

SNA IMF/XL Node Manager's Guide

HP 3000 MPE/iX Computer Systems

Edition 3



Manufacturing Part Number: 30293-90010

E0692

U.S.A. June 1992

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Preface

This manual describes Hewlett-Packard Company's Systems Network Architecture Interactive Mainframe Facility (SNA IMF) for the MPE/XL operating system. Systems Network Architecture (SNA) is a comprehensive specification for distributed data processing networks, developed by IBM.

SNA IMF allows interactive communications between an HP 3000 computer and an IBM host, by emulating the major features of an IBM 3270 control unit, using the protocols of a Node Type 2.0 and Logical Unit Types 1, 2, and 3 (LU.T1, LU.T2, and LU.T3). This manual describes the steps to install and configure SNA IMF on the HP 3000 system.

NOTE

MPE/iX, Multiprogramming Executive with Integrated POSIX, is the latest in a series of forward-compatible operating systems for the HP 3000 line of computers.

In HP documentation and in talking with HP 3000 users, you will encounter references to MPE/XL, the direct predecessor of MPE/iX. MPE/iX is a superset of MPE/XL. All programs written for MPE/XL will run without change under MPE/iX. You can continue to use MPE/XL system documentation, although it may not refer to features added to the operating system to support POSIX (for example, hierarchical directories).

Finally, you may encounter references to MPE V, which is the operating system for HP 3000s, not based on the PA-RISC architecture. MPE V software can be run on the PA-RISC (Series 900) HP 3000s in what is known as compatibility mode.

Audience

This manual addresses the HP node manager responsible for planning, configuring, and monitoring the operation of an HP 3000 SNA data communications subsystem. A node manager also handles data communications activities associated with the link between SNA IMF and the host. The node manager should have knowledge of the MPE operating system, be familiar with how the host system operates, and have HP 3000 node manager (NM) and network administrator (NA) capabilities.

Organization

This manual is divided into the following chapters and appendix:

Chapter 1 , “SNA IMF Overview,” contains an overview of SNA IMF and the components of the network.

Chapter 2 , “SNA IMF Installation Guidelines,” discusses installation procedures.

Chapter 3 , “SNA IMF Configuration,” explains how to use the NM configuration manager (NMMGR) to create a hierarchical configuration file for SNA IMF.

Chapter 4 , “SNA IMF Session Startup and Shutdown,” describes how to establish and terminate SNA IMF sessions.

Chapter 5 , “SNA IMF Troubleshooting,” gives you information about solving problems that might occur while configuring, installing, and running SNA IMF.

Appendix A , “Validation Messages.” contains the messages you might encounter while validating the SNA IMF configuration data.

Related HP Publications

As an SNA IMF node manager, you can find related information in these manuals:

- *Using the Node Management Services Utilities*
- *SNA Link/XL Node Manager's Guide*
- *SNA IMF Programmer's Reference Manual*
- *Using SNA IMF Pass Thru*
- *HP SNA Products: IBM Host System Programmer's Guides:*
 - *HP SNA Products: Manager's Guide*
 - *HP SNA Products: ACF/NCP and ACF/VTAM Guide*
 - *HP SNA Products: IMS Guide*
 - *HP SNA Products: CICS Guide*
 - *HP SNA Products: AS/400 Guide*
- *MPE/XL Commands Reference Manual*
- *HP SNA Server/Access User's Guide*

Systems Network Architecture Interactive Mainframe Facility (SNA IMF) emulates the major features of an **IBM 3270** control unit, using the protocols of a Node Type 2.0 and Logical Unit Types 1, 2, and 3 (LU.T1, LU.T2, and LU.T3). SNA IMF supports interactive communication between an HP 3000 and an IBM host. The host can be an **IBM System/370**-compatible mainframe (for example, Model **370**, **303x**, or **43xx**), an **IBM System/36** or **System/38**, or an **IBM AS/400**.

If the HP 3000 will communicate with an IBM mainframe, it must be connected to an **IBM 37xx**-compatible communications controller that supports an SNA line. An HP 3000 can also be connected to the communications controller via an **IBM 3710** network controller. The host must use an IBM operating system with the Virtual Telecommunications Access Method (VTAM) and must support remote IBM 3270 control units.

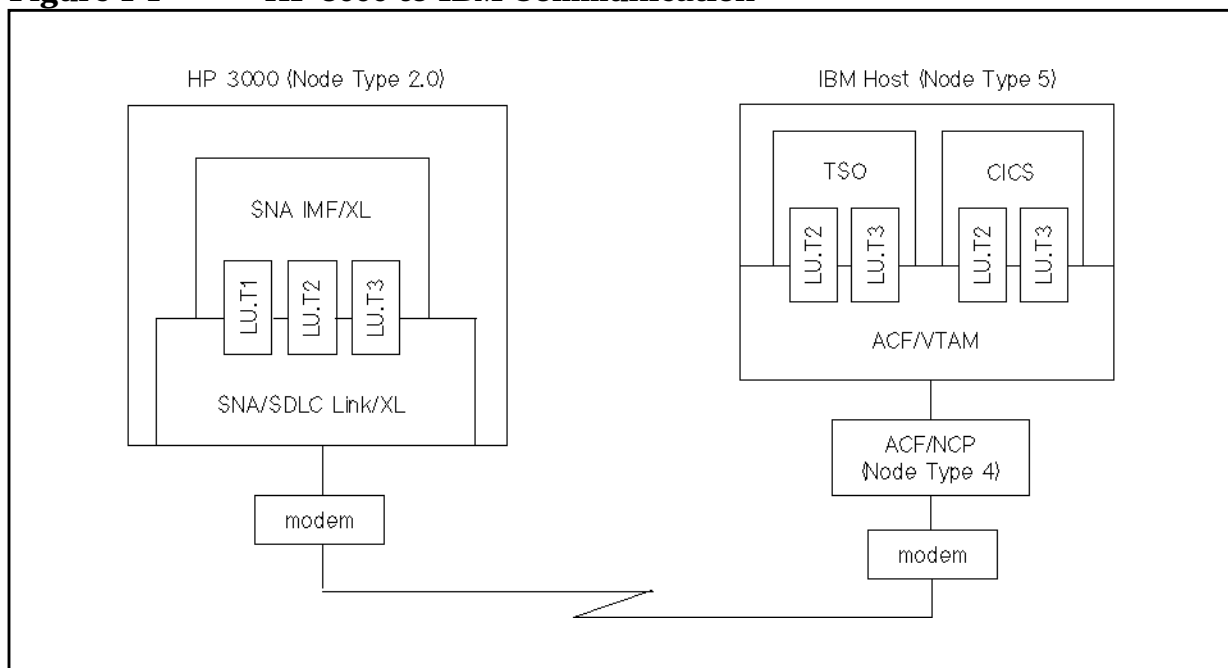
SNA IMF uses one of these SNA link products:

- SNA/SDLC Link: A bundled hardware and software product that supports a logical and physical connection to an SNA network.
- SNA/X.25 Link: A software product that communicates with the X.25 network through the X.25 XL System Access software on the HP 3000.

SNA IMF and the SNA link form an HP 3000 subsystem that emulates the IBM 3270 control unit in an SNA network.

Figure 1-1 shows the different LU types that SNA IMF can implement.

Figure 1-1 HP 3000-to-IBM Communication



Note that SNA/SDLC Link is the only SNA link product shown in the figure. For a description of all SNA link products, see the *SNA Link/XL Node Manager's Guide*.

Network Configuration Order

We recommend that the HP 3000 system and the software components of the IBM host be configured in this order:

1. The IBM host (VTAM, AS/400, etc.)
2. The SNA nodes on the HP 3000
3. Logging for SNA Transport on the HP 3000
4. The SNA services on the HP 3000
5. Logging for the SNA services on the HP 3000

To run SNA IMF on your HP 3000, you must install the product and configure both your HP 3000 environment and the host system to support SNA IMF. As part of the configuration process, you must ensure that the HP 3000 parameters match those on the host side. The necessary parameters are described in Chapter 3 , “SNA IMF Configuration,” in this manual.

Before you install SNA IMF on the HP 3000, you must do the following things:

1. Ensure that the modem link between the HP 3000 and the host operates. If you use HP modems, Hewlett-Packard will help you verify that these modems work.
2. Configure a remote IBM 3270 control unit on the host system. This can involve system generation changes to the host operating system, teleprocessing subsystem software, and an IBM 37xx front end processor. Also, you might need to install additional hardware on the host to support a remote IBM 3270 port. For information on host configuration, consult the following manuals:

HP SNA Products: Manager's Guide

HP SNA Products: ACF/VTAM and ACF/NCP Guide

HP SNA Products: CICS Guide

HP SNA Products: IMS Guide

HP SNA Products: AS/400 Guide

Obtain a copy of the host system generation. You will need this information later during SNA IMF installation.

3. Have available a host system program that can communicate with a remote IBM 3270 control unit. You can use this host program to test SNA IMF.
4. Ensure that the correct SNA link product has been installed.

After you perform these pre-installation tasks, your HP 3000 will be prepared for SNA IMF installation. Follow the instructions in the *HP 3000 MPE XL Installation and Update Manual* or the *HP 3000 MPE XL Add-On Manual* to install SNA IMF with the MPE AUTOINST utility.

After you have installed SNA IMF, run `NMMAINT.PUB.SYS` to ensure that the AUTOINST utility successfully installed the right versions of all the necessary software modules.

Your HP representative will perform a minimum configuration of SNA IMF to verify that the product is working correctly.

This chapter describes how to use the NM configuration manager (NMMGR) to create or modify a hierarchical configuration file for SNA IMF.

NOTE

Before you can configure SNA IMF, you must have successfully configured the SNA link (including logging). Configuration of the SNA links is described in the *SNA Link/XL Node Manager's Guide*. You also must coordinate the SNA IMF configuration with the IBM host configurations. Host configuration is described in the *HP SNA Products* guides (see the list of related publications in the preface of this manual).

This chapter contains this information:

- Data required from the host configuration
- NMMGR configuration overview
 - Location of NMMGR screens
 - Configuration file validation
 - Configuration file critical summary
- Configuring SNA IMF
- Migrating a configuration from MPE V to MPE XL

Data Required From the Host Configuration

Data in an SNA IMF configuration file must correspond to information from the host configuration. Before using NMMGR, you should have certain information from the host configuration.

You must coordinate the SNA IMF configuration with the ACF/NCP and ACF/VTAM host configurations. The *HP SNA Products: ACF/NCP and ACF/VTAM Guide* explains these configurations (see the list of related publications in the preface of this manual).

