- Resets back to an IBM-supplied default keyboard map
- Selects a keyboard map from those that are already defined

The KEYS procedure can be run from any 3270RA display station, or it can be run by a System/36 user (on a 5250 display). All four of the functions listed above can be performed at a 3270RA display station, but *only the DEFINE function can be performed at a 5250 display.*

## KEYS Procedure Command

The syntax of the KEYS procedure command shown in Figure K-1 is:

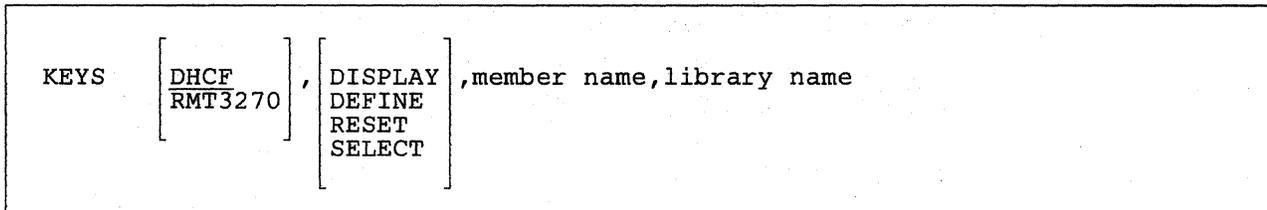


Figure K-1. KEYS Procedure Syntax Diagram

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**RMT3270** specifies that the type of keyboard mapping to be used is for 3270RA. That is, the keyboard and display station to be used as a remote 5250 is a 3277, 3278, or 3279 display. DHCF is the default value for this parameter.

**DHCF** specifies that the type of keyboard mapping to be used is for DHCF. That is, the keyboard and display station that are to be used as a remote 5250 is a 3277, 3278, or 3279 display. DHCF is the default value for this parameter.

**DISPLAY** specifies that the *current* keyboard map for the 3270 display is to be presented. When you specify DISPLAY, the keyboard map currently being used for the 3270 display station is shown; it could be the RMT3270-supplied default map, or a user-defined map. (To display any other keyboard map, you must first use the SELECT or RESET option to activate it as the current map.) The DISPLAY option cannot be used to make changes to the map, nor can it be specified at a 5250 display station on System/36.

The IBM-supplied default keyboard map members are called HCFDFLTS and DFLT3270 on the display screen. HCFDFLTS is used as the DHCf default member (ATTN is valid for DHCf only), and DFLT3270 is used as the RMT3270 default member. These #LIBRARY members cannot be defined or selected. RESET causes the appropriate mapping to be used.

**DEFINE** specifies that a new 3270-to-5250 keyboard map is to be defined and stored in a source member. A new map can be defined (or an existing map can be redefined) from either a 3270 or 5250 display station, but it cannot be activated at a 5250 display. To redefine (change) an existing map, specify the name of the source member to be redefined. Use the SELECT option to activate a user-defined mapping.

**RESET** specifies that the current user-defined keyboard map is to be replaced by the RMT3270-supplied or DHCf-supplied default keyboard map. The RESET option is valid only at a 3270 display station.

**SELECT** specifies that a previously defined keyboard map is to be activated as the current keyboard map. (The map is selected from any of those listed when the KEYS procedure specifies the DISPLAY option.) The SELECT option is valid only at a 3270 display station.

**member name** specifies the name of the keyboard mapping *source member* to be selected, defined, or redefined. This parameter is required if the DEFINE or SELECT option is specified, and it is not valid if the DISPLAY or RESET option is specified. If the DEFINE option is specified with the name of an existing member, it must be a source member that was created by the KEYS procedure. The default names HCFDFLTS and DFLT3270 cannot be used as the member name.

**library name** specifies the name of the library containing the keyboard mapping member to be selected, defined, or redefined. If this parameter is not specified for the DEFINE or SELECT options, the current session library is assumed. This parameter is not valid for the DISPLAY and RESET options.

## **KEYS Examples**

```
KEYS RMT3270,DEFINE,KEYS3279,JONES
```

This command starts the definition or redefinition of a 3270 keyboard mapping member that is to be named **KEYS3279** and stored in the **JONES** library. This command could be entered by a 3270RA user or a System/36 user or at a 5250 display.

```
KEYS RMT3270,SELECT,KEYS3279
```

This command, entered at a System/36 3270RA device that is varied on and signed on, specifies that the user-defined 3270 keyboard map is to be activated as the current keyboard map for this device. The member containing this map should be located in the current session library.

## Using the KEYS Procedure

When you enter the KEYS procedure command without any parameters, the KEYS Procedure prompt display is presented. Otherwise, the appropriate display is presented for whichever parameter you specify on the procedure command.

### Displaying a Keyboard Mapping Member

To display the *current* keyboard map being used for your 3270RA device, enter the KEYS procedure command with the DISPLAY option. The name of the mapping member and the library in which it is stored are shown on the resulting display.

If you have not defined a keyboard mapping member, a default is displayed. Figure K-2 shows the RMT3270-supplied default keyboard mapping values, including the name of the System/36 member and library in which it is stored:

CURRENT MAPPING OF 3270 FUNCTION KEYS TO 5250 KEYBOARD							
KEY	VALUE	KEY	VALUE	KEYSEQ	VALUE	KEYSEQ	VALUE
PF1	HELP	PF13	CMD13	PA1PF1	CMD1	PA2PF1	CMD13
PF2	NONE	PF14	CMD14	PA1PF2	CMD2	PA2PF2	CMD14
PF3	CLEAR	PF15	CMD15	PA1PF3	CMD3	PA2PF3	CMD15
PF4	PRINT	PF16	CMD16	PA1PF4	CMD4	PA2PF4	CMD16
PF5	NONE	PF17	CMD17	PA1PF5	CMD5	PA2PF5	CMD17
PF6	NONE	PF18	CMD18	PA1PF6	CMD6	PA2PF6	CMD18
PF7	DOWN	PF19	CMD19	PA1PF7	CMD7	PA2PF7	CMD19
PF8	UP	PF20	CMD20	PA1PF8	CMD8	PA2PF8	CMD20
PF9	NONE	PF21	CMD21	PA1PF9	CMD9	PA2PF9	CMD21
PF10	RESET	PF22	CMD22	PA1PF10	CMD10	PA2PF10	CMD22
PF11	SYSRQ	PF23	CMD23	PA1PF11	CMD11	PA2PF11	CMD23
PF12	HOME	PF24	CMD24	PA1PF12	CMD12	PA2PF12	CMD24

The values are described in detail on the help screen.

Current mapping from member DFLT3270 in library #LIBRARY.

Cmd7 - End    Enter - End

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Figure K-2. RMT3270-Supplied Default Keyboard Mapping Values

Only the keyboard mapping member currently being used can be displayed; no other members that may exist can be specified. (To display any other mapping member, you would first have to use the SELECT or RESET option to activate that member and then use the DISPLAY option to display it. Or you can use the DEFINE option to see the values in a mapping member. To see a list of all the mapping members, you can use the LISTLIBR procedure.)

## Defining a Keyboard Mapping Member

Use the **DEFINE** option to create other keyboard mapping members (or to make changes to an existing member). You can change any or all of the default mapping key values, as long as the required keys are defined in the map (see "Allowable Keyboard Mapping Values and Restrictions" on page K-9).

