IBM

X.25 Network Control Program Packet Switching Interface

SC30-3470-2

Planning and Installation

Version 3

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Packet Switching Interface

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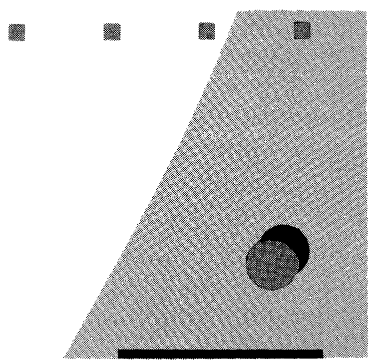

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About This Book

This *X.25 NPSI Planning and Installation* manual is intended to provide high-level planning information and guidance on using the installation parameters of X.25 NPSI. It primarily contains internal product information, which is provided to help the customer plan an X.25 NPSI configuration and provide information about the X.25 NPSI installation parameters you can use to customize X.25 NPSI. However, Chapter 4 does contain general-use programming interfaces, which allow the customer to write a host application that uses the services of the GATE, DATE, and Transparent PAD functions of X.25 NPSI. Unless specified as a general-use programming interface, the information in the manual must not be used for programming purposes.

X.25 NPSI Planning and Installation assists system programmers in planning and installing IBM's X.25 Network Control Program Packet Switching Interface (X.25 NPSI) licensed program. X.25 NPSI provides Systems Network Architecture (SNA) users with the ability to use communication facilities that support the X.25 Interface as defined by the International Telegraph and Telephone Consultative Committee (CCITT) at Geneva in 1980 and a subset of the Recommendation as defined at Malaga-Torremolinos in 1984.

Who Should Use This Book

This book, *X.25 NPSI Planning and Installation*, is intended for system programmers who are responsible for planning and installing X.25 NPSI in a network.

How to Use This Book

This section includes information about the organization, the abbreviations, and the symbols used in the book. It is important that you read this book before you begin to plan for and install X.25 NPSI in your network.

How This Book Is Organized

This book is organized into the following sections that address specific planning and installation considerations for X.25 NPSI.

Chapter 1, "Introduction," describes the planning process for X.25 NPSI and gives a general overview of the installation process.

Chapter 2, "Planning for an X.25 NPSI Network," describes X.25 NPSI pre-installation considerations. This chapter describes:

- X.25 PSDN subscription
- Virtual circuit types
- Hardware and software requirements
- Storage requirements
- System performance
- Access methods
- Application programming
- Network resource recovery
- Migration.

Chapter 3, "Network Definition," describes how to define the configuration of an X.25 NPSI environment before generation. This chapter explains how to define:

- Physical circuits
- Virtual circuits
- Logical channels
- Virtual circuit tables
- Switched virtual circuit subarea communication (SVCSC)
- Short hold mode (SHM)
- Packet assembler/disassembler (PAD) support
- General access to X.25 transport extension (GATE)
- Dedicated access to X.25 transport extension (DATE).

Chapter 4, "Resource Definition Reference," describes the resource naming conventions and the X.25 NPSI statements that are used to define network resources. The statements, presented alphabetically, include an illustrated format and an explanation of the keywords.

Chapter 5, "Coding NCP and VTAM Parameters for X.25 NPSI," describes NCP considerations, VTAM considerations including SNA type 2.1 node, SVCSC considerations including SHM and session continuation. This chapter instructs you in the use of the access method and in the coding of NCP statements that work with X.25 NPSI definitions for accessing X.25 NPSI after it is installed.

Chapter 6, "Controlling X.25 NPSI Resources," describes the operation of X.25 NPSI resources after the installation process is complete. This chapter distinguishes between SNA and non-SNA resources and switched and permanent virtual circuits (SVCs and PVCs). This chapter also describes the correct sequence for the activation and deactivation of X.25 NPSI resources, for calls using SVCSC, and for session continuation.

Appendix A, "Defining X.25 PSDN Facilities," describes how to define the PSDN facilities used by X.25 NPSI.

Appendix B, "Installation Examples for X.25 NPSI," provides samples of definition statements for X.25 NPSI installation, which consists of:

- NCP and X.25 NPSI generation input
- NCP generation output that is also the NCP Major Node
- Switched major nodes to illustrate the appropriate support
- Mode table generation input to illustrate the appropriate support.

Appendix C, "Statement and Keyword Changes," contains a statement-by-statement listing of each X.25 NPSI statement and associated keywords. Keywords that are introduced with Version 3 Release 2 and Release 3 are noted.

A glossary, bibliography, and index are also included in this book.

Abbreviations and Terms Used in This Book

Throughout the book, the following abbreviations and terms apply.

ACF/NCP	Advanced Communications Function for Network Control Program
CCITT	International Telegraph and Telephone Consultative Committee
CTCP	Communication Transmission and Control Program
DATE	Dedicated Access to X.25 Transport Extension
GATE	General Access to X.25 Transport Extension
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
MVS	Multiple Virtual Storage/System Product (MVS/SP) operating system, Multiple Virtual Storage/Extended Architecture (MVS/XA) operating system, or Multiple Virtual Storage/Enterprise System Architecture (MVS/ESA)
PAD	Packet Assembler/Disassembler
PSDN	Packet Switched Data Network
SNA	Systems Network Architecture
SSP	System Support Programs
SSCP	System Services Control Point
SVCSC	Switched Virtual Circuit Subarea Communication
VM	Virtual Machine/System Product (VM/SP) operating system or Virtual Machine/Extended Architecture (VM/XA) operating system
VSE	Disk Operating System/Virtual Storage Extended (DOS/VSE) operating system
VTAM	Virtual Telecommunications Access Method
X.25 NPSI	X.25 NCP Packet Switching Interface.

Other abbreviations used in this book are listed in the "Glossary."

How the Term Network Is Used

The term network has at least two meanings. A public network is established and operated by communication common carriers or telecommunication administrations for the specific purpose of providing circuit-switched, packet-switched, and leased-circuit services to the public.

A user application network is a configuration of data processing products, such as processors, controllers, and terminals established and operated by users for data processing or information exchange. These products can use transport services offered by communication common carriers or telecommunication administrations.