Table 3-1 shows the relationship between items from the ACF/NCP and ACF/VTAM configurations and items in the SNA IMF configuration file. To determine whether the value of a host macro must match the value entered in the corresponding NMMGR screen field, see that field's description later in this chapter.

Table 3-1 ACF/NCP and ACF/VTAM Corresponding Values

Host Configuration Macro and Operand	Field in NMMGR Screen	SNA IMF NMMGR Screen
PU <i>puname</i>	SNAnode Name New Name	Configuration Configuration
LU <i>luname</i>	LU List for this Security Class	Security Class Data

NOTE

It is not necessary to configure TSO explicitly to communicate with SNA IMF. All the information TSO needs to communicate with SNA IMF is configured through VTAM.

Table 3-2 shows the relationship between items from the IBM AS/400 configuration and items in the SNA IMF configuration file. To determine whether the value of a host parameter must match the value entered in the corresponding NMMGR screen field, see that field's description later in this chapter. For more information on configuring an IBM AS/400 to communicate with SNA IMF, see the *HP SNA Products: AS/400 Guide*.

Table 3-2 AS/400 Corresponding Values

AS/400 Configuration Parameter	Field in NMMGR Screen	SNA IMF NMMGR Screen
RMTLOCNAME of Device Description	LU List for this Security Class	Security Class Data

NOTE

When you configure a device on the AS/400, System/36, or System/38 to communicate with SNA IMF, the device type *must* be 3277.

In addition to NMMGR configuration, SNA IMF also requires that you configure Pass Thru options in a file called PTCONFIG. In order to use Pass Thru to communicate with an IBM AS/400, you must specify UNBIND: NO in the PTCONFIG file. For more information, see *Using SNA IMF Pass Thru*.

NMMGR Configuration Overview

The SNA IMF configuration is done by using NMMGR to create or modify a configuration file. The basic operation of NMMGR is described in *Using the Node Management Services Utilities*; if you are not familiar with NMMGR, you should read that manual before continuing.

NOTE

When configuring SNA IMF, the configuration file can be named anything you prefer. However, when you run SNA IMF, it looks for a configuration file named `NMCONFIG.PUB.SYS`. For example, you could have these configuration files:

```
XYZ.CONFIG.SYS
CONFIG1.FILES.SYS
FILE3.CONFIG.SYS
```

If you wanted to use `FILE3.CONFIG.SYS` when you ran SNA IMF, you would have to rename or copy the file to `NMCONFIG.PUB.SYS` before you started SNA IMF.

You configure these items for SNA IMF:

- SNA node and security class identification data. This is the name of the SNA node you are specifying security class information for, and the name of the security class you are configuring.
- Security class data. A list of up to 64 LUs can be configured for a security class.
- Authorized user data. A list of up to 42 users can be authorized to use the LUs in a security class.
- Authorized program data. A list of up to 26 programs can be authorized to use the LUs in a security class.

NOTE

If you change the node configuration for SNA IMF while it is running, the changes will not take effect until SNA IMF is restarted.

Location of NMMGR Screens

Refer to the List of Figures for a location of the NMMGR screens used in SNA IMF configuration; it lists the page in this manual on which each screen is shown.

Configuration File Validation

Validating the configuration file ensures that the configuration data is logically and syntactically correct. Each SNA service's data is also checked against the SNA node configuration data for correctness (for

example, correct LU names). See Appendix A , “Validation Messages,” of this manual for SNA IMF validation error messages.

You should validate the configuration file after completing any of these tasks:

- An initial configuration of one or more SNA nodes
- An initial configuration of one or more SNA services
- A modification of an existing configuration

The configuration file is validated through NMMGR; see *Using the Node Management Services Utilities*.

Configuration File Critical Summary

The critical summary is a printout of the data in the configuration file. It can be used to check current contents of the configuration file, (without opening the file) to determine whether the configuration is correct. The critical summary is generated through NMMGR; see *Using the Node Management Services Utilities*.

An example of a critical summary of SNA IMF configuration data is shown below.

```

CRITICAL SUMMARY - SNA IMF CONFIGURATION

THU, FEB 16, 1989,  2:50 PM
CONFIGURATION FILE NAME: NMCONFIG.PUB.SYS
Validated subsystem.

SNANODE Name: IBMNODE

Security Class: ISPFUSER
  LU List:      LUNAME01, LUNAME02, LUNAME03, LUNAME04, LUNAME05, LUNAME06,
                LUNAME08, LUNAME09, LUNAME10, LUNAME11, LUNAME12, LUNAME13,
                LUNAME15, LUNAME16, LUNAME17, LUNAME18, LUNAME19, LUNAME20,
                LUNAME22, LUNAME23, LUNAME24, LUNAME25, LUNAME26, LUNAME27

  User List:    @.IMF,                @.SERVER,                OPERATOR.SYS,
                USER1,                USER2.SYS,                USER3,
                USER4,                USER5

  Program List: TTSSON.PUB.SYS,        PROGRAM1,
                PROGRAM2.PUB.SYS,    PROGRAM3,
                PROGRAM4,            PROGRAM5

Security Class: SDSFUSER
  LU List:      LUNAME01, LUNAME02, LUNAME03, LUNAME04, LUNAME05, LUNAME06,
                LUNAME08, LUNAME09, LUNAME10, LUNAME11, LUNAME12, LUNAME13,
                LUNAME15, LUNAME16, LUNAME17, LUNAME18, LUNAME19, LUNAME20,
                LUNAME22, LUNAME23, LUNAME24, LUNAME25, LUNAME26, LUNAME27,
                LUNAME29, LUNAME30, LUNAME31, LUNAME32, LUNAME33, LUNAME34,
  
```

SNA IMF Configuration
NMMGR Configuration Overview

LUNAME36, LUNAME37, LUNAME38, LUNAME39, LUNAME40, LUNAME41,
LUNAME43, LUNAME44, LUNAME45, LUNAME46, LUNAME47, LUNAME48,
LUNAME50, LUNAME51, LUNAME52, LUNAME53, LUNAME54, LUNAME55,
LUNAME57, LUNAME58, LUNAME59, LUNAME60, LUNAME61, LUNAME62,
LUNAME64

User List: USER1, USER2, USER3,
 USER4, USER5, USER6

Program List: PROGRAM1, PROGRAM2,
 PROGRAM3, PROGRAM4,
 PROGRAM5

SNANODE Name: IBMNODE2

Security Class: CLASS2

LU List: LNAME01, LUNAME02, LUNAME03, LUNAME04

User List: USER1, USER2, USER3,
 USER4, USER5, USER6,
 USER7

Program List: PROGRAM1, PROGRAM2,
 PROGRAM3, PROGRAM4,
 PROGRAM5, PROGRAM6,
 PROGRAM7

SNANODE Name: IBMNODE3

Security Class: CLASS3

LU List: (None configured)

User List: (None configured)

Program List: (None configured)

SNANODE Name: IBMNODE4

Security Class: CLASS1

LU List: LUNAME01, LUNAME02, LUNAME03, LUNAME04

User List: USER1, USER2, USER3,

Program List: PROGRAM1

SNANODE Name: IBMNODE5

Security Class: CLASS5

LU List: (None configured)

User List: (None configured)

Program List: (None configured)

Some fields could not be found or printed.

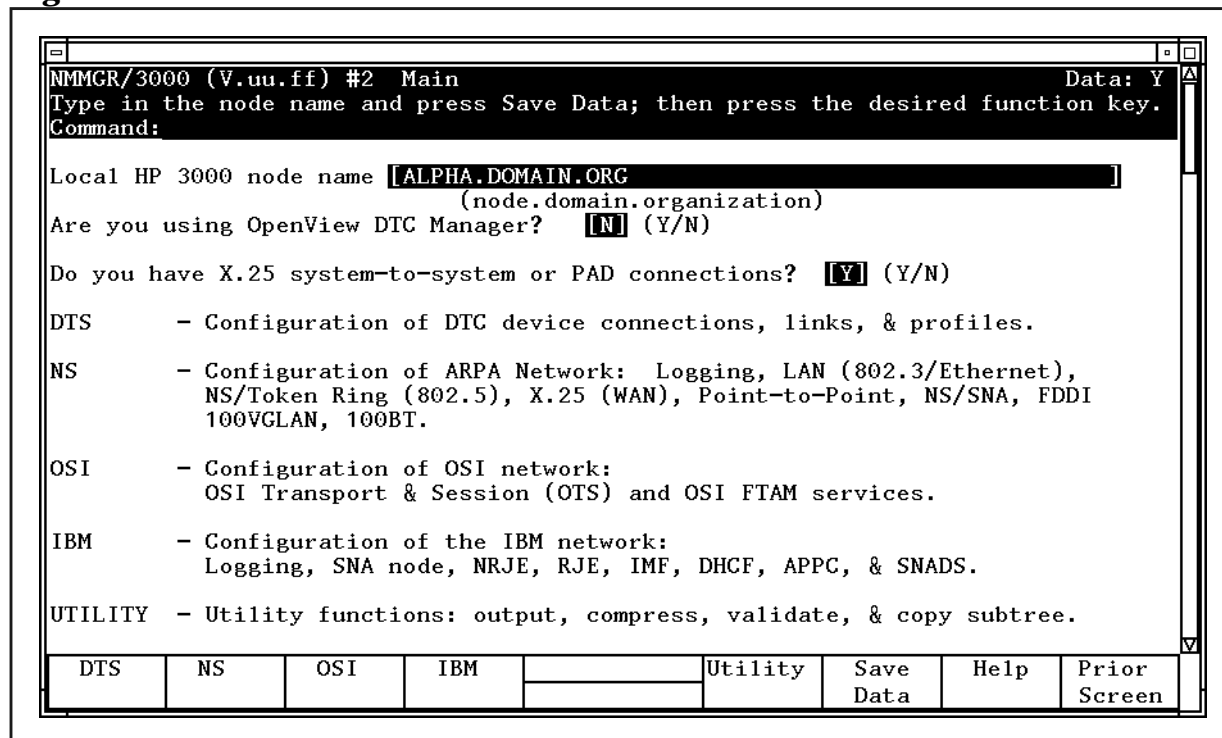
Configuring SNA IMF

Once you have opened the configuration file, you are placed at the NMMGR Main screen.

Main Screen

The Main Screen is shown in Figure 3-1, from this screen you can select the category of network subsystems you want to configure.