When you enter the **KEYS** procedure command with the **DEFINE** option, you are prompted for the name of the keyboard mapping member and its library name. Once you enter the member name and, optionally, the library name (the current session library is the default), the display for the specified keyboard map is presented. The IBM-supplied default members **HCFDFLTS** and **DFLT3270** in **#LIBRARY** cannot be defined or selected. The **RESET** option causes the appropriate default mapping to be used.

If the mapping member does not exist in the library specified, the member is assumed to be a new member, and the display presented shows the **RMT3270**-supplied default mapping values, as shown in Figure K-2. These key values, displayed with your specified member name and library name (or default library name), can then be changed however you wish, as long as the required keys (**HELP**, **RESET**, and **SYSRQ**) are all defined in the **PF** key columns that are valid for your keyboard. (For example, the second pair of columns, for keys **PF13** through **PF24**, is not valid if you have a 3270 *data entry* keyboard.)

### Changing the 3270 Key Values

The left column of each of the two-column pairs (labeled as **KEY** or **KEYSEQ**) contains the names of the 3270 keys. The right column of each pair (labeled **VALUE**) contains the current 5250-equivalent key values assigned to the 3270 keys. You can change any value in the **VALUE** columns by keying the new value over the one currently displayed. For example, to change **PF4** (on the 3270) to appear to be a 5250 **Cmd1** key, replace the value **PRINT** with the value **Cmd1**.

To store the displayed member as a new member or to change the values in an existing member, press command key 7 (or its 3270 equivalent). To cancel the DEFINE option without storing the displayed values, press command key 19 (or its 3270 equivalent).

- The *Enter* key is normally used to enter several changes to the displayed member, without the member being stored until you have entered and verified all your changes. Each time the Enter key is pressed, all the mapping values are checked for errors; however, no check is made for the four required keys. If any mapping errors are detected, an error message is displayed for each one, one message after the other, until they are all corrected.
- *Command key 7* stores the new member or replaces an old member with the new values, but first the values in the member are checked to verify that they are all valid and that the four required keys are all defined. If errors exist, error messages are displayed so they can be corrected.
- *Command key 19* cancels the DEFINE option without replacing the member or checking the values.

The command keys for ending the DEFINE option are different from those used for ending the DISPLAY option. The functions for command keys 7 and 19 are displayed at the bottom of the DEFINE display in Figure K-3 as:

```
Current mapping from member ##### in library #####.  
Cmd7 - End and save member      Cmd19 - Cancel with no save  
                                  Copyright 1985 IBM Corporation
```

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**Figure K-3. DEFINE Option Command Keys**

*Note: On a 3270 display keyboard, the PF keys used to perform the Cmd7 and Cmd19 functions (shown above and described below) are the PF keys currently in effect for this device, not the ones being defined or redefined now. The values in the mapping member being defined or redefined do not take effect until the member is activated with the SELECT option.*

To use the newly defined values, run the KEYS procedure again, this time with the SELECT option. Once this has been done (at a signed-on 3270RA device, *not* at a System/36 display device), the selected set of mapping values are immediately put into effect for your device.

## Selecting a Keyboard Mapping Member

Use the **SELECT** option to select a different keyboard mapping member than the one you are currently using. (The one currently in use could be the RMT3270-supplied keyboard map or a user-defined map.)

When you enter the **KEYS** procedure command with the **SELECT** option, you must already know the name and library location of the member. Enter the member name and, optionally, the library name containing the member (the current session library is the default). The selected set of keyboard mapping values is then put into effect for that 3270RA device. If the member does not exist, is not a keyboard mapping member, or is not in the library specified or assumed, the appropriate error message is displayed.

The IBM-supplied keyboard map member names (HCFDFLTS and DFLT3270) cannot be used with the **SELECT** option. **RESET** causes the appropriate default mapping to be used.

Because no display is shown by the **KEYS** procedure when the **SELECT** option is entered, the procedure command can be included in the user's normal sign-on procedure. This allows a user-defined keyboard map to be automatically selected and activated for each 3270RA user who signs on using that procedure.

## Resetting to the Default Keyboard Mapping Member

To reset your current keyboard map to be the IBM-supplied default keyboard map, specify the **RESET** option for the **KEYS** procedure command.

No display is presented when the **RESET** option is specified.

## Allowable Keyboard Mapping Values and Restrictions

Following is a list of the values that can be assigned in the right column of the two-column pairs when the DEFINE option of the KEYS procedure is being used. Other assignment restrictions are also listed in the next topic.

Assignable Value	5250 Meaning
* HELP	5250 help (System/36 help)
* ATTN	Attention (valid for DHCF only)
* RESET	Error reset
* SYSRQ	System request (valid only for console device)
CLEAR	Clear screen
PRINT	Print screen
UP	Roll up
DOWN	Roll down
HOME	Record backspace
NONE	No value assigned to key (ignored if pressed)
CMD1	Command key 1
CMD2	Command key 2
.	.
.	.
CMD24	Command key 24

### Notes:

1. The keys marked with an asterisk (\*) **must** be assigned (ATTN valid only for DHCF), and their assignment must be to PF1 through PF12, PA1/PF1 through PF12, or PA2/PF1 through PF12. Because these functions are required for 3270RA support to work properly, and not all keyboards have 24 PF keys, these functions cannot be assigned to PF13 through PF24 unless they are also assigned to another key or key sequence.
2. If PA1 or PA2 is pressed followed by a PF13 through PF24 key, the PA key is ignored and only the PF key value is processed.

## Other Keyboard Mapping Considerations for 3270RA

Following are other considerations that affect how 3270RA keyboard mapping is used.

- The KEYS procedure cannot be used to change the values assigned to a local or remote 5250 display station.
- The device, controller, or line must be varied on.
- When you sign off a 3270RA device, the current keyboard mapping values are lost. Unless the RMT3270-supplied default mapping member is being used or the name of a user-defined mapping member is included in your normal sign-on procedure, you must respecify which mapping member is to be used each time you sign on a 3270RA device by running the KEYS procedure with the SELECT option.

- The PA1 and PA2 keys *cannot* be assigned a different value. These keys are used for the special sequences PA1/PF1 through PF12 and PA2/PF1 through PF12. The PA keys always signify that a PF key will follow, and that the two-key sequence is to be interpreted as a group. The only exception is when the keyboard does not have 24 PF keys and the PA1 or PA2 key is pressed, followed by PF13 through 24. In that case, the PA key is ignored and only the PF key is interpreted.
- The PF13 through PF24 keys are definable on all 3270RA display stations. However, because the System/36 has no way of determining whether the remote device actually has 24 PF keys, no function from the minimum function set of keys (HELP, H3270, RESET, or SYSRQ) can be assigned to PF13 through PF24 unless that function is also assigned to PF1 through PF12, PA1/PF1 through PF12, or PA2/PF1 through PF12.
- If desired, a 3270RA user can assign the 3270 PF keys to map to command keys that are defined to have specific meanings for his application programs. For example, one command key could be defined to mean end of job (EOJ).

The application programs in which the special meanings are to be used must be written so that they support the special function; that is, assigning the EOJ function to a particular command key does not mean that 3270RA will handle the EOJ function when that key is pressed. 3270RA will interpret the PF key and return the appropriate command key function to the application. The application must interpret any command key that is specific to the program and provide that function. For more information about user-defined command keys, see the appropriate programming language manual.

- A 3270 Attention Identification (AID) generating key precludes the generation of a subsequent AID request until the first AID request is processed.