Network, as used in this book, refers to a user application network.

How Version and Release Are Abbreviated

The terms version and release are abbreviated as "V" and "R." For example, X.25 NPSI Version 3 Release 3 is abbreviated as V3R3.

How Numbers Are Written

In this book, numbers over four digits are represented in metric style. A space is used rather than a comma to separate groups of three digits. For example, the number ten thousand five hundred fifty-two is written 10 552.

Symbols Used in This Book

Figure 1 illustrates the networking symbols used throughout this book.

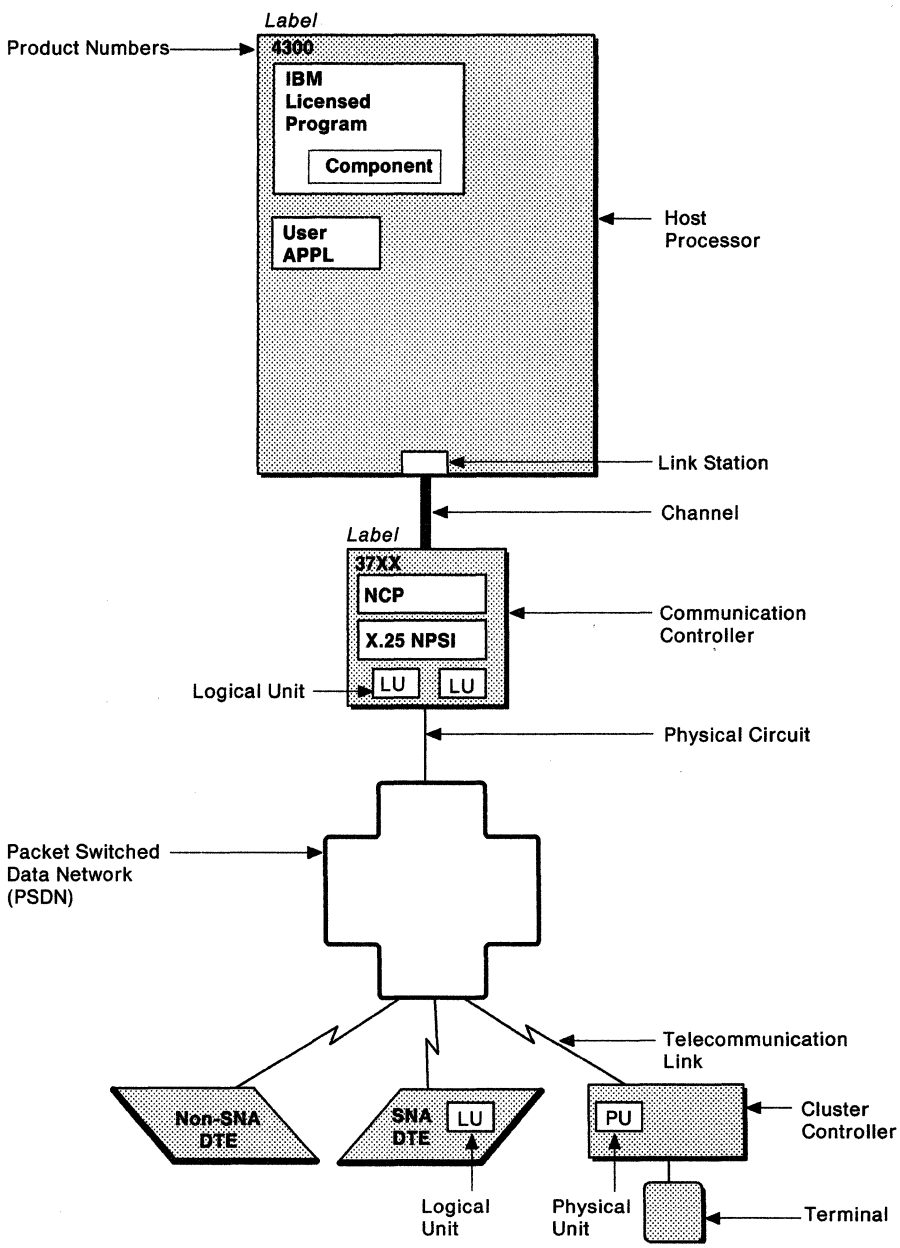

Figure 1. Networking Symbols Used in This Book

What Is New in This Book

This book has been changed to reflect the enhancements available for X.25 NPSI Version 3 Release 3. These changes include:

- Enhanced multichannel link compatibility
- NCP V5R3 support
- Ability to establish link session priority
- Enhanced SNA Type 2.1 boundary function support (casual connection)
- RU chaining support for long non-SNA messages
- Improved conformance to the International Organization for Standardization (ISO) 7776 and 8208
- Enhanced PAD support
- X.21 switched connections support
- Enhanced capability to activate, load, and dump remote NCPs
- Miscellaneous enhancements, which include:
  - Ability to clear an SVC based on an inactivity time-out
  - Ability to use billing units as statistics
  - Improved inbound flow control
  - Improved flow control negotiation in GATE and DATE
  - Improved integrated PAD support
  - Improved reset processing.

These changes are described in the following chapters:

- The X.25 NPSI generation example under VSE has been expanded in Chapter 1, "Introduction."
- V3R3 improved compliance with ISO standards 7776 and 8208 has been added to Chapter 2, "Planning for an X.25 NPSI Network." Additionally, this chapter contains information regarding the ability to perform remote communication controller loading, and the ability to perform RU chaining on long non-SNA messages.

  Chapter 2 also contains the considerations for migration from V3R2 to V3R3.
- Chapter 3, "Network Definition," has been expanded to describe the improved IDBLK/IDNUM structure for V3R3. A description of the X.21 switched connection enhancement, and a table showing MCH compatibility, have been added to this chapter.
- V3R3 statements and keywords have been added to Chapter 4, "Resource Definition Reference," and general use programming interfaces have been identified.
- The impact of the REDIAL parameter on remote communication controller loading has been added to Chapter 5, "Coding NCP and VTAM Parameters for X.25 NPSI."
- Considerations for operating an X.21 switched connection have been added to Chapter 6, "Controlling X.25 NPSI Resources."
- The flow control parameter description in Appendix A, "Defining X.25 PSDN Facilities," has been expanded to include the appropriate ISO enhancements.