Figure 3-1 Main Screen

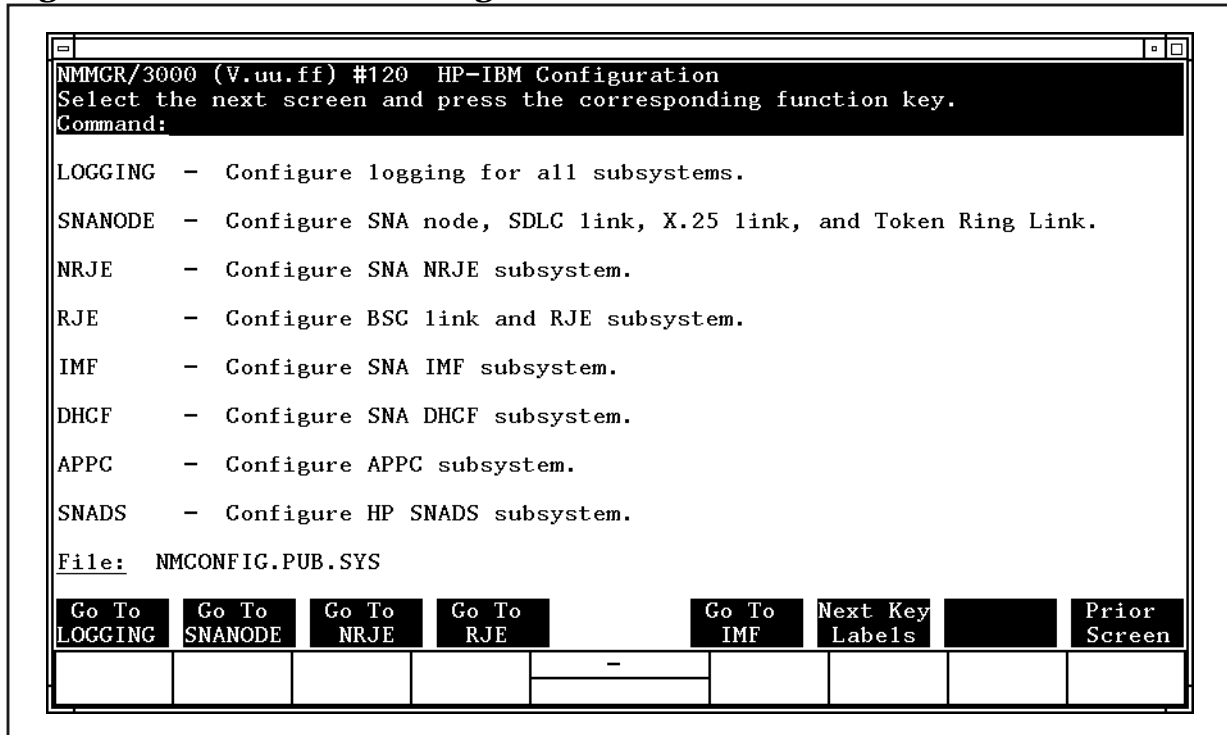


To access the NMMGR branch for configuring SNA IMF, press [f4] (IBM). This places you at the HP-IBM Configuration screen.

HP-IBM Configuration Screen

The HP-IBM Configuration Screen is shown in Figure 3-2, from this screen you can select the item you want to configure.

Figure 3-2 HP-IBM Configuration Screen

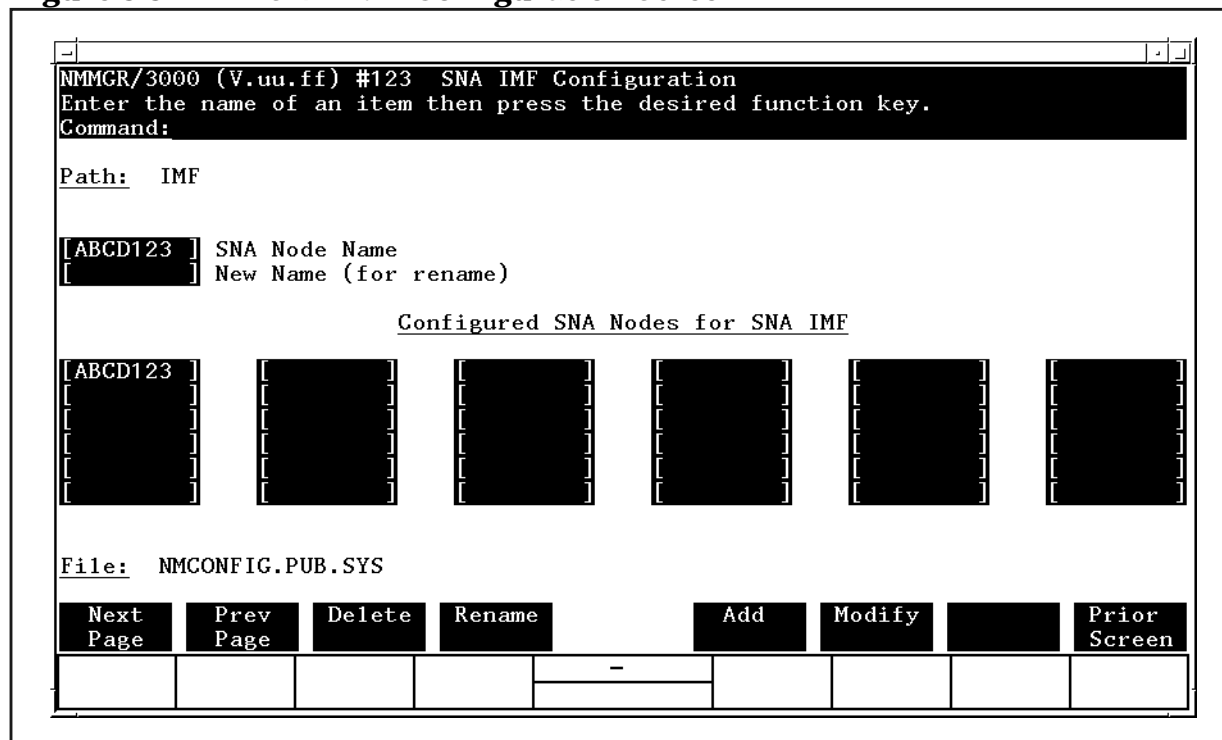


To select SNA IMF configuration, press [f5] (Go To IMF).

SNA IMF Configuration Screen

After you have selected SNA IMF configuration, NMMGR displays the SNA IMF Configuration Screen, shown in Figure 3-3. You can go directly to this screen from any screen by typing @IMF in the command window and pressing [ENTER]. Here you select an SNA node that has already been configured for SNA IMF, or configure an SNA node for SNA IMF.

Figure 3-3 SNA IMF Configuration Screen



Fields

Path

For display only. The NMMGR branch you are in.

SNA Node Name

The name of the SNA node you want to configure for SNA IMF, or the configured node whose security class configuration you are modifying. The name can be up to eight alphanumeric characters long; the first character must be alphabetic.

Host Configuration: For troubleshooting purposes, we strongly recommend that this match the *puname* operand of the PU macro that defines this node on the host (VTAM); see Table 3-1.

New Name

The new name of an existing SNA node. The name can be up to eight alphanumeric characters long; the first character must be alphabetic.

Host Configuration: For troubleshooting purposes, we strongly recommend that this match the *puname* operand of the PU macro that defines this node on the host (VTAM); see Table 3-1.

Once you have entered the new name, press [f4] (Rename); the node is then renamed.

Configured SNA Nodes for SNA IMF

For display only. The names of the SNA nodes for which SNA IMF has been configured. You can configure a maximum 256 nodes for SNA IMF in a configuration file (use [f1] [Next Page] to display more fields). The nodes listed must also have been configured in the SNA node configuration; this is checked when the validation is done. Validating the configuration file is discussed earlier in this chapter.

File

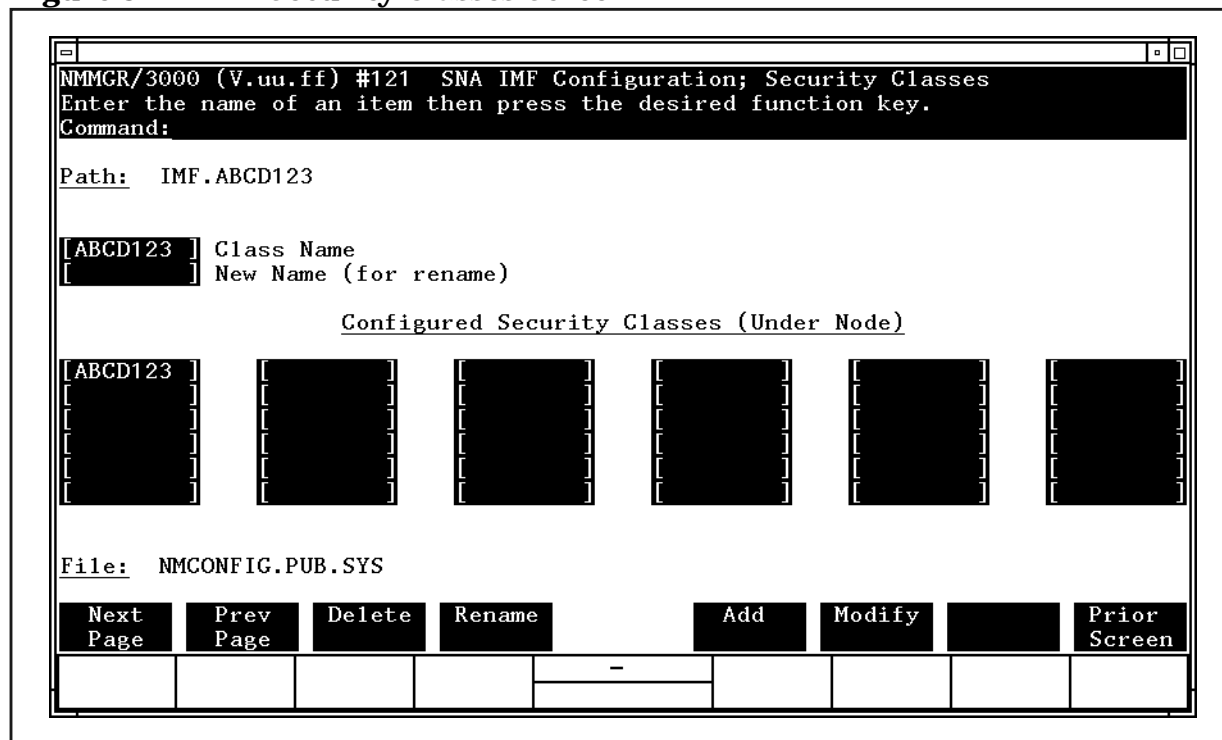
For display only. The name of the configuration file.