## Glossary

**#LIBRARY.** The library, provided with the system, that contains the System Support Program Product. See *system library*.

**abnormal termination.** A system failure or operator action that causes a job to end unsuccessfully.

**access method.** The way that records in files are referred to by the system. The reference can be consecutive (records are referred to one after another in the order in which they appear in the file), or it can be random (the individual records can be referred to in any order).

**acknowledgment character (ACK).** In binary synchronous communications, a transmission control character sent as a positive response to a data transmission.

**ACK0.** In binary synchronous communications, the even-numbered positive acknowledgment character. See *acknowledgment character (ACK)*.

**ACK1.** In binary synchronous communications, the odd-numbered positive acknowledgment character. See *acknowledgment character (ACK)*.

**acquire.** To assign a display station or session to a program.

**acquired session.** A session that has been started by a System/36 program using an acquire operation, or in BASIC, using an OPEN statement.

**adapter.** See *communications adapter*.

**address pool.** In data communications, a collection of multipoint addresses. Each address can be associated with an individual SSP-ICF session.

**addressing.** (1) In data communications, the way that the sending or control station selects the station to which it is sending data. (2) A means of identifying storage locations.

**Advanced Peer-to-Peer Networking (APPN).** A communications feature that routes data in a network between two or more APPC systems that are not directly attached. See also *node* and *network node*.

**advanced program-to-program communications (APPC).** Communications support that allows System/36 to communicate with other systems having the same support. APPC is the way that System/36 puts the IBM SNA LU-6.2 protocol into effect.

**alert.** A record sent to another system to communicate a problem or an impending problem. On System/36, the problem management portion of the Communications and Systems Management feature is used to generate and send alerts.

**allocate.** To assign a resource, such as a disk file or a diskette file, to perform a specific task.

**alphabetic character.** Any one of the letters A through Z (uppercase and lowercase). Some program products extend the alphabet to include the special characters #, \$, and @.

**alphanumeric.** Consisting of letters, numbers, and other symbols, such as punctuation marks and mathematical symbols.

**alphanumeric.** See *alphanumeric*.

**American National Standard Code for Information Interchange (ASCII).** The code developed by ANSI for information interchange among data processing systems, data communications systems, and associated equipment. The ASCII character set consists of 7-bit control characters and symbolic characters.

**American National Standards Institute (ANSI).** An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

**ANSI.** See *American National Standards Institute (ANSI)*.

**APAR.** See *authorized program analysis report (APAR)*.

**APPC.** See *advanced program-to-program communications (APPC)*.

**application program.** A program used to perform an application or part of an application.

**APPN.** See *Advanced Peer-to-Peer Networking*.

**assembler.** A program that converts assembler language statements to machine instructions.

**assembler instruction statement.** A statement that controls what the assembler does, rather than what the user program does.

**assembler language.** A symbolic programming language in which the set of instructions includes the instructions of the machine and whose data structures correspond directly to the storage and registers of the machine.

**asynchronous.** (1) Not occurring in a regular or predictable pattern. (2) Without regular time relationship.

**asynchronous transmission.** In data communications, a method of transmission in which the bits included in a character or block of characters occur during a specific time interval. However, the start of each character or block of characters can occur at any time during this interval. Contrast with *synchronous transmission*.

**attribute.** A characteristic. For example, an attribute for a displayed field could be blinking. (BGU/36) A characteristic of a graph that you can change.

**authorized program analysis report (APAR).** A request for correction of a defect in a current release of an IBM-supplied program.

**autoanswer.** In data communications, the ability of a station to receive a call over a switched line without operator action. Contrast with *manual answer*.

**autocall.** In data communications, the ability of a station to place a call over a switched line without operator action. Contrast with *manual call*.

**autocall unit.** A common carrier device that allows System/36 to automatically call a remote location.

**automatic reconnect.** An option specified during system configuration that allows a remote work station controller to be reconnected automatically on a switched or nonswitched line.

**BASIC (beginner's all-purpose symbolic instruction code).** A programming language designed for interactive systems and originally developed at Dartmouth College to encourage people to use computers for simple problem-solving operations.

**basic data exchange.** A file format for exchanging data on diskettes between systems or devices.

**batch.** Pertaining to activity involving little or no operator action. Contrast with *interactive*.

**batch BSC.** The System Support Program Product support that provides data communications with BSC computers and devices via the RPG T specification or the assembler \$DTFB macroinstruction.

**batch processing.** A processing method in which a program or programs process records with little or no operator action. Contrast with *interactive processing*.

**binary.** (1) Pertaining to a system of numbers to the base two; the binary digits are 0 and 1. (2) Involving a choice of two conditions, such as on-off or yes-no.

**binary synchronous communications (BSC).** A form of communications line control that uses transmission control characters to control the transfer of data over a communications line. Compare with *synchronous data link control (SDLC)*.

**bind command.** An SNA command used to define the protocols for a session. Contrast with *unbind command*.

**bit.** Either of the binary digits 0 or 1. See also *byte*.

**bps.** Bits per second.

**BSC.** See *binary synchronous communications (BSC)*.

**BSCCL (binary synchronous communications equivalence link) subsystem.** The SSP-ICF subsystem that provides BSC communications with another System/36 and many other BSC computers and devices.

**buffer.** (1) A temporary storage unit, especially one that accepts information at one rate and delivers it at another rate. (2) An area of storage, temporarily reserved for performing input or output, into which data is read or from which data is written.

**byte.** The amount of storage required to represent one character; a byte is 8 bits.

**C & SM.** See *Communications and Systems Management (C & SM)*.

**cable thru.** A standard function or special feature that allows multiple work stations to be attached to a particular line.

**call.** (1) To activate a program or procedure at its entry point. Compare with *load*. (2) In data communications, the action necessary in making a connection between two stations on a switched line.

**cancel.** To end a task before it is completed.

**carrier.** A continuous frequency that can be modulated with a second (information-carrying) signal.

**CCITT.** Consultative Committee on International Telegraphy and Telephone.

**CCP.** See *communications control program (CCP)*.

**CCP subsystem.** The SSP-ICF subsystem that provides data communications with a System/3 Model 15D.

**chain.** (1) A group of logically linked records. (2) In SNA, a group of logically linked records that are transferred over a communications line.

**change management.** The part of the Communications and Systems Management feature that allows a host system operator to send (via DSX) programming changes and new programs to System/36, and to start procedures on System/36.

**character.** A letter, digit, or other symbol.

**character key.** A keyboard key that allows the user to enter the character shown on the key. Compare with *command key* and *function key*.

**CICS subsystem.** The SSP-ICF subsystem that allows binary synchronous communications with CICS/VS.

**CICS/VS.** Customer Information Control System, which operates on a host system such as a System/370, or a 30xx or 43xx processor.

**clocking.** In data communications, a method of controlling the number of data bits sent on a communications line in a given time.

**close.** To end the processing of a file.

**COBOL (common business-oriented language).** A high-level programming language, similar to English, that is used primarily for commercial data processing.

**code.** (1) Instructions for the computer. (2) To write instructions for the computer. Same as *program*. (3) A representation of a condition, such as an error code.

**command.** A request to the system to perform an operation or a procedure.

**command key.** A keyboard key that is used to request specific programmed actions. Compare with *character key* and *function key*.

**common carrier.** In data communications, any government-regulated company that provides communication services to the general public.

**communications.** See *data communications*.

**communications adapter.** A hardware feature that enables a computer or device to become a part of a data communications network.