- A V3R3 installation example has been added to Appendix B, "Installation Examples for X.25 NPSI."
- The tables contained in Appendix C, "Statement and Keyword Changes," have been updated to include the V3R3 statement and keyword changes.
- The Glossary has been expanded, and the Bibliography and Index have been updated.

Where to Find More Information

You should read *X.25 NPSI General Information* before reading this book. You should also be familiar with SNA concepts and products, as described in *Systems Network Architecture Concepts and Products.*

Additional publications for the X.25 NPSI library include:

- *X.25 NPSI General Information*
- *X.25 NPSI Host Programming*
- *X.25 NPSI Diagnosis, Customization, and Tuning.*

For information on related publications, see "Bibliography" at the back of this book.

Chapter 1. Introduction

Chapter 1. Introduction

This chapter describes the X.25 Network Control Program Packet Switching Interface (X.25 NPSI) and explains the planning required for the installation process of this IBM licensed program. For example, when planning to install X.25 NPSI, you must answer several questions, such as:

- What are the hardware and software requirements?
- What types of connections are required?
- How do you specify NCP statements?

Background information on the X.25 NPSI licensed program and packet switched data networks (PSDNs) can be found in *X.25 NPSI General Information*.

Concepts

This book assumes that you are familiar with the concepts and procedures needed to install IBM licensed programs, such as NCP. This knowledge will help you perform the necessary planning tasks for the X.25 NPSI installation.

What Is X.25 NPSI?

X.25 NPSI is an interface that allows Systems Network Architecture (SNA) users to use X.25 PSDNs in conjunction with their existing network. X.25 NPSI allows SNA host processors to communicate with both SNA and non-SNA equipment over PSDNs that use X.25 protocols.

How Does X.25 NPSI Fit into the Network?

Within the communication controller, X.25 NPSI operates under the control of the NCP. The NCP/EP Definition Facility (NDF) processes the NCP and X.25 NPSI statements to create tables, VTAM™ source statements,[1] and the link-edit control statements. The tables (in object form) and the linkage editor control statements, together with the preassembled modules supplied with NCP and X.25 NPSI program products, are input to the linkage editor. The linkage editor then creates a load module containing NCP and X.25 NPSI processes.

[1] VTAM is a trademark of International Business Machines Corporation.

X.25 NPSI Generation under MVS

X.25 NPSI generation under MVS occurs as a two-stage, inline process in the first step of NCP generation. X.25 NPSI uses the NDF standard attachment facility for generation.

X.25 NPSI is installed from tape. To select the correct tape files, see the instructions contained in the X.25 NPSI program directory.

For a complete explanation of the NCP installation procedure, see *NCP, SSP, and EP Resource Definition Guide*.

Installation

This section lists the libraries for V3R1, V3R2, and V3R3.

Installation for V3R1

After installing X.25 NPSI V3R1 under MVS, the following libraries are available.

- SYS1.NPSIOBJ

  SYS1.NPSIOBJ contains the object code for the X.25 NPSI part of the NCP/EP Definition Facility (NDF). This library is used for maintenance to the X.25 NPSI part of the generation.

- SYS1.NPSILNK

  SYS1.NPSILNK is created during the installation of X.25 NPSI. This library is concatenated to the NCP SYS1.SSPLIB library, and used by NDF for the X.25 NPSI part of generation.

- SYS1.MAC3725X

  SYS1.MAC3725X contains the X.25 NPSI macros used during the combined NCP and X.25 NPSI generation. For the X.25 NPSI part of the generation, you must code a DD statement concatenated with the NCP macro library, which is associated with the DDNAME SYSLIB in the NDF step. These macros are used during the table assembly of NCP generation.

- SYS1.OBJ3725X

  SYS1.OBJ3725X contains the preassembled X.25 NPSI load modules. This library is used during the link-edit step of the combined NCP and X.25 NPSI generation. You must code a DD statement with a DDNAME of OBJ3725X to define this library for V3R1 at link-edit time.

Installation for V3R2 and Later Releases

When installing X.25 NPSI V3R2 under MVS, restore the following libraries from the X.25 NPSI distribution tape.

- SYS1.NPSIOBJ

  SYS1.NPSIOBJ contains the object code for the X.25 NPSI part of the NCP/EP Definition Facility (NDF). This library is used for maintenance for the X.25 NPSI part of the generation.

- SYS1.NPSILNK

  SYS1.NPSILNK is created during the installation of X.25 NPSI and is used by NDF. This library is concatenated to the NCP SYS1.SSPLIB library.

- SYS1.SBALMAC1

  SYS1.SBALMAC1 contains the X.25 NPSI macros used during the combined NCP and X.25 NPSI generation. These macros are used during the table assembly of NCP generation.

- SYS1.SBALMOD1

  SYS1.SBALMOD1 contains the preassembled X.25 NPSI load modules. This library is used during the link-edit step of the combined NCP and X.25 NPSI generation. You must code a DD statement with a DDNAME of ABALMOD1. This statement specifies the system library of SBALMOD1 for the data set name to define the object module library at link-edit time. See "LKEDT Step" on page 236.

The library names change between V3R1 and V3R2, but the descriptions listed in "Installation for V3R1" on page 4 still apply. Table 1 shows the library names for V3R1 and the changed names in V3R2 and later releases.

Table 1. Changed Library Names (V3R1 to V3R2)

		System	**Distribution**
V3R1 Name	**Content**	**V3R2 Name**	**V3R2 Name**
NPSIOBJ	Generation modules	none	NPSIOBJ
NPSILNK *	Generation load module	NPSILNK	none
MAC3725X	Generation macros	SBALMAC1	ABALMAC1
OBJ3725X	Executable modules	SBALMOD1	ABALMOD1

Note: X.25 NPSI has two sets of libraries:

S For the system (target) library name.
A For the distribution library name.

* Not delivered with MVS, but created during installation and used during X.25 NPSI generation. Delivered with VM.