Once you have entered the name of the node, press [f5] (Add) if this is a new configuration, or press [f6] (Modify) if you are modifying a configuration. This places you at the SNA IMF Configuration: Security Classes screen.

Security Classes Screen

After you have selected an SNA node, NMMGR displays the SNA IMF Configuration: Security Classes screen as shown in Figure 3-4. (You can go directly to this screen from any screen by typing @IMF.nodename in the command window and pressing [ENTER].) Here you specify the security class you want to configure. A class is a means of associating a set of LUs with a name and security attributes. SNA IMF searches the configuration file and extracts a list of LU names that correspond to the specified class name. SNA IMF then passes the list to SNA Transport, which selects an available LU from the list.

Figure 3-4 Security Classes Screen



Fields	<i>Path</i>	For display only. The NMMGR path for this screen. It includes the name of the node you are configuring the security class for.
	<i>Class Name</i>	The name of the new security class you are configuring, or the existing class whose configuration you are modifying. The name can be up to eight alphanumeric characters long; the first character must be alphabetic.
	<i>New Name</i>	The new name of an existing security class. The name can be up to eight alphanumeric characters long; the first character must be alphabetic. Once you have entered the new name, press [f4] [Rename]; the class is then renamed.
	<i>Configured Security Classes (Under Node)</i>	For display only. The names of the security classes that have been configured for the SNA node you selected earlier. A maximum 256 security classes can be configured (use [f5] [Next Page] to display more fields).
	<i>File</i>	For display only. The name of the configuration file. Once you have entered the class configuration information, press [f5] (Add) if this is a new configuration, or press [f6] (Modify) if you are modifying a configuration. This places you at the SNA IMF Configuration: Security Class Data screen.

Host Configuration: For troubleshooting purposes, we strongly recommend that the LU names entered here match the *luname* operands of the LU macro that defines these LUs in VTAM on the host; see Table 3-1. If you use SNA IMF to communicate with an IBM AS/400, we strongly recommend that the LU names entered here match the names of the Device Descriptions on the AS/400; see Table 3-2.

File

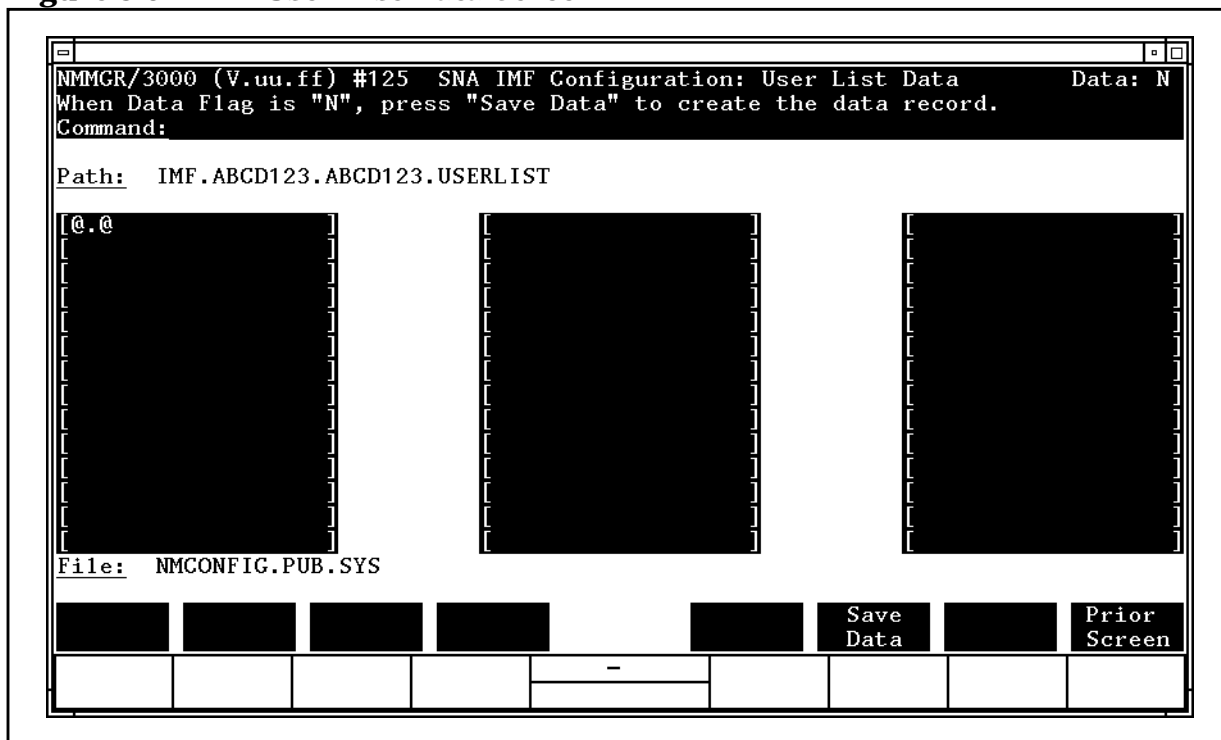
For display only. The name of the configuration file.

Once you have entered all of the LU names, press [f6] (Save Data). After the information is processed, press [f1] (Go To USERLIST) if you need to configure authorized users for this security class; press [f2] (Go To PGMLIST) if you need to configure authorized programs for this security class; or press [f8] (Prior Screen) until you get to the NMMGR menu screen or select screen you need next.

User List Data Screen

Once you have configured the LUs for the security class, you can configure the users you want to be authorized to use the LUs. You configure authorized users on the SNA IMF Configuration: User List Data screen as shown in Figure 3-6. Note that if security is not going to be used, you do not need to access this screen: All users will be authorized for this class (the @.@ default value will be added automatically to the configuration file). Select this screen by pressing [f1] (Go To USERLIST) on the SNA IMF Configuration: Security Class Data screen. (You can go directly to this screen from any screen by typing @IMF.nodename.classname.USERLIST in the command window and pressing [ENTER].)

Figure 3-6 User List Data Screen

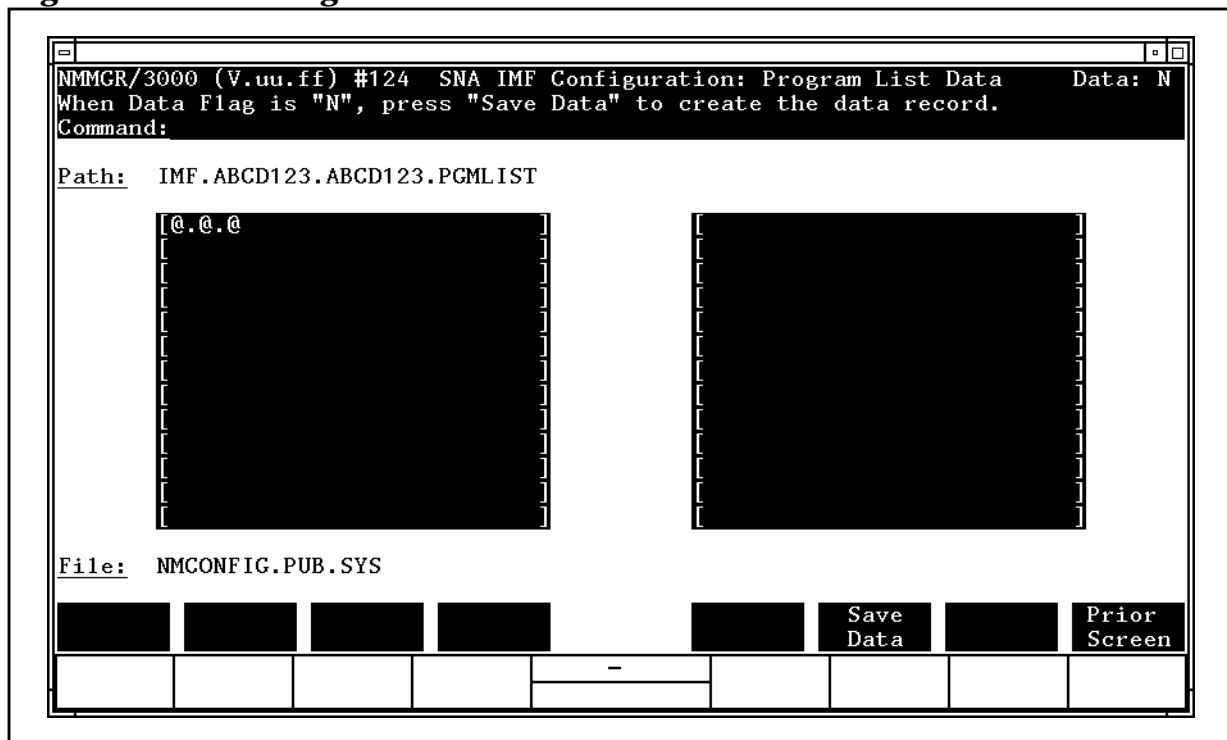


Fields	<i>Path</i>	<p>For display only. The NMMGR path for this screen. It includes the names of the SNA node and the security class you are configuring.</p>
	<i>Users</i>	<p>A list of up to 42 users to be authorized to use the LUs in this security class. Each name must be a valid MPE user name (<i>UserName.AcctName</i>), and cannot be more than 18 characters long; MPE wildcard characters can be used.</p> <p>Note that a security class can be used only if the users and the programs are authorized. A program is authorized on the SNA IMF Configuration: Program List Data screen.</p> <p>Default: @.@ (all users)</p>
	<i>File</i>	<p>For display only. The name of the configuration file.</p> <p>Once you have entered all of the user names, press [f6] (Save Data).</p> <p>After the information is processed, press [f8] (Prior Screen) until you redisplay the SNA IMF Configuration: Security Class Data screen. Then, if you need to configure authorized programs for the security class, press [f2] (Go To PGMLIST). Otherwise, press [f8] (Prior Screen) until you get to the NMMGR menu screen or select screen you need next.</p>

Program List Data Screen

Once you have configured the LUs for the security class, you can configure the programs you want to be authorized to use the LUs. You configure authorized programs on the SNA IMF Configuration: Program List Data screen as shown in Figure 3-7. Note that if security is not going to be used, you do not need to access this screen: All programs will be authorized for this class (the @.@.@ default value will be added automatically to the configuration file). Select this screen by pressing [f2] (Go To PGMLIST) on the SNA IMF Configuration: Security Class Data screen. (You can go directly to this screen from any screen by typing @IMF.nodename.classname.PGMLIST in the command window and pressing [ENTER].)