**Communications and Systems Management (C & SM).** A feature of the System Support Program Product that contains the remote management support (also referred to as DHCF), the change management support (referred to as DSNX), and the problem management support (referred to as alerts).

**communications control program (CCP).** An IBM System/3 Model 15 program that allows communications between System/3 and the SSP-ICF CCP subsystem.

**communications file.** A file that describes an advanced program-to-program communications (APPC) subsystem session between a System/36 program and a remote device, another program, or another system.

**communications file definition.** The format in the communications file that contains the APPC subsystem session description.

**communications line.** The line over which data communications takes place; for example, a telephone line.

**communications link.** See *data link*.

**communications security.** A System Support Program Product option that allows the identity of a remote location to be verified before that location can run programs on your system.

**communications subsystem.** See *subsystem*.

**compress.** (1) To move files, libraries, or folders together on disk to create one continuous area of unused space. (2) To replace repetitive characters in a file or folder with control characters so that the file or folder takes up less space when saved on diskette.

**compression.** In data communications, a technique for removing strings of duplicate characters and for removing trailing blanks before transmitting data.

**condition.** An expression in a program or procedure that can be evaluated to a value of either true or false when the program or procedure is running.

**configuration.** The group of machines, devices, and programs that make up a data processing system. See also *system configuration*.

**configuration member.** (1) A library member that describes the devices, programming, and characteristics of the system. (2) In data communications, a member that defines the attributes of a communications subsystem or line.

**configure.** (1) To describe (to the system) the devices, optional features, and program products installed on a system. (2) To describe to SSP-ICF both the communications facilities connected to System/36 and the attributes of the subsystem and remote system.

**constant.** A data item with a value that does not change. Contrast with *variable*.

**control storage.** Storage in the computer that contains the programs used to control input and output operations and the use of main storage. Contrast with *main storage*.

**current library.** The first library searched for any required members. The current library can be specified during sign-on or while running programs and procedures.

**cursor.** A movable symbol on a display, used to indicate to the operator where to type the next character.

**data area.** A storage area used by a program or device to hold information.

**data circuit-terminating equipment (DCE).** The equipment installed at the user's location that provides all the functions required to establish, maintain, and terminate a connection, and the signal conversion and coding between the data terminal equipment (DTE) and the line.

**data communications.** The transmission of data between computers and/or remote devices (usually over a long distance).

**Data Encryption Subroutine.** A feature of the System Support Program Product that codes and decodes data for security purposes. This subroutine is only used by the SSP-ICF Finance subsystem.

**data link.** The equipment and rules (protocols) used for sending and receiving data.

**data link escape (DLE) character.** In BSC, a transmission control character usually used in transparent text mode to indicate that the next character is a transmission control character.

**data management.** See *disk data management*.

**data mode.** In data communications, a time during which BSC is sending or receiving characters on the communications line.

**data terminal equipment (DTE).** The data processing unit that uses communications lines.

**DCE.** See *data circuit-terminating equipment (DCE)*.

**DDFF.** See *Distributed Disk File Facility (DDFF)*.

**DDM.** See *Distributed Data Management (DDM)*.

**debug.** To detect, locate, and remove errors from a program.

**decimal.** (1) Pertaining to a system of numbers to the base ten; decimal digits range from 0 through 9. (2) A proper fraction in which the denominator is a power of 10.

**default.** See *default value*.

**default value.** A value stored in the system that is used when no other value is specified.

**define-the-file (DTF).** A control block containing information that is passed between data management routines and users of the data management routines.

**delete.** To remove. For example, to delete a file or a document.

**demodulate.** To set a modulated signal to its original state.

**destination service access point (DSAP).** An address that allows a system to route data to the proper support from a remote device.

**DHCF.** See *Distributed Host Command Facility (DHCF)*.

**disable.** In interactive communications, to end a subsystem and free the area of main storage used by that subsystem. Contrast with *enable*.

**DISC.** Disconnect.

**disclosure.** The act of making known or public.

**disconnect (DISC) character.** In data communications, the part of the BSC transmission control sequence for ending the connection on a switched line.

**display.** (1) A visual presentation of information on a display screen. (2) To show information on the display screen.

**display format.** Data that defines (or describes) a display.

**display station.** A device that includes a keyboard from which an operator can send information to the system and a display screen on which an operator can see the information sent to or the information received from the system.

**Display Station Pass-Through (DSPT).** A communications feature that allows a user to sign on to one System/36 from another System/36 and access that remote system's resources.

**DisplayWrite/36 (DW/36).** A program product for creating, revising, viewing, and printing documents.

**Distributed Data Management (DDM).** A feature of the System Support Program Product that allows an application program to work on files that reside on a remote system.

**Distributed Disk File Facility (DDFF).** A feature of the System Support Program Product that allows a System/3 or System/34 with DDFF to access disk files on System/36.

**Distributed Host Command Facility (DHCF).** Another name for the remote management support offered by the Communications and Systems Management feature. This support allows HCF host system users to operate System/36s in an HCF network.

**Distributed Systems Executive (DSX).** A program product available for IBM host systems (System/370, 43xx, and 30xx) that allows the host system to get, send, and remove files, programs, formats, and procedures in a network of computers.

**Distributed Systems Node Executive (DSNX).** Another name for the change management support offered by the Communications and Systems Management feature. This support processes changes sent by a DSX host system.

**DLE.** See *data link escape (DLE) character*.

**DSAP.** See *destination service access point (DASP)*.

**DSNX.** See *Distributed Systems Node Executive (DSNX)*.

**DSPT.** See *Display Station Pass-Through (DSPT)*.

**DSX.** See *Distributed Systems Executive (DSX)*.

**DTE.** See *data terminal equipment (DTE)*.

**duplex.** Pertains to communications in which data can be sent and received at the same time. Same as full duplex. Contrast with *half duplex*.

**DW/36.** See *DisplayWrite/36 (DW/36)*.

**EBCDIC.** See *extended binary-coded decimal interchange code (EBCDIC)*.

**EBCDIC character.** Any one of the symbols included in the 8-bit EBCDIC set.

**eight-line communications adapter/attachment (ELCA).** A feature that allows up to eight communication lines to be connected to a 5360 System Unit.

**ELCA.** See *eight-line communications adapter/attachment (ELCA)*.

**emulation.** Imitation; for example, the imitation of a computer or device.

**enable.** In interactive communications, to load and start a subsystem. Contrast with *disable*.

**end-of-text (ETX) character.** In binary synchronous communications, the transmission control character used to end a logical set of records that began with the start-of-text character.

**end-of-transmission (EOT) character.** In binary synchronous communications, the transmission control character usually used to end communications.

**end-of-transmission-block (ETB) character.** In binary synchronous communications, the transmission control character used to end a block of records that began with the start-of-text character.

**enhance.** To make greater; to improve.

**ENQ.** See *enquiry (ENQ) character*.

**enquiry (ENQ) character.** In binary synchronous communications, the transmission control character usually used to request a response from the remote system or device.

**enter.** To type in information from a keyboard and press the Enter key to send the information to the computer.

**EOT.** See *end-of-transmission (EOT) character*.

**ERAP.** See *error recording analysis procedure (ERAP)*.

**error code.** See *system reference code*.

**error recording analysis procedure (ERAP).** An IBM-supplied program that processes and presents recorded errors related to the devices (disk, for example) of the system.