X.25 NPSI code is first installed in the system library, also known as the target library. When the code is successfully installed, it is copied into the distribution library at System Modification Program (SMP) ACCEPT time.

Generation Process

The combined X.25 NPSI NCP generation procedure results in the following improvements:

- One generation set contains both X.25 NPSI and NCP statements.
- Load module creation takes less time.
- The NCP and X.25 NPSI listing is printed as one item.
- NDF diagnostic aids can be used.

To verify the input definitions without going through the entire generation process, use the FASTRUN keyword on the OPTIONS statement. When FASTRUN is selected, NDF reads the input and performs a validity check. Only the input section and error listing are generated. Control blocks and the load module are not produced.

TBL1OBJ and TBL2OBJ are small data sets. The size depends on the number of multichannel links (MCHs) and virtual circuits. A safe order of magnitude is one cylinder of 3380 for every 200 virtual circuits.

Figure 2 on page 7 and Figure 3 on page 8 describe the production of the combined NCP/X.25 NPSI load modules for V3R1, V3R2, and later releases, respectively. The X.25 NPSI statements described in Chapter 4, "Resource Definition Reference," provide the attachment to the PSDN. These statements are required for the X.25 NPSI part of the NCP generation and define the X.25 NPSI control blocks through the use of NDF.

The linkage editor uses both the X.25 NPSI library (SYS1.OBJ3725X for V3R1 and SYS1.SBALMOD1 for V3R2 and later releases) and the NCP library (SYS1.OBJ3725 for V3R1 and SYS1.SNCPMOD1 for V3R2 and later releases) as input. This produces the following:

- NCP/X.25 NPSI Load Module
- Resource Resolution Table.

The NCP load module contains NCP and X.25 NPSI control blocks and executable code.