Figure 3-7 Program List Data Screen



Fields	<i>Path</i>	For display only. The NMMGR path for this screen. It includes the names of the SNA node and the security class you are configuring.
	<i>Programs</i>	A list of up to 26 programs to be authorized to use the LUs in the security class. Each name must be a valid MPE file name (no lockwords), and cannot be more than 26 characters long; MPE wildcard characters can be used.
		Note that a security class can be used only if the users and the programs are authorized. A user is authorized on the SNA IMF Configuration: User List Data screen.

Default: @.@.@ (all programs)

File

For display only. The name of the configuration file.

Once you have entered all of the program names, press **[f6]** (Save Data).

After the information is processed, press **[f8]** (Prior Screen) until you redisplay the SNA IMF Configuration: Security Class Data screen. Then, if you need to configure authorized users for the security class, press **[f1]** (Go To USERLIST). Otherwise, press **[f8]** (Prior Screen) until you get to the NMMGR menu screen or select screen you need next.

Migrating a Configuration from MPE V to MPE XL

If you are migrating from SNA IMF/V to SNA IMF/XL, run the NMS utility `NMMGRVER.PUB.SYS`, described in *Using the Node Management Services Utilities*. `NMMGRVER` will convert your old configuration to a configuration that is compatible with your new software.

SNA IMF Session Startup and Shutdown

This chapter describes how SNA IMF sessions are started up (establishing an LU-LU session) and how sessions are shutdown (terminating an LU-LU session).

To start an SNA IMF session, you must establish an LU-LU session between an HP 3000 LU (the secondary LU) and a host LU (the primary LU). An SNA IMF LU-LU session can be initiated by an LU in the HP 3000 node or by a host LU. Both kinds of session initiation are described here.

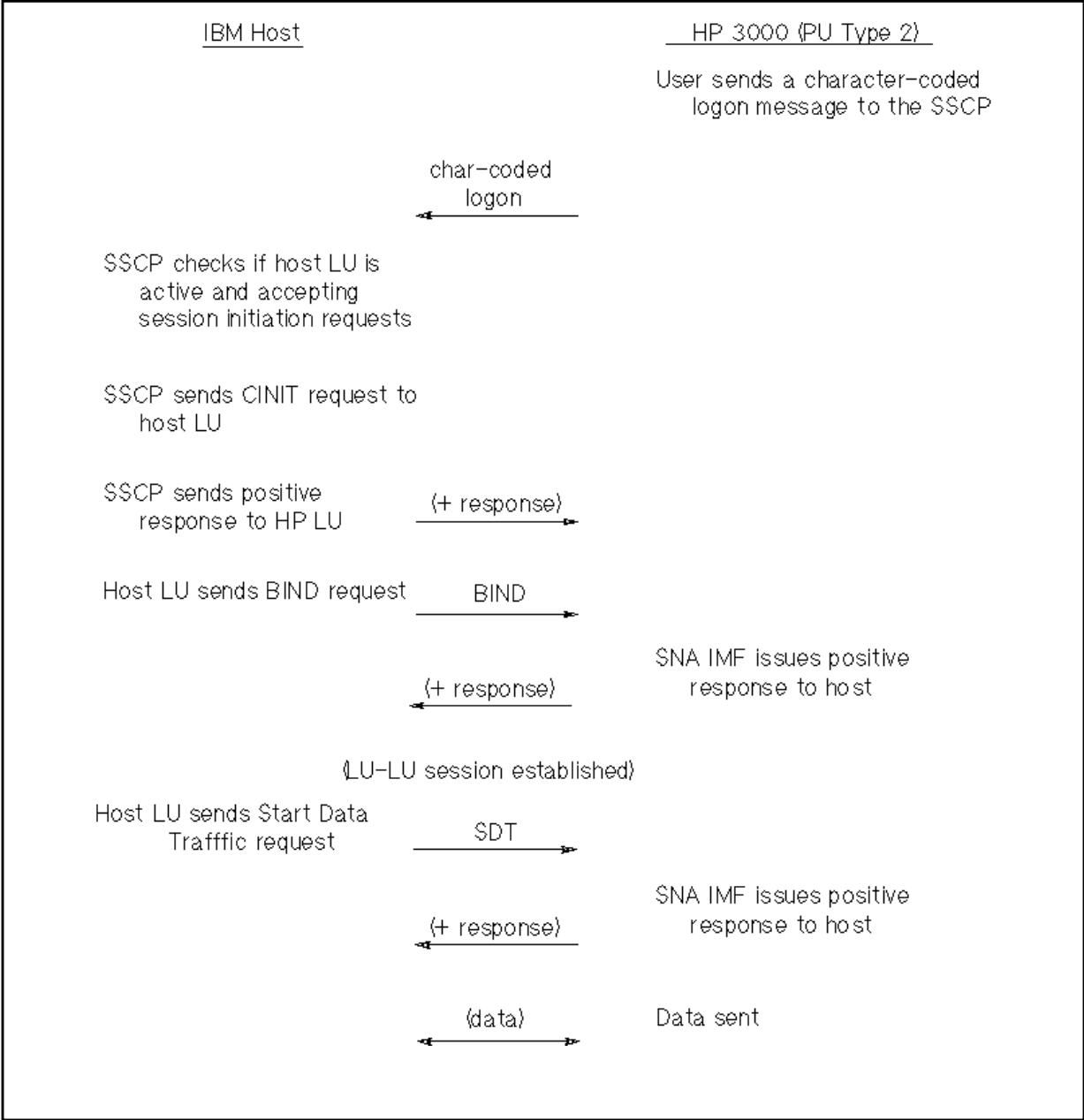
Starting a Session From the HP 3000 LU

An SNA IMF LU-LU session initiated by an LU in the HP 3000 node is started by sending a character-coded logon message to the IBM host. The issued logon causes an INITiate-SELF (INIT-SELF) request to be sent to the SSCP.

In processing the INIT-SELF request, the SSCP determines whether the host LU is accepting session-initiation requests. The SSCP then sends a Control INITiate (CINIT) request to the host LU. The host LU then sends a BIND request to the HP 3000 LU. The BIND protocols specified in the request must be accepted by the HP 3000. If the protocols are acceptable, the HP 3000 LU sends a positive response and the LU-LU session is established. The host LU notifies the SSCP that the session has been established, by sending a SESSion STarted (SESSST) request. The host LU sends a Start Data Traffic (SDT) request to the HP 3000 LU, to allow data requests to be transmitted.

Figure 4-1 shows an SNA IMF LU-LU session initiated by the HP 3000 LU.

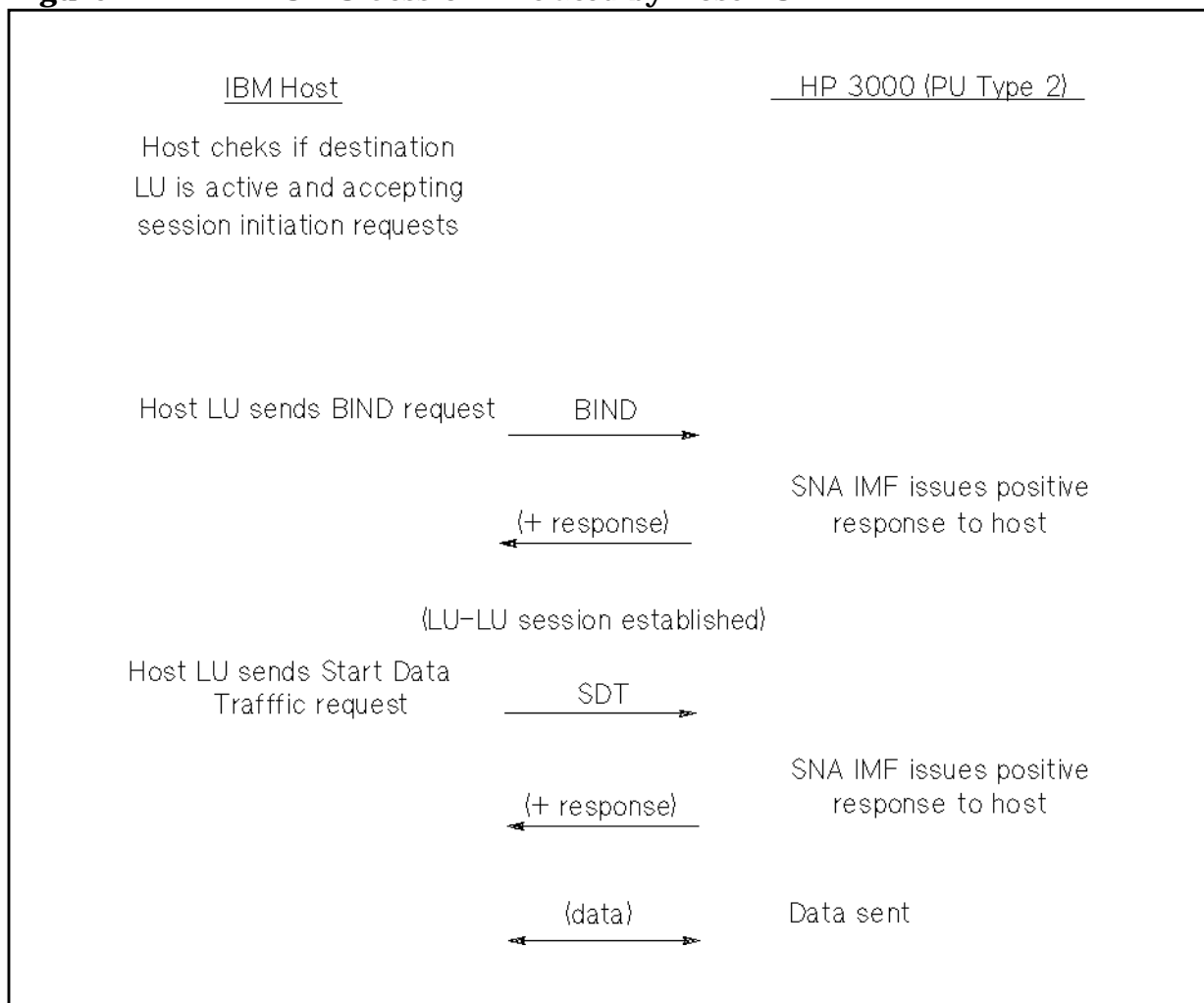
Figure 4-1 LU-LU Session Initiated by HP 3000 LU



Starting a Session From the Host LU

An SNA IMF LU-LU session can also be initiated by an LU on the IBM host. When the host LU initiates a session with SNA IMF, it begins by sending a session-initiation request to its SSCP. The SSCP returns a CINIT request, which contains the session parameters the host LU can support. The host LU sends these parameters in its BIND request to the LU on the HP 3000. If the HP 3000 LU accepts the BIND request parameters, an LU-LU session is established. Figure 4-2 shows an SNA IMF LU-LU session initiated by a user or program on the host node.