**ETB.** See *end-of-transmission-block (ETB) character*.

**ETX.** See *end-of-text (ETX) character*.

**evoked.** To start a program or procedure so that it can communicate with your program.

**EW indicator.** See *end-of-work-session indicator*.

**executable statement.** A statement that specifies action to be taken by the program; for example, calculations to be performed, conditions to be tested, or flow of control to be altered. Contrast with *nonexecutable statement*.

**execution phase.** The part of the sort program that reads the records to be sorted, sorts the records, and writes the sorted records into the output file.

**execution-time array.** An array that is loaded after the program begins. Contrast with *compile-time array* and *preexecution-time array*. An array that is loaded after the program begins. Contrast with *compile-time array* and *preexecution-time array*.

**expiration date.** The date after which a diskette file is no longer protected from being automatically erased by the system.

**explicit.** Externally visible.

**expression.** A representation of a value. For example, variables and constants appearing alone or in combination with operators.

**extended binary-coded decimal interchange code (EBCDIC).** A set of 256 eight-bit characters.

**feature.** A programming or hardware option, usually available at an extra cost. For example, Communications is a feature of the System Support Program Product.

**field.** One or more characters of related information (such as a name or an amount). Can be what records are comprised of.

**file.** A set of related records treated as a unit.

**file name.** The name used by a program to identify a file. See also *label*.

**Finance subsystem.** The SSP-ICF subsystem that allows System/36 to communicate with the 3601 and 4701 Finance Controllers and the 3694 Document Processor.

**first-level message.** A message that is issued immediately when an error occurs. See also *second-level message*.

**folder.** A named area on disk that contains documents, profiles, mail, or data definitions used by office products. Compare with *library*.

**format.** (1) A defined arrangement of such things as characters, fields, and lines, usually used for displays, printouts, files, or documents. (2) To arrange such things as characters, fields, and lines. (3) In BASIC, a representation of the correct form of a command or statement. (4) In IDDU, a group of related fields, such as a record, in a file.

**full duplex.** See *duplex*.

**function key.** A keyboard key that requests an action but does not display or print a character. The cursor movement and Help keys are examples of function keys. Compare with *command key* and *character key*.

**function management header.** In SNA, a special record or part of a record that contains control information for the data that follows.

**generation.** For some remote systems, the translation of configuration information into machine language.

**half duplex.** Pertains to communications in which data can be sent in only one direction at a time. Contrast with *duplex*.

**HCF.** See *Host Command Facility (HCF)*.

**HDLC.** See *high-level data link control (HDLC)*.

**Help key.** A function key that, when pressed, displays online information or some part of the system help support.

**help text.** The part of the system help support that supplies information about menus, prompts, and messages.

**hex.** See *hexadecimal*.

**hexadecimal.** Pertaining to a system of numbers to the base sixteen; hexadecimal digits range from 0 (zero) through 9 (nine) and A (ten) through F (fifteen).

**high-level data link control (HDLC).** Control of data links by use of a specified series of bits rather than by the control characters of the ISO Standard 7-bit character set for information processing interchange.

**Host Command Facility (HCF).** A feature available for IBM host systems (System/370, 43xx, and 30xx) that allows host system users to operate System/36s from their 3270-type display stations as though they were using remotely attached 5250-type display stations.

**host system.** The primary or controlling computer in a communications network. See also *control station*.

**I/O.** See *input/output (I/O)*.

**IBM PC.** An IBM personal computer; for example, an IBM Personal Computer AT.

**Token-Ring Network.** The local area network (LAN) designed to run on the IBM Cabling System.

**ID.** Identification.

**identifier.** (1) A sequence of bits or characters that identifies a program, device, or system to another program, device, or system. (2) In COBOL, a data name that is unique or is made unique by the correct combination of qualifiers, subscripts, or indexes. (3) In PS/36, a name that identifies the type of member in a group. The identifier can be a calendar, a user ID, or another group.

**IGS.** See *interchange group separator (IGS)*.

**informational message.** A message that provides information to the operator, but does not require a response.

**initial program load (IPL).** The process of loading the system programs and preparing the system to run jobs.

**initialize.** To prepare for use. For example, to initialize a diskette.

**input.** Data to be processed.

**input/output (I/O).** Pertaining to either input or output, or both.

**inquiry.** (1) A request for information in storage. (2) A request that puts a display station into inquiry mode. (3) In data communications, a request for information from another system.

**interactive.** Pertaining to activity involving requests and replies as, for example, between an operator and a program or between two programs. Contrast with *batch*.

**Interactive Communications Feature (SSP-ICF).** A feature of the System Support Program Product that allows a program to interactively communicate with another program or system.

**interactive processing.** A processing method in which each operator action causes a response from the program or the system. Contrast with *batch processing*.

**interchange group separator (IGS).** A character used to indicate that blanks have been removed from a string of data and are to be reinserted.

**intermediate block check.** In binary synchronous communications, an option that permits checking each record, instead of checking the contents of the total buffer, when large buffers of data are received.

**intermediate routing function.** The capability of a network node to receive session data from an adjacent node and route it to the next node on the session path.

**intermediate-text-block (ITB) character.** In binary synchronous communications, the transmission control character used to indicate the end of a section of data to be checked. See *intermediate block check*.

**interrupt.** (1) To temporarily stop a process. (2) In data communications, to take an action at a receiving station that causes the sending station to end a transmission.

**Intra subsystem.** An SSP-ICF subsystem that enables programs to communicate with other programs on the same system without the use of communication lines.

**IPL.** See *initial program load (IPL)*.

**IRS (interchange record separator).** Same as *record separator*.

**ITB.** See *intermediate-text-block (ITB) character*.

**job.** (1) A unit of work to be done by a system. (2) One or more related procedures or programs grouped into a procedure.

**job step.** A unit of work represented by a single program or a procedure that contains a single program. A job consists of one or more job steps.

**K-byte.** 1024 bytes.

**key.** One or more characters used to identify the record and establish the record's order within an indexed file.

**label.** (1) The name in the disk or diskette volume table of contents or on a tape that identifies a file. See also *file name*. (2) The name that identifies a statement.

**LAN.** See *local area network (LAN)*.

**left-adjust.** To place or move an entry in a field so that the leftmost character of the field is in the leftmost position. Contrast with *right-adjust*.

**library.** (1) A named area on disk that can contain programs and related information (not files). A library consists of different sections, called library members. Compare with *folder*. (2) The set of publications for a system.

**library member.** A named collection of records or statements in a library. The types of library members are *load member*, *procedure member*, *source member*, and *subroutine member*.

**library member subtype.** A specific classification of a library member type. For example, a source member can be identified as a COBOL source member or a DFU source member.

**licensed program.** An IBM-written program that performs functions related to processing user data.

**link.** In data communications, the connection between two systems.

**link level.** A part of Recommendation X.25 that defines the link protocol used to get data into and out of the network across the full-duplex link connecting the subscriber's machine to the network node. LAP and LAPB are the link access protocols recommended by the CCITT.

**link protocol.** See *link level*.

**load.** (1) To move data or programs into storage. Compare with *call* (2) To place a diskette into a diskette drive or a diskette magazine into a diskette magazine drive. (3) To insert paper into a printer. (4) To mount a tape or insert a tape cartridge into a tape drive.

**load member.** A library member that contains information in machine language, a form that the system can use directly. Contrast with *source member*.

**local.** Pertaining to a device, file, or system that is accessed directly from your system, without the use of a communications line. Contrast with *remote*.