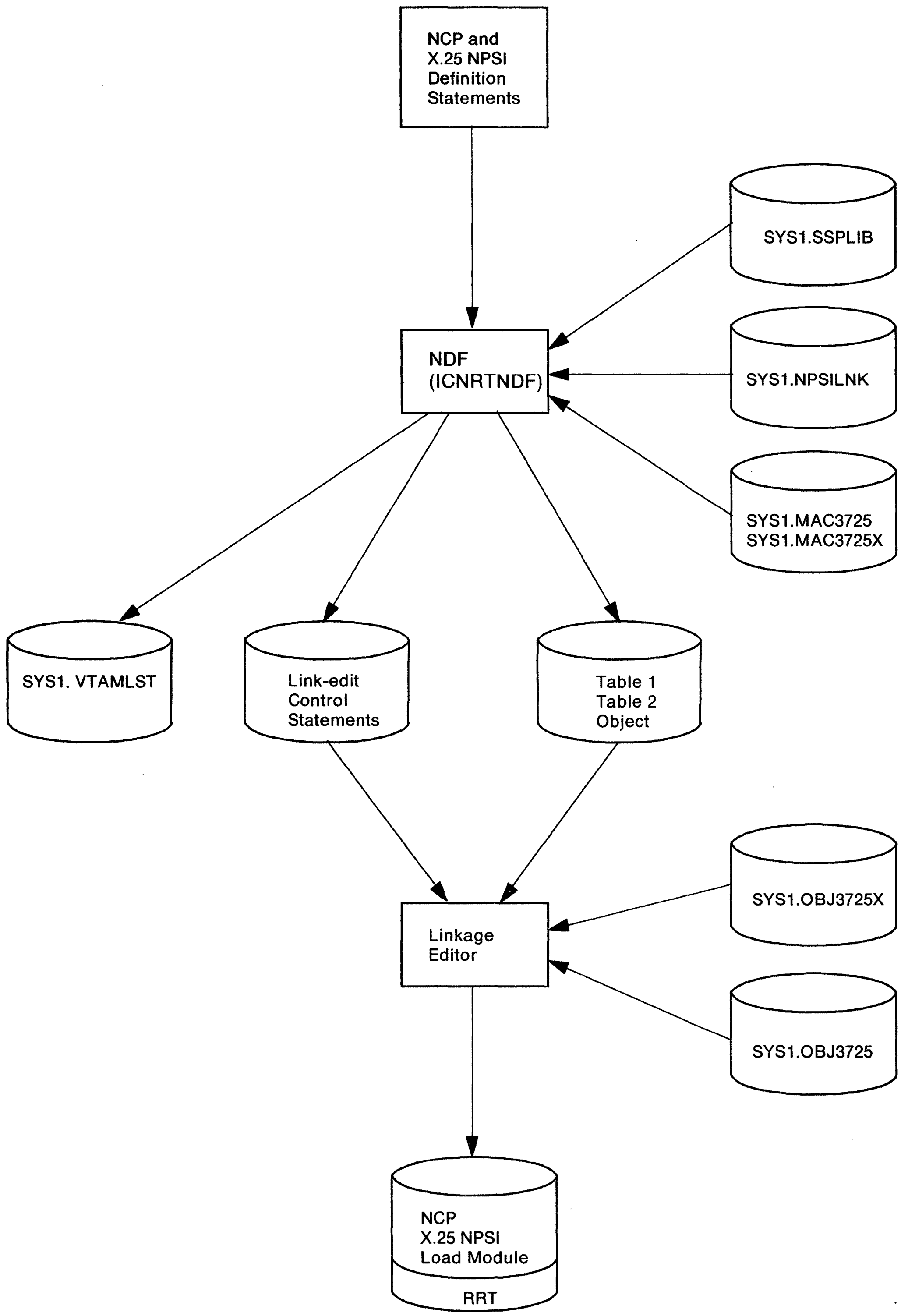

Figure 2. X.25 NPSI Generation Summary under MVS for V3R1

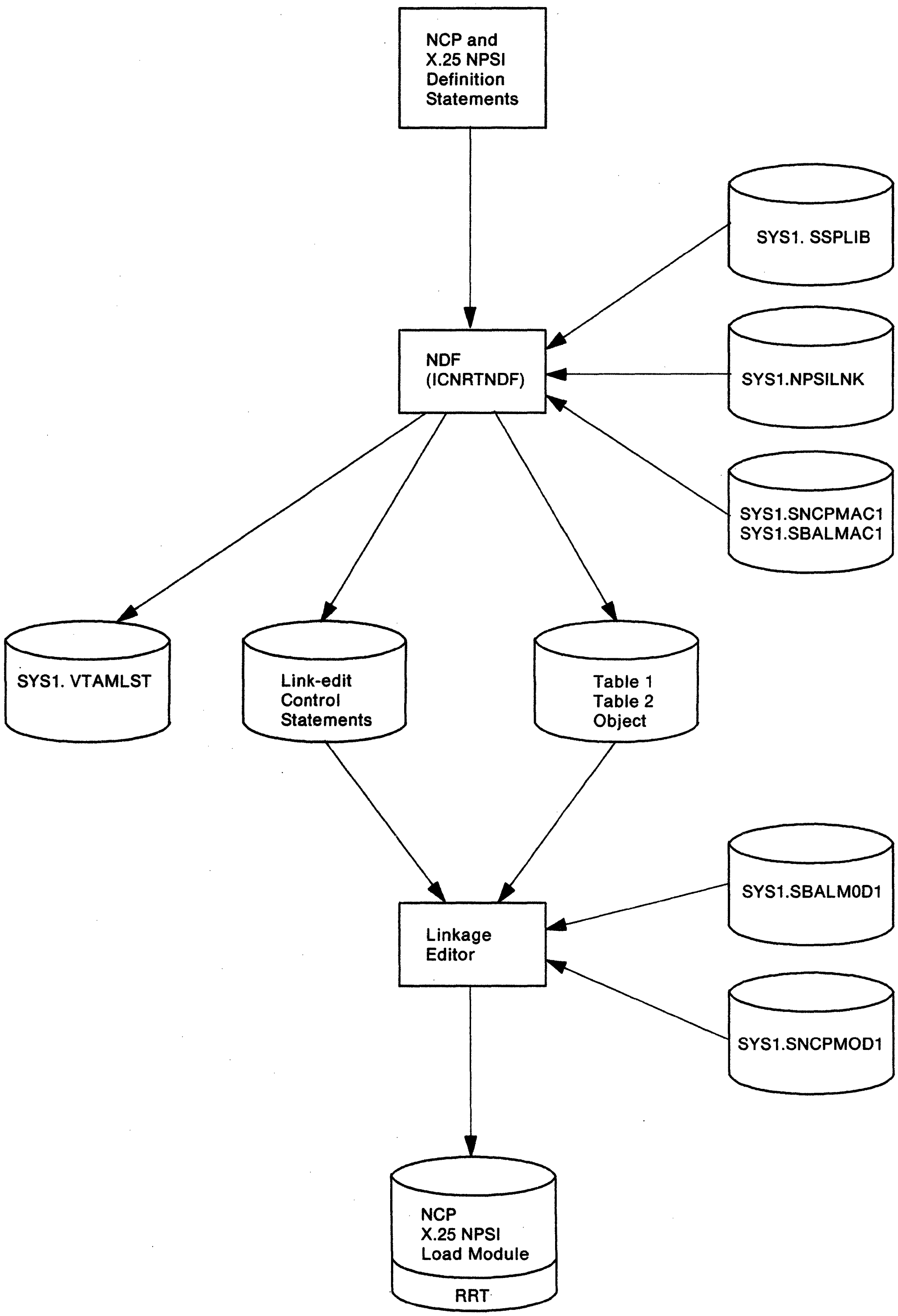

Figure 3. X.25 NPSI Generation Summary under MVS for V3R2 and Later Releases

Placement within the NCP Generation Definition Statements

The X.25 NPSI generation process under MVS allows you to specify the X.25 NPSI definitions within the NCP definitions by using the NDF standard attachment facility. To accomplish this, code X.25 NPSI statements in the NCP generation code after all start-stop (SS) and binary synchronous communication (BSC) definitions, if any, and before all SNA network interconnect (SNI) NETWORK statements (non-native network definitions).

Figure 4 shows the correct placement of X.25 NPSI statements.

```
NCP BUILD Statement
   .
   .
SS Definitions
   .
   .
BSC Definitions
   .
   .
SDLC Definitions
   .
   .
X.25 NPSI Definitions
   X25.NET Statement
   .
   .
   X25.END Statement
XI Definitions (if XI is used)
   .
   .
Channel Adapter Definitions (required for 3745)
   .
   .
SNI Definitions (non-native network definitions)
   .
   .
GENEND Statement
```

Figure 4. Placement of X.25 NPSI Statements in NCP Generation

X.25 NPSI Generation under VM (V3R2 and Later Releases)

X.25 NPSI generation under VM occurs as a two-stage, inline process in the first step of NCP generation.

X.25 NPSI is installed from tape. To select the correct tape files, see the instructions in the X.25 NPSI program directory. No specific X.25 NPSI EXECs are provided to perform X.25 NPSI generation. X.25 NPSI uses the NDF standard attachment facility for generation.

For a complete explanation of the NCP installation procedure, see *NCP, SSP, and EP Resource Definition Guide*.

Installation

When installing X.25 NPSI under VM, you must restore various files from the X.25 NPSI distribution tape. Descriptions of the required files are as follows:

- NPSIOBJ TXTLIB contains the object code for the X.25 NPSI part of the NCP/EP Definition Facility (NDF). This file is used to apply maintenance to the X.25 NPSI part of the generation.
- NPSILNK LOADLIB contains the load module used to generate X.25 NPSI.
- SBALMAC1 MACLIB contains the X.25 NPSI macros used during the combined NCP and X.25 NPSI generation. These macros are used during the table assembly of NCP generation.
- SBALMOD1 TXTLIB contains the preassembled X.25 NPSI load modules. This file is used during the link-edit step of the combined NCP and X.25 NPSI generation. The DDNAME of the FILEDEF statement for the target library used to define the X.25 NPSI object modules library must be SBALMOD1.