Figure 4-2 LU-LU Session Initiated by Host LU



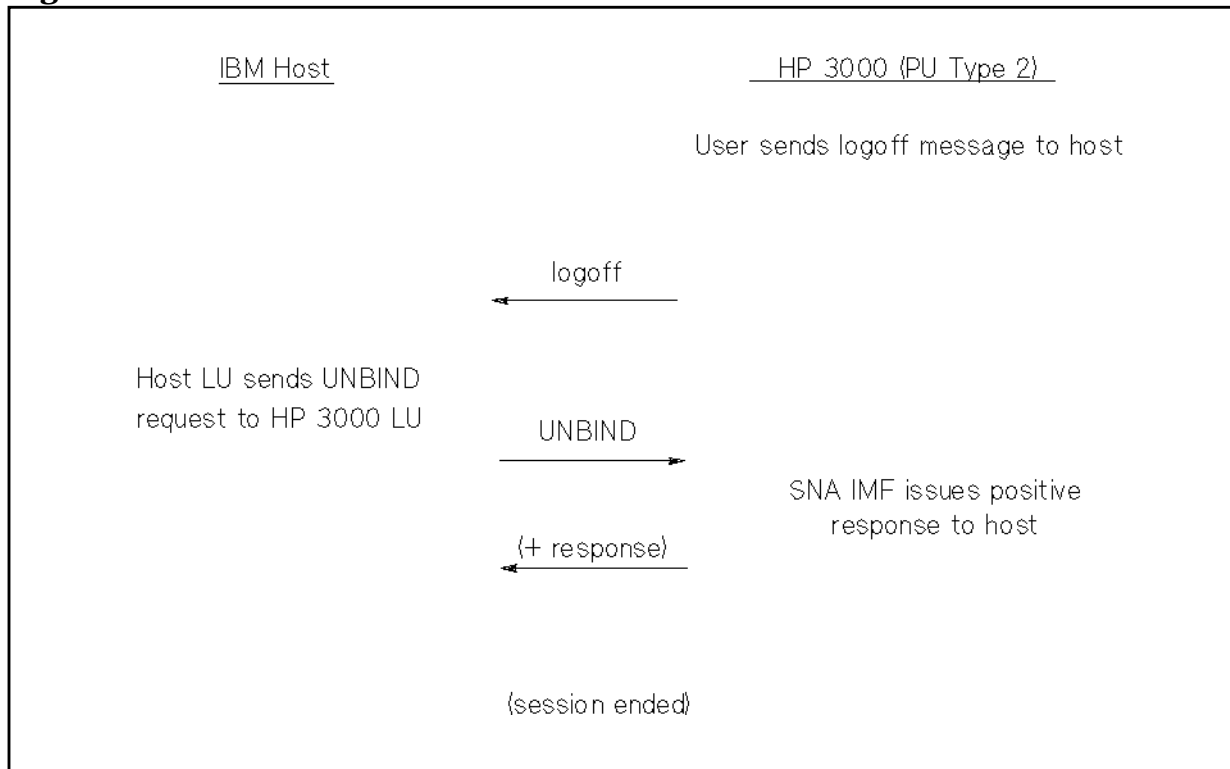
Stopping a Session

AN LU-LU session exists to allow two users to communicate in an SNA network. Once that communication is completed, the LU-LU session should be terminated to allow the LUs to participate in other LU-LU sessions.

An SNA IMF session is stopped by sending a logoff message to the IBM host. The logoff message is forwarded to the host by SNA Transport. The host LU sends an UNBIND request to the HP 3000 LU. SNA IMF sends a positive response to the host LU.

Figure 4-3 shows a typical SNA IMF LU-LU session termination.

Figure 4-3 SNA IMF Session Termination



You can troubleshoot SNA IMF by using the tracing and logging facilities for the SNA link: SNA IMF tracing and logging is done as part of SNA Transport tracing and logging (see the *SNA Link/XL Node Manager's Guide*).

This chapter describes those facilities and other related topics:

- Using NMMAINT for SNA IMF
- Problem resolution
 - Common problems
 - Configuration problems
 - Installation problems
 - SNA IMF run-time problems
 - Submitting an SR

NOTE

Depending on the type of service contract you have with Hewlett-Packard, you might be billed on a time and materials basis. For example, Hewlett-Packard does not support, correct, or attend to any customer-performed modification of the MPE operating system. Remember, if you cannot solve a problem, the more data you can supply, the faster your HP representative can pinpoint a problem and solve it.

Using NMMAINT for SNA IMF

The NMMAINT utility displays the version numbers of the HP data communications software installed on your system. The example below shows the SNA IMF information displayed when you run NMMAINT. Note that the version numbers shown below are not necessarily the current version numbers for SNA IMF; they are shown only as an example. NMMAINT is described in more detail in *Using the Node Management Services Utilities*. If you are not familiar with NMMAINT, you should read that manual before you run NMMAINT.

```
SNA IMF/XL  HP30293      module
versions<$INMMMAINT;example of SNA IMF listing>:

SL procedure:  IMFDFC_VERS      Version: B0303002
SL procedure:  IMFPS_VERS      Version: B0303000
SL procedure:  IMFSC_VERS      Version: B0303000
SL procedure:  IMFINTR_VERS    Version: B0303003
SL procedure:  IMFDATAMGT'VERS  Version: B0303000
SL procedure:  TTSINTR'VERS    Version: B0303003
SL procedure:  IMFSWT_VERS     Version: B0303000
CM program file: TTSSON.PUB.SYS  Version: B0303003
Catalog file:  CATIMF.PUB.SYS   Version: B0303000
Catalog file:  IMFHELP.PUB.SYS  Version: B0303000

SNA IMF/XL  HP30293      overall version = B.03.03
```

The overall version of SNA IMF can also be listed by using the SNA IMF VERS3270 intrinsic (see the *SNA IMF Programmer's Reference Manual*).

Problem Resolution

Problems that can occur while installing, configuring, and running SNA IMF, and how to deal with them, are described here. Guidelines for submitting a service request (SR) are also described.

Common Problems

Some problems are common to many situations, invalid software installation, version incompatibilities, insufficient MPE resources, corrupt configuration files, and file system errors. In most cases, you can resolve these problems yourself; the resolutions to these problems are described here. However, in some cases you should submit an SR. To enable Hewlett-Packard to solve your problem in an efficient manner, you should follow certain guidelines when submitting an SR; these guidelines are listed later in this chapter.

Invalid Software Installation

A software installation might be invalid. Run NMMAINT to get a listing of all software modules and their version IDs. Check that all required modules are present, and that the first five characters of the version IDs (the *v.uu.ff* fields) of these modules are the same within each subsystem. Finally, check the version IDs with the *SYSTEM STATUS BULLETIN* or other HP source to be sure the versions of software you have are supported by the version of MPE you have. If a problem is found with any of these checks, you have an incorrect software version installed. Locate a known valid version of the suspect software (perhaps from one of your system backup tapes) and install it correctly.

Version Incompatibilities

Version incompatibilities between NMS software and other subsystem software are possible. Run NMMAINT to get a listing of version IDs for NMS and for all of the NMS-dependent subsystems. Locate the overall version IDs for NMS and for each subsystem. Compare the first five characters of these version IDs (the *v.uu.ff* fields) with those listed as compatible with each other in the *SYSTEM STATUS BULLETIN* or other HP source. If a discrepancy is found, locate a known set of compatible software (perhaps from one of your system backup tapes) and install it.

Insufficient MPE Resources

The system might have insufficient MPE resources, such as configured table sizes. Run *SMT.PUB.SYS* to check MPE table utilization. Reconfigure MPE to fix any problems found and restart the system.

Corrupt Configuration File

The configuration file is possibly corrupt. Validate the configuration file to check for possible corruption. If the error persists, use NMMGR to manually check the configuration file (if possible). If bad records seem to be localized to a particular item, delete that item and reconfigure it. If necessary, RESTORE a backup copy of the file.

File System Errors

A file system error might have occurred while trying to access the configuration file. Try to access the configuration file under the same userid using NMMGR. Use the NMMGR error screen to find out what the underlying FSERR is. Correct the problem and retry.

Configuration Problems

Configuration problems can occur on both the HP 3000 and the host.

HP 3000 Configuration Problems

Listed below are some configuration problems that can occur on the HP 3000.

- **PSI problems.**

When you run the PUs concurrently, each PSI requires a unique PU and each PU requires a unique PSI.

Also, if you are using an SDLC link, ensure that you correctly configured the `Physical Path` field of the `SNANode Configuration: SDLC Linkdata` screen (see the *SNA Link/XL Node Manager's Guide*).

- **Configuration file misnamed.**

Remember, when configuring SNA IMF, the configuration file can be named anything you prefer. However, when you run SNA IMF, it looks for a configuration file named `NMCONFIG.PUB.SYS`.

Host Configuration Problems

Listed below are some configuration problems that can occur on the host.

- **Incorrect device specified.**

Too many or the wrong type of device might have been configured for a particular line.

- **Incorrect macro definition.**

Macro operands might have been incorrectly placed within the hierarchical structure. Although the operands for lower-level macros

can be defined in a higher-level macro, this structure must be followed: GROUP, LINE, SERVICE, PU, and LU.

A macro could be missing a required operand or an invalid operand might have been specified for a particular macro.

- **Incorrect Logmode table definition.**

Ensure that the correct Logmode Table definitions are being used. The HP SNA Products: ACF/NCP and ACF/VTAM Guide contains more information about this.

Installation Problems

Some common problems that might occur during installation, or as a result of improper or unsuccessful installation, are described below.

- **Inactive VTAM node.**

This is probably the most common problem that occurs on the host. Ensure that the proper activation commands have been issued. Setting the ISTATUS operand of the LU macro to ACTIVE will help, especially if it is moved up to either the GROUP or LINE macro. (The ACTIVE setting sifts down to all lower-level macros.) This problem most frequently occurs in a switched line configuration when the major node containing the VBUILD macro was never activated. In this case, an inactive macro causes the host to fail to find a match for the remote's Exchange Station Identification (XID) number. The only way you will be aware that this XID problem has happened is a message at the host operator's console. To avoid these problems remember this rule: When in doubt, activate.

- **Switched lines.**

Be sure the VBUILD macros are in a separate member in the VTAM parameter library (SYS1.VTAMLST).

- **Hardware problems.**

Ensure that all hardware is installed properly. Many problems are related to such things as incompatible modems, bad phone lines and cables, etc.