**local area network (LAN).** The physical connection among devices located on the same premises for information transfer.

**location name.** In interactive communications, the identifying name associated with a particular system or device.

**log.** (1) To record; for example, to log all messages on the system printer. (2) See *mail log*.

**logical channel.** In a packet switching data network, a path over which data packets flow between the sending data terminal equipment and the network, and between the network and the receiving data terminal equipment.

**logical unit (LU).** The part of a system or device in an SNA network that allows a user or program to use the communications network.

**LU.** See *logical unit (LU)*.

**macro.** See *macroinstruction*.

**macroinstruction.** A single instruction that represents a set of instructions.

**main storage.** The part of the processing unit where programs are run. Contrast with *control storage*.

**manual answer.** In data communications, a line type requiring operator actions to receive a call over a switched line. Contrast with *autoanswer*.

**manual call.** In data communications, a line type requiring operator actions to place a call over a switched line. Contrast with *autocall*.

**master configuration record.** Information, stored on disk, that describes system devices, programming, and characteristics.

**member.** See *library member*.

**menu.** A displayed list of items from which an operator can make a selection.

**message.** (1) Information sent to one or more users or display stations from a program or another user. A message can be either displayed or printed. (2) An indication of the condition of the system sent by the system. (3) For IMS/IRSS, a unit of data sent over the communications line.

**message identification.** A field in the display or printout of a message that directs the user to the description of the message in a message guide or a reference manual. This field consists of up to four alphabetic characters, followed by a dash, followed by the message identification code.

**message identification code (MIC).** A four-digit number that identifies a record in a message member. This number can be part of the message identification.

**MIC.** See *message identification code (MIC)*.

**MLCA.** See *multiline communications adapter/attachment (MLCA)*.

**mode.** A method of operation. For an example, see *enter/update mode*.

**modem.** See *modulator-demodulator (modem)*.

**modulation.** Changing the frequency or size of one signal by using the frequency or size of another signal.

**modulator-demodulator (modem).** A device that converts data from the computer to a signal that can be transmitted on a communications line, and converts the signal received to data for the computer.

**module.** (1) One part of a program, which usually performs a specific task (such as disk input/output). (2) See *load module*. (3) See *object module*.

**monitor.** Programming or hardware that observes, supervises, controls, or verifies the operation of a system.

**MRT procedure.** See *multiple requester terminal (MRT) procedure*.

**MRT program.** See *multiple requester terminal (MRT) program*.

**MSRJE.** See *Multiple Session Remote Job Entry (MSRJE)*.

**multiline communications adapter/attachment (MLCA).** A feature that allows up to four communication lines to be connected to System/36 with a 5360 or 5362 System Unit.

**multiple.** More than one.

**multiple requester terminal (MRT) procedure.** A procedure that calls a multiple requester terminal program.

**multiple requester terminal (MRT) program.** A program that can process requests from more than one display station or SSP-ICF session at the same time using a single copy of the program. Contrast with *single requester terminal (SRT) program*.

**Multiple Session Remote Job Entry (MSRJE).** A feature of the System Support Program Product that allows one or more remote job entry sessions to operate on a host system (such as a System/370, or a 30xx or 43xx processor) at the same time.

**multipoint.** In data communications, pertains to a network that allows two or more stations to communicate with a single system on one line.

**NAK.** See *negative acknowledgment character (NAK)*.

**negative acknowledgment character (NAK).** In binary synchronous communications, a transmission control character sent as a negative response to data received.

**negative response.** In data communications, a reply indicating that data was not received correctly or that a command was incorrect or unacceptable.

**negotiate.** To arrange for or bring about.

**NEP.** See *never-ending program (NEP)*.

**network.** A collection of data processing products connected by communications lines for information exchange between stations.

**network node.** A node which is capable of performing the intermediate routing functions, directory services, and route selection services in an APPC network.

**Network Problem Determination Application (NPDA).** A program product that assists the user in identifying network problems from a central control point using interactive display techniques.

**network resource directory (NRD).** An area on disk that lists the files on remote systems that can be accessed using Distributed Data Management (DDM).

**never-ending program (NEP).** A long-running program that does not share system resources, except for shared files and the spool file.

**node.** (1) An addressable location in a communications network that provides host processing services. (2) A point where packets are received, stored, and forwarded to another node (or DTE) according to a routing method the network has defined.

**non-return-to-zero inverted (NRZI).** On System/36, a method of data transmission where the signal is changed to transmit a 0 bit. For the 1 bit the signal stays the same. This ensures that the signal does not stay the same for an extended period of time.

**nonswitched line.** A connection between computers or devices that does not have to be established by dialing. Contrast with *switched line*.

**NRZI.** See *non-return-to-zero inverted (NRZI)*.

**null.** See *null character*.

**null character.** The character hex 00, used to represent the absence of a displayed or printed character.

**null record.** In binary synchronous communications, a record that contains no data; only the data link control characters STX ETX.

**numeric.** Pertaining to any of the digits 0 through 9.

**OCL.** See *operation control language (OCL)*.

**offline.** Neither controlled directly by, nor communicating with, the computer, or both. Contrast with *online*.

**online.** Being controlled directly by, or directly communicating with, the computer, or both. Contrast with *offline*.

**open.** To prepare a file for processing.

**operation.** A defined action, such as adding or comparing, performed on one or more data items.

**operation code.** (1) A code used to represent the operations of a computer. (2) In SSP-ICF, a code used by a System/36 application program to request SSP-ICF data management and/or the subsystem to perform an action. For example, the operation **\$\$SEND** asks that data be sent.

**operation control language (OCL).** A language used to identify a job and its processing requirements to the System Support Program Product.

**output.** The result of processing data.

**override.** (1) A parameter or value that replaces a previous parameter or value. (2) To replace a parameter or value.

**packet.** A data transmission information unit. It has a header on the front that indicates the destination of the packet. Commonly used data field lengths in packets are 128 or 256 bytes.

**packet assembly/disassembly (PAD).** A functional unit that enables data terminal equipment (DTEs) not equipped for packet switching to access a packet-switched network.

**packet switching.** The act of transferring and routing packets from source to destination based on information contained in their headers.

**packet switching data network (PSDN).** A communications network that uses packet switching as a means of transmitting data.

**packet window.** A specified number of packets that can be sent by the DTE before it receives an acknowledgement.

**PAD.** See *packet assembly/disassembly*

**parameter.** A value supplied to a procedure or program that either is used as input or controls the actions of the procedure or program.

**partner.** In data communications, the remote application program or the remote computer.

**password.** A string of characters that, when entered along with a user ID, allows an operator to sign on to a secured system.

**password security.** A System Support Program Product option that helps prevent the unauthorized use of system services by checking the password entered by each operator at sign-on.

**PC.** A personal computer.

**PC Support/36.** A group of programs that can be used to transfer data from a System/36 to an IBM personal computer, to use disk storage on System/36 as IBM personal computer disk storage, and to use printers attached to System/36 as a IBM personal computer printer.

**PC Support/36 Expansion feature.** A feature that allows the number of concurrent users of PC Support/36 to be expanded.

**Peer subsystem.** The SSP-ICF subsystem that allows System/36 to communicate with another System/36 or System/34 using SNA/SDLC.