When X.25 NPSI is generated under VM, a DDNAME and FILEDEF must be included for ABALMOD1 in the VMNCP EXEC statement. In addition, the following two lines are required on the VMNCP EXEC statement, under `FILEDEFS FOR THE LINK EDIT STEP`:

```
"FILEDEF" DDNAME "DISK" OBJECT "TXTLIB *"
"FILEDEF ABALMOD1 DISK1" SBALMOD1 "TXTLIB *"
```

Under the section for MACRO libraries, which is used in the table assembly phase of NDF, the following two lines are required:

```
"FILEDEF SYSLIB DISK SBALMAC1 MACLIB * (CONCAT"
"GLOBAL MACLIB SBALMAC1" MACRO
```

Generation Process

The combined NCP/X.25 NPSI generation procedure results in the following improvements:

- One generation set contains both X.25 NPSI and NCP statements.
- Load module creation takes less time.
- The NCP and X.25 NPSI listing is printed as one item.
- NDF diagnostic aids can be used.

To verify the input definitions without going through the entire generation process, use the FASTRUN keyword on the OPTIONS statement. When FASTRUN is selected, NDF reads the input and performs the validity check. Only the input section and error listing are generated. Control blocks and the load module are not produced.

The TBL1OBJ and TBL2OBJ are small data sets. The size depends on the number of MCHs and virtual circuits. A safe order of magnitude is one cylinder of 3380 for every 200 virtual circuits.

The X.25 NPSI statements described in Chapter 4, "Resource Definition Reference," provide the attachment to the PSDN. These statements are required for the X.25 NPSI part of the NCP generation and define the X.25 NPSI control blocks through the use of NDF.

The linkage editor uses both the X.25 NPSI object module library (SBALMOD1 TXTLIB) and the NCP object module library (SNCPMOD1 TXTLIB) as input. This produces the following:

- NCP/X.25 NPSI Load Module
- Resource Resolution Table.

The NCP load module contains NCP and X.25 NPSI control blocks and executable code.

Placement within the NCP Generation Definition Statements

The X.25 NPSI generation process under VM allows you to specify the X.25 NPSI definitions, within the NCP definitions, by using the NDF standard attachment facility. To accomplish this, code X.25 NPSI statements in the NCP generation code after all start-stop (SS) and binary synchronous communication (BSC) definitions, if any, and before all SNA network interconnect (SNI) NETWORK statements (non-native network definitions).

Figure 5 on page 12 shows the correct placement of X.25 NPSI statements.

```
NCP BUILD Statement
   .
   .
SS Definitions
   .
   .
BSC Definitions
   .
   .
SDLC Definitions
   .
   .
X.25 NPSI Definitions
   X25.NET Statement
   .
   .
   X25.END Statement
XI Definitions (if XI is used)
   .
   .
Channel Adapter Definitions (required for 3745)
   .
   .
SNI Definitions (non-native network definitions)
   .
   .
GENEND Statement
```

Figure 5. Placement of X.25 NPSI Statements in NCP Generation

X.25 NPSI Generation under VSE (V3R2 and Later Releases)

X.25 NPSI generation under VSE occurs as a two-stage, inline process in the first step of NCP generation.

X.25 NPSI is installed from tape using the Maintain System History Program (MSHP). For more information, see the instructions in the X.25 NPSI program directory. The distribution tape contains the base product, as well as several usage tiers. X.25 NPSI uses the NDF standard attachment facility for generation.

For a complete explanation of the NCP installation procedure, see *NCP, SSP, and EP Resource Definition Guide.*

Installation

The installation of X.25 NPSI under VSE consists of the following:

- Restoring the production and generation sublibraries from the distribution tape
- Updating the VSE System History File.

Production and generation libraries are listed below:

- X25LIB.V3R3MAC
- X25LIB.V3R3OBJ
- X25LIB.V3R3UST2
- X25LIB.V3R3UST25 (3745 support)
- X25LIB.V3R3UST3
- X25LIB.V3R3UST4
- X25LIB.V3R3UST5

Generation Process

The combined NCP/X.25 NPSI generation procedure results in the following improvements:

- One generation set contains both X.25 NPSI and NCP statements.
- Load module creation takes less time.
- The NCP and X.25 NPSI listing is printed as one item.
- NDF diagnostic aids can be used.

To verify the input definitions without going through the entire generation process, use the FASTRUN keyword on the OPTIONS statement. When FASTRUN is selected, NDF reads the input and performs the validity check. Only the input section and error listing are generated. Control blocks and the load module are not produced.

The TBL1OBJ and TBL2OBJ are small data sets. The size depends on the number of MCHs and virtual circuits. A safe order of magnitude is one cylinder of 3380 for every 200 virtual circuits.

The X.25 NPSI statements described in Chapter 4, "Resource Definition Reference," provide the attachment to the PSDN. These statements are required for the X.25 NPSI part of the NCP generation and define the X.25 NPSI control blocks through the use of NDF.

The linkage editor uses both the X.25 NPSI object module library and the NCP object module library as input. This produces the following:

- NCP/X.25 NPSI Load Module
- Resource Resolution Table.

The NCP load module contains NCP and X.25 NPSI control blocks and executable code.

Placement within the NCP Generation Definition Statements

The X.25 NPSI generation process under VSE allows you to specify the X.25 NPSI definitions within the NCP definitions by using the NDF standard attachment facility. To accomplish this, code X.25 NPSI statements in the NCP generation code after all start-stop (SS) and binary synchronous communication (BSC) definitions if any, and before all SNA network interconnect (SNI) NETWORK statements (non-native network definitions).

Figure 6 shows the correct placement of X.25 NPSI statements.

```
NCP BUILD Statement
   .
   .
SS Definitions
   .
   .
BSC Definitions
   .
   .
SDLC Definitions
   .
   .
X.25 NPSI Definitions
   X25.NET Statement
   .
   .
   X25.END Statement
Channel Adapter Definitions (required for 3745)
   .
   .
SNI Definitions (non-native network definitions)
   .
   .
GENEND Statement
```

Figure 6. Placement of X.25 NPSI Statements in NCP Generation

Chapter 2. Planning for an X.25 NPSI Network

Chapter 2. Planning for an X.25 NPSI Network

This chapter introduces you to the planning concepts needed for integrating X.25 NPSI into your network. The chapter is divided into five task sections:

- Planning for the X.25 interface
- Planning for X.25 NPSI
- Planning for X.25 NPSI in the network
- Planning for X.25 NPSI migration
- Planning for the configurator.