Ensure that the host is up, the line is active (being polled), and the host telecommunications subsystem (for example, VTAM) is active. You might need to use a line monitor, such as an HP 4953, which requires the link option to check whether the line is being polled and to determine the addresses being polled. You also can use one of the other HP 495x Protocol Analyzers in addition to the standard HP 4953.

- **Pass Thru problems.**

Ensure that the HP terminal supports Pass Thru and that its MPE I/O configuration is correct. Using SNA IMF Pass Thru lists the terminals and printers you can use with Pass Thru.

SNA IMF Run-Time Problems

After both the hardware and software are installed, problems might occur. Many run-time problems are caused by inaccurate configuration. You might encounter some of these problems while attempting to run SNA IMF or while actually running SNA IMF:

- **Inactive SNA node.**

If you attempt to run SNA IMF without starting the HP 3000 node on which SNA IMF will be running, you will receive this message:

```
Inactive node or invalid node name. (SNAERR 29)
```

Use the `SNACONTROL START` command to activate the node. For example,

```
SNACONTROL START;NODE=NodeName
```

(The `SNACONTROL` commands are described in the *SNA Link/XL Node Manager's Guide*.) If everything is set up correctly, you should receive some SNA logging messages that indicate that the line has been activated, and that sessions (SSCP-PU and SSCP-LU) have been started for the PU and LUs that you want to use. If not, you should ensure that the proper resources are active on the host side, by having the IBM operator issue the `DISPLAY` command.

```
D NET,E, ID=LineName
```

at the host console. Then, if the proper resources are not active, the IBM operator should issue the `VARY` command.

```
V NET,ACTIVE, ID=LineName
```

to activate the line. Then, a second `VARY` command should be issued:

```
V NET,ACTIVE, ID=PuName
```

or

```
V NET,ACTIVE, ID=LuName
```

to activate the PU or LU. Note that both of the above steps can be done by issuing only one command:

```
V NET,ACTIVE,SCOPE=ALL, ID=LineName
```

The PU and each LU activation request might require a separate `VARY` command to completely activate the node. This occurs when the `ISTATUS` operand of the LU macro (in the node definition) is not

set to `ACTIVE` or is not placed high enough in the node definition (see “Host Configuration Problems” earlier in this chapter).

- **Unable to log on.**

To log on, the display screen must be owned by the SSCP-LU session. Remember, display screen ownership is shared between the LU-LU session and the SSCP-LU session. When you first start Pass Thru, the screen is unowned. Press the System Request Key (SRK) to transfer display ownership to the SSCP-LU session. You can then log on to the host system.

NOTE

Remember to consult Using SNA IMF Pass Thru and the *SNA IMF Programmer's Reference Manual* for descriptions of error messages. Those manuals list Pass Thru messages and errors returned from SNA IMF intrinsics. For each type of error, the manuals give explanations and suggest corrective actions.

You might encounter other error messages while using SNA IMF. See Using the Node Management Services Utilities for generic messages produced by NMMGR and the utilities NMMAINT and NMDUMP.

Submitting an SR

Listed below are some guidelines for submitting a service request (SR). Some of the guidelines refer to Node Management Services (NMS) programs (NMDUMP, NMMAINT, NMMGR, etc.). Using NMMAINT for SNA IMF is explained earlier in this chapter. Using NMMGR for SNA IMF is explained in Chapter 3, “SNA IMF Configuration,” of this manual. Since SNA IMF tracing and logging are part of SNA Transport tracing and logging, using NMDUMP to format those files is not explained in this manual (see the *SNA Link/XL Node Manager's Guide*). For more NMS information, see *Using the Node Management Services Utilities*.

Common Information

For any SR, include this common information, where applicable:

- A characterization of the problem. Describe the events leading up to and including the problem. Try to describe the source of the problem. Describe the symptoms of the problem.

Your characterization should include MPE commands, communication subsystem commands, job streams, result codes and messages, and data that can reproduce the problem.

List the context and environment in which the message occurred. Prepare copies of the HP 3000 system console information.

Give a brief history of your site, including when SNA IMF was installed, the circumstances that usually produce problems, other

data communications products installed, and any other products you were using when the problem arose.

- Obtain the version, update, and fix information for all software by running NMMAINT (for SNA IMF, you also can call the VERS3270 intrinsic). This allows Hewlett-Packard to determine whether the problem is already known and if the correct software is installed at your site.
- Record all result messages and numbers that appear at the user terminal and the system console.
- Run NMDUMP to format the NM log file (NMLGnnnn.PUB.SYS) that was active when the problem occurred. You might need to issue the MPE command SWITCHNMLOG to free the NM log file. For more information, see the *SNA Link/XL Node Manager's Guide*. Inspect the formatted output and try to locate errors. Prepare the formatted output and a copy of the log file for your HP representative to analyze.
- Prepare a listing of the configuration file and the MPE configuration you are using for your HP representative to analyze. Inspect the output and try to locate errors.
- Try to determine the general area, within the software, where you think the problem exists. If you think the problem is caused by an SNA link, refer to the *SNA Link/XL Node Manager's Guide* and follow the guidelines there for gathering information for problems.
- Document your interim, or "workaround," solution. The cause of the problem can sometimes be found by comparing the circumstances in which it occurs with the circumstances in which it does not occur.
- Save copies of any SNA trace and communications link trace files that were active when the problem occurred, for your HP representative to analyze.
- If the problem involves NMMGR, give a copy of NMMGRF.PUB.SYS to your HP representative.
- *If a system failure occurs, a full memory dump must be taken.*
- If a fatal SDLC link error has occurred, a message in this format is displayed on the operator's console:

```
SDLC (LinkName) Error ErrorNum:  
SDLC (LinkName) Info: Status=Status,  
    Loc=LocationId, Path=PhysPath
```

Be sure to include this error message in the SR *exactly as it appears on the operator's console*.

- Save copies of all active or in-use trace files for analysis by your HP representative.

- Save copies of all active or in-use log files for analysis by your HP representative.
- Record all intrinsic result codes and Pass Thru messages that appear at an emulated terminal or printer and the HP 3000 console.
- Always obtain a copy of the host system generation you are using. For the host configuration to be compatible with SNA IMF, Hewlett-Packard sets certain operands and parameters to required values (see Chapter 3 , “SNA IMF Configuration,” of this manual). Also see the *SNA Link/XL Node Manager’s Guide* for more host configuration information. Note any differences between the actual system generation and your expectations. Keep this information for your HP representative. This is very important.
- Give a copy of `NMCONFIG.PUB.SYS` to your HP representative.
- Issue the `SNACONTROL STATUS` command (see the *SNA Link/XL Node Manager’s Guide* for a description of the command).

SNA Transport Information

For problems that might involve SNA Transport, see the *SNA Link/XL Node Manager’s Guide*.

Communications Link Information

For problems that might involve the communications link, see the *SNA Link/XL Node Manager’s Guide*.

A

Validation Messages

This appendix contains messages that might occur when you validate the SNA IMF configuration data. Configuration file validation is discussed in Chapter 3 , “SNA IMF Configuration,” of this manual.

- IMFVAL ERR 3 **MESSAGE: Corrupt configuration file. Missing IMF path. (IMFVALERR 3)**
- CAUSE: The SNA IMF path is missing from the configuration file.
- ACTION: Restore the configuration file from a backup tape and retry the validation. Also, submit an SR.
- IMFVAL ERR 4 **MESSAGE: Corrupt configuration file. Missing SNA IMF version. (IMFVALERR 4)**
- CAUSE: No version stamp exists for the SNA IMF path.
- ACTION: Restore the configuration file from a backup tape and retry the validation. Also, submit an SR.
- IMFVAL WARN 5 **MESSAGE: No configuration data exists for SNA IMF subsystem. (IMFVALWARN 5)**
- CAUSE: No data is configured for SNA IMF. Note that this is a warning message.
- ACTION: If you do not want SNA IMF to be configured, no action is necessary. If you want SNA IMF to be configured, you must configure it before validating the configuration file again.
- IMFVAL ERR 6 **MESSAGE: Path: NMMGRpath — Node NodeName is not configured under SNANODE screen. (IMFVALERR 6)**
- CAUSE: A node listed as a configured SNA IMF node was not configured as an SNA node.
- ACTION: Configure the indicated node as an SNA node on the SNANode Configuration screen.
- IMFVAL ERR 7 **MESSAGE: Path: NMMGRpath — No classes configured for this path. (IMFVALERR 7)**
- CAUSE: No security classes were configured for the node indicated in the path.
- ACTION: Configure the node’s security classes on the SNA IMF Configuration: Security Classes screen.
- IMFVAL ERR 8 **MESSAGE: Path: NMMGRpath — No data configured for this security class. (IMFVALERR 8)**
- CAUSE: No LUs are configured for the security class indicated in the path name.

- ACTION:** Configure the correct LUs for the security class on the SNA IMF Configuration: Security Class Data screen.
- IMFVAL ERR 9 **MESSAGE: Path: NMMGRpath — LU LUName is not a valid LU for SNA node NodeName. (IMFVALERR 9)**
- CAUSE:** The indicated LU is not configured under the indicated SNA node.
- ACTION:** Ensure that the LU should be configured under the SNA node. If it should be configured, configure it on the SNA Node Configuration: LU Data screen.
- IMFVAL ERR 10 **MESSAGE: Path: NMMGRpath — Corrupt configuration file. Missing USERLIST path. (IMFVALERR 10)**
- CAUSE:** The USERLIST path (for the user list data) is missing from the configuration file.
- ACTION:** Restore the configuration file from a backup tape and retry the validation. Also, submit an SR.
- IMFVAL ERR 11 **MESSAGE: Path: NMMGRpath — Corrupt configuration file. Missing PGMLIST path. (IMFVALERR 11)**
- CAUSE:** The PGMLIST path (for the program list data) is missing from the configuration file.
- ACTION:** Restore the configuration file from a backup tape and retry the validation. Also, submit an SR.
- IMFVAL ERR 12 **MESSAGE: Path: NMMGRpath — The USERLIST for this security class is empty. (IMFVALERR 12)**
- CAUSE:** No authorized users are configured for the security class indicated in the path: no users will be able to use the security class. This happens when the `Users` field of the SNA IMF Configuration: User List Data screen is intentionally blanked out and then the `Save Data` key ([f6]) is pressed.
- ACTION:** Configure at least one authorized user for the security class.
- IMFVAL ERR 13 **MESSAGE: Path: NMMGRpath — The PGMLIST for this security class is empty. (IMFVALERR 13)**
- CAUSE:** No authorized programs are configured for the security class indicated in the path: no programs will be able to use the security class. This happens when the `Programs` field of the SNA IMF Configuration: Program List Data screen is intentionally blanked out and then the `Save Data` key ([f6]) is pressed.
- ACTION:** Configure at least one authorized program for the security class.