**Peer-to-Peer Networking.** See *Advanced Peer-to-Peer Networking*.

**pending.** (1) Waiting, as in an operation is pending.

**peripheral.** A device connected to the system to provide communication (as input or output) or auxiliary functions.

**permanent virtual circuit (PVC).** A virtual circuit that has a logical channel permanently assigned to it at each DTE. The usual call establishment protocol is therefore not required.

**phone list.** A list of telephone numbers to be called using a communications program and the autocal or X.25 feature.

**physical connection.** See *physical level (X.25)*.

**physical level (X.25).** A standard that defines the electrical, physical, functional, and procedural methods used to control the physical link running between the DTE and the DCE.

**point-to-point line.** A communications line that connects a single remote station to a computer.

**poll.** To execute a polling sequence.

**polling.** A method for determining whether each of the stations on a communications line has data to send.

**positional parameter.** A parameter that must appear in a specified location, relative to other positional parameters.

**priority.** The relative ranking of items. For example, a job with high priority will be run before one with regular or low priority.

**procedure.** A set of related operation control language statements (and, possibly, utility control statements or procedure control expressions) that cause a specific program or set of programs to be run.

**procedure command.** A command that runs a procedure; usually the same as a procedure name.

**procedure member.** A library member that contains the statements (such as operation control language statements) necessary to perform a program or set of programs.

**procedure start request.** A message from the remote system asking an SSP-ICF subsystem to start a System/36 procedure.

**program.** (1) A sequence of instructions for a computer. See *source program* and *load module*. (2) To write a sequence of instructions for a computer. Same as *code*.

**program product.** A licensed program for which a fee is charged.

**program temporary fix (PTF).** A temporary solution to or bypass of a defect in a current release of a licensed program.

**prompt.** A displayed request for information or operator action.

**protocol.** A set of rules governing the communication and transfer of data between two or more devices in a communications system.

**PSDN.** See *packet switching data network (PSDN)*.

**PTF.** See *program temporary fix (PTF)*.

**public data network.** A communications common carrier network that provides data communications services over switched or nonswitched lines.

**queue.** A line or list formed by items waiting to be processed.

**receive time-out.** In data communications, the result of no data being received in a given period of time.

**Recommendation X.25.** A document, CCITT Recommendation X.25, that outlines standards for the connection of processing equipment to a packet switching data network.

**record.** A collection of fields that is treated as a unit.

**record separator.** In binary synchronous communications, a character used to indicate the end of one record and the beginning of another.

**recovery procedure.** (1) An action performed by the operator when an error message appears on the display screen. Usually, this action permits the program to continue or permits the operator to run the next job. (2) The method of returning the system to the point where a major system error occurred and running the recent critical jobs again.

**remote.** Pertaining to a device, file, or system that is accessed by your system through a communications line. Contrast with *local*.

**remotely started session.** A session started by an incoming procedure start request from the remote system. Contrast with *acquired session*.

**request unit.** In SNA, the record transmitted to the other system. This record can contain a request, data, or both.

**requester.** A display station or interactive communications session that requests a program to be run.

**response unit.** In SNA, the record sent to respond to a request. The response can be either positive or negative and can include control information.

**restore.** Return to an original value or image. For example, to restore a library from diskette.

**return code.** In data communications, a value generated by the system or subsystem that is returned to a program to indicate the results of an operation issued by that program.

**reverse charging.** A packet switching data network optional facility. It enables the DTE to request that the cost of a communications session it initiates be charged to the DTE that is called. See also *optional network facilities*.

**reverse-interrupt character (RVI).** In binary synchronous communications, a request by the receiving station to the sending station to stop sending and begin receiving a message.

**right-adjust.** To place or move an entry in a field so that the rightmost character of the field is in the rightmost position. Contrast with *left-adjust*.

**routine.** A set of statements in a program that causes the system to perform an operation or a series of related operations.

**RPG.** A programming language specifically designed for writing application programs that meet common business data processing requirements.

**RU.** See *request unit* and *response unit*.

**run.** To cause a program, utility, or other machine function to be performed.

**RVI.** See *reverse-interrupt character (RVI)*.

**RWS.** Remote work station.

**SDLC.** See *synchronous data link control (SDLC)*.

**secondary.** Not first in importance or occurrence.

**security.** The protection of data, system operations, and devices from accidental or intentional ruin, damage, or exposure. See also *system security*.

**security officer.** A person who is designated to control many of the system security tasks that are provided with the System Support Program Product. A security officer can, for example, add, change, or remove security information about system console operators, subconsole operators, and display station operators. A security officer cannot, however, deactivate password, badge, or resource security. Contrast with *master security officer*.

**segment.** A part of a program that can be run without the entire program being in main storage.

**sense data.** In SNA, the data sent with a negative response, indicating the reason for the response.

**separator character.** In data communications, the character that is used with some autocal units to separate the digits to be dialed.

**session.** (1) The logical connection by which a System/36 program or device can communicate with a program or device at a remote location. (2) The length of time that starts when an operator signs on the system and ends when the operator signs off the system.

**session group.** In APPC, a number of communications sessions managed as a unit.

**SEU.** See *source entry utility (SEU)*.

**sign off.** To end a session at a display station.

**sign on.** (Verb) To enter a user identification to begin a session at a display station.

**sign-on.** (Noun) The action an operator uses at a display station in order to begin working at the display station.

**single line communications adapter/attachment (SLCA).** In data communications, a feature that allows a single communications line to be connected to System/36.

**single requester terminal (SRT) program.** A program that can process requests from only one display station or SSP-ICF session from each copy of the program. Contrast with *multiple requester terminal (MRT) program*.

**SLCA.** See *single line communications adapter/attachment (SLCA)*.

**SNA.** See *systems network architecture (SNA)*.

**SNA LU-6.2 protocol.** SNA data link protocol for communication between peer systems.

**SNA Upline Facility (SNUF).** The SSP-ICF subsystem that allows System/36 to communicate with CICS/VS and IMS/VS application programs on a host system. Also, using this subsystem, DHCF communicates with HCF and DSNX communicates with DSX.

**SNUF.** See *SNA Upline Facility (SNUF)*.

**SOH.** See *start-of-header (SOH) character*.

**source.** A system, a program within a system, or a device that makes a request to a target. Contrast with *target*.

**source entry utility (SEU).** The part of the Utilities Program Product used by the operator to enter and update source and procedure members.

**source member.** A library member that contains information in the form in which it was entered, such as RPG specifications. Contrast with *load member*.

**SRT program.** See *single requester terminal (SRT) program*.

**SSCP.** See *system services control point (SSCP)*.

**SSP.** See *System Support Program Product (SSP)*.

**SSP-ICF.** See *Interactive Communications Feature (SSP-ICF)*.

**start-of-header (SOH) character.** In binary synchronous communications, the transmission control character indicating that the information that follows is a header.

**start-of-text (STX) character.** In binary synchronous communications, a transmission control character used to begin a logical set of records that will be ended by the end-of-text character or end-of-transmission-block character.

**statement.** An instruction in a program or procedure.

**station.** A computer or device that can send or receive data.

**status.** A condition. For example, the status of a printer, a job, or a communications line.

**STX character.** See *start-of-text (STX) character*.

**subconsole.** A display station that controls a printer or printers.

**subroutine.** A group of instructions that can be called by another program or subroutine.

**subroutine member.** A library member that contains information that must be combined with one or more members before being run by the system.

**subsystem.** The part of communications that handles the requirements of the remote system, isolating most system-dependent considerations from the application program.