Because X.25 NPSI has the ability to connect SNA equipment through an X.25 PSDN, in addition to an understanding of SNA products, you should have an understanding of Recommendation X.25, the PSDNs that conform to Recommendation X.25, and the subscription parameters for PSDNs that work with X.25 NPSI.

As you plan your generation, you also should become familiar with the following:

- Hardware and software compatibility
- Logical link control types
- Storage requirements
- Connections that do not use PSDNs
- Conformance to ISO standards.

Because X.25 NPSI communicates with many components of the network, you need to understand:

- SNA considerations
- Host application considerations
- Network recovery considerations.

If you used an earlier version of X.25 NPSI, you should also read "Planning for X.25 NPSI Migration" on page 57.

Planning for the X.25 Interface

To plan for the use of X.25 NPSI in your network, you need to understand both Recommendation X.25 and the packet switched data networks (PSDNs) that are designed to conform to Recommendation X.25.

"Recommendation X.25" on page 18 gives you an introduction to Recommendation X.25.

"PSDNs" on page 18 gives you an overview of how the PSDNs work.

"Planning PSDN Subscription" on page 19 describes the specific subscription parameters available from PSDNs.

X.25 NPSI General Information contains more information about X.25 and PSDNs.

Recommendation X.25

Recommendation X.25 was first approved by the International Telegraph and Telephone Consultative Committee (CCITT) in 1976. Since then, Recommendation X.25 has been refined and enhanced in 1980 and 1984.

Recommendation X.25 defines a standard interface for communication over three conceptual levels: physical, link, and packet.

- Physical level

  The physical level specifies the electrical and physical characteristics of the interface (for example, voltage levels and circuit signals).

  Recommendation X.21 from the CCITT defines the recommended physical interface. An alternative physical interface is defined in X.21bis. X.21bis is similar to the current V.24 (EIA RS-232-C in the U.S. and Canada) and V.35 interfaces implemented on IBM equipment.

- Link level

  The link level converts the physical circuit into an error-free logical link used to transfer data between the data terminal equipment (DTE) and the data communication equipment (DCE).

  Link level provides a standard protocol for the following procedures:

  - Controlling the data link
  - Checking the frame sequence
  - Detecting the start and end of a frame
  - Initializing the link
  - Disconnecting the link
  - Resetting the link.

  The address field defines the flow and direction of the frame. For example, the address field indicates whether the frame is a command or a response. Both the DTE and the DCE use the control field information to detect out-of-sequence frames, duplicated frames, missing frames, and the types of frames. The frame check sequence is a facility for detecting transmission errors.

- Packet level

  The packet level defines the structure of *data* and *control* packets. Data packets contain the information that is to be transferred. Control packets are used to establish and manage virtual circuits.

  The packet level specifies how a single physical circuit can be used by multiple logical circuits that handle simultaneous virtual calls. Packet flow over the logical circuit is also managed at the packet level.

PSDNs

Packet switched data networks (PSDNs) are networks connected by high-speed lines that carry data in small segments called *packets*. PSDNs perform the following functions:

- Route user-data packets
- Respond to command packets
- Monitor and manage the status of network resources.

PSDNs and user-control data flow over physical circuits. Placing data into packets permits multiple connections to share one physical circuit. These connections, which support many subscribers, can use the same PSDN simultaneously. Each connection is a logical point-to-point *virtual circuit*.

Each physical circuit can contain up to 4096 virtual circuits. Virtual circuits are created by connecting two end points of a network. Each end of the virtual circuit accesses the PSDN through a *logical channel*.

There are two types of virtual circuit connections supported in a PSDN:

- Permanent virtual circuit (PVC)
- Switched virtual circuit (SVC).

A PVC is analogous to a leased line in that a predefined association between two logical channels is made to the PSDN. An SVC is analogous to a switched circuit. A call setup procedure must be followed to establish a virtual circuit connection between two logical channels. The PSDN uses routing tables to maintain the relationships among the physical circuits, virtual circuits, and logical channels.

Note: Although access to the PSDN by a physically switched connection is part of the CCITT Recommendation X.25, most networks provide access only by physically nonswitched connections. X.25 NPSI supports nonswitched connections to PSDNs only.

Packets that flow on the virtual circuit have a maximum packet length. If the data to be sent has a length exceeding the maximum packet length, the data must be split into packets that do not exceed the maximum packet length. The PSDN then transmits the packets to the specified destination and guarantees delivery in the proper order with no information loss.

To ensure the proper delivery of packets, the PSDN uses a *packet header* that includes the logical channel identifier, a sequence number, and other control information. In most cases, the PSDN receives the packetized data from a DTE, sends an acknowledgment to the origin, and passes the packets to their destination.

Note: CCITT Recommendation X.25 applies to the interface between the PSDN DCE and a user DTE. PSDNs that provide an X.25 interface do not always operate in exactly the same way. In addition, not all PSDNs provide an X.25 interface.

Planning PSDN Subscription

The following considerations should be discussed with your PSDN vendor when you plan the attachment requirements.

Packet Size

Packet size is defined to the PSDN as the maximum size packet that can be transmitted between the DTE and DCE.

X.25 NPSI supports packet sizes ranging from 32 through 4096 bytes, but many PSDNs have their own size restrictions. To ensure compatibility, discuss packet size with your network vendor. A larger packet size decreases central control unit (CCU) utilization by X.25 NPSI, because splitting the path information unit (PIU) into several packets is time-consuming.

Packet size can be predetermined or negotiated at call setup.

Packet-Level Window Size

Packet-level window size defines the maximum number of packets that can be transmitted between the DTE and DCE on a particular virtual circuit, before an acknowledgment must be received.

A packet window exists for each transmission direction. The packet-level window size affects end-to-end flow control for a virtual circuit and is dependent upon the following:

- Type of application
- Traffic flow
- Line access speed.

Many PSDN vendors do not offer packet-level window size as a subscription parameter. Instead, they set the packet-level window size default at 2, because, as the packet-level window size increases, the buffer requirements within a PSDN increase.