- IMFVAL ERR 14 **MESSAGE: Path: NMMGRpath — Unknown error occurred while getting this path. (IMFVALERR 14)**
- CAUSE: An unexpected error occurred while attempting to obtain a path from the configuration file. This usually indicates a problem with the validation procedure.
- ACTION: Restore the configuration file from a backup tape and retry the validation. Also, submit an SR.
- IMFVAL ERR 15 **MESSAGE: Path: NMMGRpath — Unknown error occurred while reading the path data. (IMFVALERR 15)**
- CAUSE: An unexpected error occurred while attempting to read data from the configuration file. This usually indicates a problem with the validation procedure.
- ACTION: Restore the configuration file from a backup tape and retry the validation. Also, submit an SR.

Glossary

A

ACF: *See* **Advanced Communication Function.**

ACF/NCP: *See* **Advanced Communication Function for the Network Control Program.**

ACF/VTAM: *See* **Advanced Communication Function for the Virtual Telecommunications Access Method.**

active state: A state in which part of an SNA node is able to function as it was designed.

Advanced Communication Function (ACF): A group of IBM program products that uses SNA concepts.

Advanced Communication Function for the Network Control Program (ACF/NCP):

An IBM program product that resides in the 37xx Communications Controller and supports single and multiple domains.

Advanced Communication Function for the Virtual Telecommunications Access Method (ACF/VTAM): An IBM program product on the host that provides communication access to and from the SNA network for single and multiple domains.

B

bind: An SNA request sent by the host to activate a session between two logical units. The request specifies the detailed protocol to be accepted before initiating an LU-LU session.

C

chain: A sequence of RUs constituting a recoverable entity.

CI: *See* **Command Interpreter.**

cluster controller: A programmable device that supports one or more terminals or printers. For example, the cluster controller would be the center node in a star shaped cluster network, governing all message traffic to and from the other nodes.

A cluster controller communicates with the communications controller either through a local channel attachment or through modems and phone lines.

Command Interpreter (CI):

The part of MPE which analyzes and processes commands entered during a session or submitted as part of a job.

communications controller: A type of front-end processor, such as an IBM 3705, 3720, or 3725, that communicates between the communications facility and a host computer. IBM supports both

programmable and nonprogrammable communication controllers. Hewlett-Packard's INP and PSI are types of communications controllers.

communications link: The hardware that directly connects two locations for the purpose of data transfer, including the interface boards, cables, and modems (if a telephone line is used).

Control Unit (CU): A device that controls input and output for one or more devices such as printers or display stations.

CU: *See* Control Unit.

D

data set: In IBM terminology, any file.

E

emulation: A technique, using software, allowing one computer to behave exactly like another computer. An HP emulation of an IBM device is a Hewlett-Packard data communications product that enables an HP computer or terminal to carry out many of the functions of the IBM device. For example, the Hewlett-Packard SNA IMF product enables an HP computer to carry out many of the functions of an IBM 3270 device.

F

FMD: *See* Function Management Data services.

FMH: *See* Function Management Header.

front end processor: A smaller computer that relieves a larger host computer of certain processing tasks, such as error detection, line control, and message handling.

Function Management Data (FMD) services: A generic term that describes two SNA layers: Session Presentation and Session Network Services.

Function Management Header (FMH): An SNA header that selects a destination or source for subsequent data transmission and supplies information for other data management tasks.

H

host: A central computer that provides services for other computers and terminals attached to it.

I

INIT-SELF: An SNA request to the SSCP to initiate an LU-LU session.

intrinsic: A subprogram provided by Hewlett-Packard systems. Intrinsic perform common functions such as

opening files, opening communications lines, or transmitting data over a communications line.

L

ldev: *See* **logical device**.

ldn: Logical device number. *See* **logical device**.

link: The physical or logical connection between two devices in a network.

logging: The recording of significant events that may be of use to the user at the time they occur. This is distinguished from tracing, which is the recording of events for future use.

logical device (ldev): A disc file, a set of disc files, or a physical device associated with a data stream between a host and a remote system. An HP logical device is identified either by a number or by a device class name. For SNA IMF, ldevs are identified by ldev numbers; device class names are not supported.

Logical Unit (LU): A program or a set of programs within a node that provides access to an SNA network for an end user. A logical unit can support two types of sessions: (1) an LU-SSCP session and (2) an LU-LU session. The logical unit formats message units, displays information, and

handles error recovery. Multiple logical units can reside in an SNA node.

Logical Unit (LU) class: A set of logical units on the HP 3000. For SNA IMF, an LU class may contain multiple LUs.

Logical Unit Type 1 (LU.T1): A session between an application program and one or more data processing terminals. The environment may be interactive, distributed processing, or batch data transfer. Character-oriented printer devices, batch support (RJE), and the SNA Character String (SCS) are supported.

Logical Unit Type 2 (LU.T2): A session between an application program and one 3270-type display station using interactive data transfer. IBM 3270 Data Stream Capability (3270 DSC) and 3270-type display station support is provided.

Logical Unit Type 3 (LU.T3): A session between an application program and a printer. IBM 3270 Data Stream Capability (3270 DSC) is provided. Many devices support both LU.T1 and LU.T3 print requests.

LU: *See* **Logical Unit**.

LU class: *See* **Logical Unit class**.

LU-LU session: A connection between two LUs.

LU.T1: *See Logical Unit Type 1.*

LU.T2: *See Logical Unit Type 2.*

LU.T3: *See Logical Unit Type 3.*

M

modem: An acronym for MODulator-DEModulator. A modem converts serial digital data from a transmitting terminal into a form suitable for transmission over the analog telephone channel. A second modem reconverts this signal to serial digital data for acceptance by the receiving terminal. Bell 201, 208, and 209 modems are used for synchronous data transfer.

MPE: *See MultiProgramming Executive.*

Multiple Virtual Storage (MVS): An IBM operating system that is an extension of OS/MVT. MVS is also known as OS/VS2 Release 2. IBM enhanced the original version of MVS; these enhanced systems include MVS/SP (Multiple Virtual Storage/System Product) and MVS/XA (Multiple Virtual Storage/eXtended Architecture).

MultiProgramming Executive (MPE): The Hewlett-Packard operating system for the HP 3000 computer. MPE consists of programs that handle exchanges

between HP terminals, printers, and executing programs and the internal HP 3000 Communications Software.

MVS: *See Multiple Virtual Storage.*

N

NAU: *See Network Addressable Unit.*

NCP: *See Network Control Program.*

network: A series of points interconnected by a communications channel. These may be computers, terminals, or other peripherals.

Network Addressable Unit (NAU): Either a program or group of programs that represents the source and destination of data in a network. The three kinds of network addressable units are SSCP, LU, and PU. A communication session must exist before data can be transferred. Sessions are established by the SSCP in this order:

- First with the PU.
- Then, with each LU before two LUs can communicate in a session.

Four types of sessions exist:

- SSCP-SSCP
- SSCP-PU

-
- SSCP-LU
 - LU-LU

Network Control Program (NCP): A program that controls the operation of a communications controller.

Network File Transfer (NFT):

A user-level protocol that enables the transfer or copying of files from one node to another or within a single node, interactively or programmatically.

Network Services Procedure Error (NSPE): An SNA request from the SSCP to the LU indicating an error during session startup or shutdown.

NFT: *See Network File Transfer.*

NMS: *See Node Management Services.*

node: A set of hardware devices and associated software at the end of a data link. In an SNA network, a node can be either distributed or host processors, communications controllers, cluster controllers, or terminals.

Node Management Services (NMS): A major software component of the HP 3000 operating system that provides a common set of services to HP networking products. It includes utilities and commands for configuration, event logging, message tracing, link

management, and subsystem initiation, termination and control.

node name: A name assigned to a node configured into a Local Area Network (LAN). It must be a maximum of eight characters in length and cannot be qualified.

NSPE: *See Network Services Procedure Error.*

P

Pass Thru: SNA IMF's interactive interface, which allows a terminal or printer to exchange data interactively with an IBM host.

Physical Unit (PU): A component of an SNA node. A PU controls the resources of a node and reports errors and physical failures to the SSCP. One PU exists per node. A PU is the access method in a host node, the NCP in the communications controller node, and the hardware and software in the peripheral nodes.

PU: *See Physical Unit.*

R

Request Header (RH): Control information that precedes a request/response unit (RU). It specifies the type of RU and contains control information for the RU.

Request Unit (RU): A message unit containing control information such as a request code, or function management headers, end-user data, or both.

Response Header (RH):

Control information that indicates whether a response is positive or negative. A response unit optionally follows it.

Response Unit (RU): A message unit that acknowledges a request unit. If the response unit is negative, it will contain sense data that defines the exception condition. If the response unit is positive, it may contain additional information; for example, it may contain session parameters in response to BIND SESSION.

RH: *See Request Header or Response Header.*

RU: *See Request Unit or Response Unit.*

S

SDLC: *See Synchronous Data Link Control.*

session: A logical connection between two network addressable units that allows them to communicate.

SNA: *See Systems Network Architecture.*

SSCP: *See System Services Control Point.*

Synchronous Data Link

Control (SDLC): An IBM term for a link protocol used for the transfer of data between stations. The information transfer is synchronous, thus eliminating the need for start and stop bits. It is also code-transparent, transmitted serial-by-bit, and may be transmitted in duplex or half-duplex over switched or nonswitched links. The link configuration may be point-to-point, multipoint, or loop.

System Services Control Point

(SSCP): A part of an SNA host node that helps to manage configurations, controls network operations, does problem solving, and provides other session services for end users. An SSCP exists only in the host and is exercised by the host's communications access method.

Systems Network

Architecture (SNA): A comprehensive specification for distributed data processing developed by IBM. SNA defines a layered protocol for communicating and controlling a communications network within the IBM environment.

T

TERM-SELF: An SNA request to the SSCP to terminate an LU-LU session.

TH: *See Transmission Header.*

timeout: Time limit imposed for a given task to be completed.

tracing: The recording of events for future use. *See also logging.*

Transmission Header (TH): A transmission header is used by the Transmission Control and Path Control layers of SNA for routing and sequencing data sent through an SNA network.

V

Virtual Telecommunications

Access Method (VTAM): An IBM communications access method within the host that handles the data communications and network control details for the host.

VSE/POWER: A common IBM subsystem used to control the input and output of jobs to the VSG operating system environment.

VTAM: *See Virtual Telecommunications Access Method.*

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