**subtype.** See *library member subtype*.

**switched line.** In data communications, a connection between computers or devices that is established by dialing. Contrast with *nonswitched line*.

**switched network backup (SNBU).** In data communications, a technique that provides a switched line connection when a nonswitched line fails.

**switched virtual circuit.** A virtual circuit that is requested from the network through a virtual call. It is released when the virtual circuit is cleared.

**SYN.** See *synchronization (SYN) character*.

**synchronization (SYN) character.** In binary synchronous communications, the transmission control character that provides a signal to the receiving station for timing.

**synchronous.** Occurring in a regular or predictable sequence.

**synchronous data link control (SDLC).** A form of communications line control that uses commands to control the transfer of data over a communications line. Compare with *binary synchronous communications (BSC)*.

**synchronous transmission.** In data communications, a method of transmission in which the sending and receiving of characters is controlled by timing signals. Contrast with *asynchronous transmission*.

**system.** The computer and its associated devices and programs.

**system configuration.** A process that specifies the machines, devices, and programs that form a particular data processing system.

**system console.** A display station from which an operator can keep track of and control system operation.

**system date.** The date assigned by the system operator during the initial program load procedure. See also *creation date*, *program date*, and *session date*.

**system dump.** A dump of all active programs (and their associated data) recorded after an error stops the system. Contrast with *task dump*.

**system library.** The library, provided with the system, that contains the System Support Program Product and is named #LIBRARY.

**system monitor session.** In SSP-ICF, a session started by the Finance subsystem to load the applications into a finance controller.

**system program.** An IBM-supplied program that is installed on the system. The System Support Program Product (SSP) is an example.

**system reference code.** A four-character code that contains information for a service representative. This code either is provided as part of a message or is displayed on the control panel.

**system security.** A system function that restricts the use of files, libraries, folders, folder members, and display stations to certain users.

**System Support Program Product (SSP).** A group of licensed programs that manage the running of other programs and the operation of associated devices, such as the display station and printer. The SSP also contains utility programs that perform common tasks, such as copying information from diskette to disk.

**system unit.** The part of the system that contains the processing unit, the control panel, the disk drive and the disk, and either a diskette drive or a diskette magazine drive.

**System/36 LAN communications.** The hardware and microcode that allows System/36 to be connected to the PC network.

**systems network architecture (SNA).** A set of rules for controlling the transfer of information in a data communications network.

**target.** A system, a program within a system, or a device that interprets, rejects or satisfies, and replies to requests received from a source. Contrast with *source*.

**target system.** In a Distributed Data Management (DDM) network, the system that receives a request from an application program on another system for access to one or more of its files. Contrast with *source system*.

**task.** 1) A unit of work (such as a user program) for the main storage processor. 2) A unit of work that a person does.

**task dump.** A dump of a program that failed (and its associated data). Contrast with *system dump*.

**temporary-text-delay (TTD) character.** A BSC transmission control character that indicates to the receiving station that there is a temporary delay in the transmission of data.

**terminal.** In data communications, a device, usually equipped with a keyboard and a display device, capable of sending and receiving information over a communications line.

**transaction.** (1) An item of business. The handling of customer orders and customer billing are examples of transactions. (2) In interactive communications, the communication between the application program and a specific item (usually another application program) at the remote system.

**transaction code.** For the IMS subsystem, the first one to eight characters of the first segment of a message sent to IMS/VS. The transaction code identifies the application program for which the message is intended.

**transaction file.** A file containing data, such as customer orders, that is usually used only with a master file. (WSU) A direct file containing control records and data records for each work session. (COBOL) An input/output file used to communicate with display stations and SSP-ICF sessions.

**transmission control characters.** In data communications, special characters that are included in a message to control communication over a data link. For example, the sending station and the receiving station use transmission control characters to exchange information; the receiving station uses transmission control characters to indicate errors in data it receives.

**transparent data.** Data that can contain any hexadecimal value.

**transparent text mode.** A mode that allows BSC to send and receive messages containing any of the 256 character combinations in hexadecimal, including transmission control characters.

**tributary station.** In data communications, a secondary device on a multipoint line.

**TTD character.** See *temporary-text-delay (TTD) character*.

**unbind command.** An SNA command used to reset the protocols for a session. Contrast with *bind command*.

**unique.** The only one.

**UPSI switch.** See *user program status indicator (UPSI) switch*.

**user ID.** See *user identification (user ID)*.

**user identification (user ID).** A string of characters that identifies a user to the system.

**user identification file (user ID file).** A file containing information about which operators can use certain system functions, which menu is displayed when an operator signs on to the system, and which library is assigned to an operator when the operator signs on to the system.

**user program status indicator (UPSI) switch.** One of a set of eight switches that can be set by and passed between application programs and procedures.

**valid.** (1) Allowed. (2) True, in conforming to an appropriate standard or authority.

**variable.** A name used to represent a data item whose value can change while the program is running. Contrast with *constant*.

**virtual circuit.** A logical connection established between two DTEs. It can be permanent, that is, defined when you subscribe to your network port, or it can be dynamically established when creating a switched virtual circuit.

**virtual disk.** An area of disk storage created by PC Support/36 to contain data from an IBM personal computer.

**volume table of contents (VTOC).** An area on a disk or diskette that describes the location, size, and other characteristics of each file, library, and folder on the disk or diskette.

**VTOC.** See *volume table of contents (VTOC)*.

**WACK.** See *wait-before-transmitting-acknowledgment character (WACK)*.

**wait-before-transmitting-acknowledgment character (WACK).** In BSC, the transmission control character indicating that the station is temporarily not ready to receive data.

**work station.** A device that lets people transmit information to or receive information from a computer; for example, a display station or printer.

**World Trade.** (1) Pertains to the distinction between the US and the rest of the world. (2) Pertains to the combination of:

- IBM World Trade Americas/Far East Corporation
- IBM World Trade Europe/Middle East/Africa Corporation

**wrap test.** A test that checks attachment or controller circuitry without testing the device itself.

**X.21.** In data communications, a specification of the CCITT that defines the connection of data terminal equipment to an X.21 (public data) network.

**X.21 feature.** The feature that allows System/36 to be connected to an X.21 network.

**X.21 short-hold mode.** An option specified during system configuration that allows a circuit switched line to be disconnected when the line is not active.

**X.25.** In data communications, a specification of the CCITT that defines the interface to an X.25 (packet switching) network.

**X.25 feature.** The feature that allows System/36 to be connected to an X.25 network.

**X.75.** A standard that defines ways of interconnecting two X.25 networks.

**zero suppression.** The substitution of blanks for leading zeros in a number. For example, 00057 becomes 57 when using zero suppression.

**3270 Device Emulation.** A feature of the System Support Program Product that allows a System/36 local or remote device to appear as a 3270 device to another system.

**3270 remote attachment.** Part of the base SSP. This support allows the System/36 to act as a host for 3274 SNA Remote Controllers and attached devices.

**3270 SNA Support subsystem.** The subsystem that provides support for the SNA portion of the 3270 Device Emulation feature.

**3278 Device Emulation.** A feature of the System Support Program Product that allows a System/36 local or remote device to appear as a 3278 device to another system.



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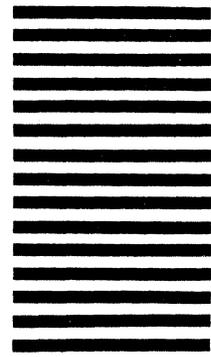
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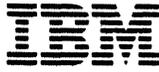
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