Subscribing to or negotiating a packet window size of more than 2 (if the size is available from the PSDN vendor) increases the degree of piggybacking possible at the X.25 NPSI packet level, and therefore decreases CCU utilization.

Link-Level Window Size

Link-level window size defines the number of packets that can be transmitted on a physical circuit before an acknowledgment must be returned. This window size is the sum of all packets transmitted for all virtual circuits operating on a physical circuit. Link-level window size is a mechanism used to regulate information flow across the X.25 DTE/DCE interface.

For access lines with smaller error rates, you can obtain better throughput by defining larger link-level window sizes. For most PSDNs, the link-level window size is fixed at 7.

Closed User Group

A closed user group (CUG) is a PSDN facility that prevents unauthorized access to a DTE. When CUG is in use, switched logical channels not subscribing to the same CUG are unable to communicate with each other. The CUG option does not affect X.25 NPSI performance.

CCITT defines the following types of CUGs within X.25:

- Outgoing access
- Incoming access
- Incoming calls barred
- Outgoing calls barred
- Outgoing access selection
- Bilateral closed user group selection.

Some networks allow all types of CUGs; others allow only some types. Check with your PSDN vendor to determine the CUGs that are available.

X.25 NPSI *unconditionally* accepts CUGs for incoming calls by default. If you want to control CUGs, you must use the X.25 NPSI GATE or DATE function, or specify the type of CUG to be rejected in the RFAC keyword of the X25.NET statement. See *X.25 NPSI Host Programming* to learn more about programming GATE and DATE.

Reverse Charging

Reverse charging for an X.25 connection is the same as reverse charging in the telephone network. With reverse charging, the called party pays the connection cost.

PSDN vendors charge for connection in different ways. Charges can be determined by the number of virtual circuits and by the number of physical circuits. Many vendors allow you to specify reverse charging only by physical circuit, which will affect all virtual circuits using that physical circuit.

Some PSDN vendors determine charges using a volume-related charge that applies to a subscription account, rather than a virtual circuit. Each installation must pay a subscription charge. In this case, you can avoid multiple subscription charges by using reverse charging for one installation with a subscription account and have all packets charged to that single subscription.

Some PSDN vendors automatically charge the called party when a PSDN packet assembler/disassembler (PAD) is accessed.

You must arrange with the PSDN vendor at the time of subscription to either accept or reject reverse charge calls.

In some cases, PSDNs behave differently depending on whether you subscribe to reverse charging. Some PSDNs provide a Facility field when the Facility field is not present in the Call Request. In this case, the Facility field parameter is set to *reverse charging not requested*. Other PSDNs include the Facility field only when the Call Request specifies *reverse charging requested*. You should check with your PSDN vendor to determine how the PSDN handles reverse charging.

X.25 NPSI *unconditionally* accepts reversed charging of incoming calls by default. To control reverse charging, you must use the X.25 NPSI GATE or DATE function or specify that you want to reject reversed charging in the RFAC keyword of the X25.NET statement. See *X.25 NPSI Host Programming* to learn more about programming GATE and DATE.

High-Priority Class of Traffic

This high-priority class of traffic service ensures that packets marked as high-priority are transmitted before other packets. However, this service requires the use of a smaller packet size and is done at a premium cost.

X.25 NPSI fully supports high-priority class of traffic service. X.25 NPSI checks incoming calls for high-priority service requests and internally updates the packet length to 128 for the duration of a high-priority call.

For outgoing calls, you can specify priority service using the optional facilities keyword (OPTFACL) of the X25.OUFT statement. You must also code an associated X25.VCCPT statement defining a maximum packet length of 128.

See Chapter 4, "Resource Definition Reference," for more information about the X25.OUFT and X25.VCCPT statements.

Note: Do not confuse high-priority class of traffic with the CCITT fast select facility.

Line Speed

Line speed is the number of bits per second (bps) that a physical circuit can transmit data. Greater line speed means an increased connection cost, in addition to the increased circuit cost. Lower line speed lengthens response time. To shorten response time, the average load on a physical circuit's transmit leg or receive leg should not exceed 60 percent. Plan your line speed needs carefully, and then discuss them with your PSDN vendor.

Note: Configurators 3720 or 3745 compute the use of each MCH leg (transmitting and receiving) as a function of the traffic described on each virtual circuit belonging to this MCH. This information can help in determining the required line speed.

PAD Service

A PSDN can include PAD service in its configuration. PAD service provides protocol conversion for connecting non-X.25 devices to an X.25 interface. CCITT has defined the following three PAD recommendations:

- Recommendation X.3 defines a set of parameters that can be used to select the operational characteristics of the PAD service.
- Recommendation X.28 defines the procedures that are used by the start-stop ASCII device that accesses the PAD. These procedures provide you with an initial set of X.3 PAD parameters, a profile, and an explanation of how these PAD parameters can be changed before or during each virtual call.
- Recommendation X.29 defines the procedures that access the PAD service, which can be used by the DTE. Recommendation X.29 also includes procedures to change the X.3 PAD parameters during the virtual call, if required.

X.25 NPSI provides two types of PAD support. The first type is called *integrated* PAD support. Integrated PAD support employs a subset of Recommendation X.29. An ASCII terminal conforming to X.28 and communicating through an X.3 PAD can use integrated PAD support to access an SNA host.

The second type of PAD support is called *transparent* PAD support. With this type of support, the host application is responsible for those commands that allow communication with the remote PAD.

Transparent PAD support is required for any PAD that does not follow Recommendations X.3, X.28, and X.29. Transparent PAD support can also be used with a PAD that supports the CCITT Recommendations X.3, X.28, and X.29 if the host application requires control of the PAD service in a different way than the support provided by integrated PAD support.

See *X.25 NPSI Diagnosis, Customization, and Tuning* for a detailed explanation on how to use and customize PAD parameters.

Compliance with ISO Standards and CCITT 84 (V3R2 Enhancements)

This section describes how X.25 NPSI V3R2 complies with ISO standards 7776 and 8208.

System Generation

Keywords must be added to the X25.NET statement to support the optional features at the packet level. See "Packet Level" for the keywords.

Link Level

The link level changes bring X.25 NPSI in closer compliance with ISO 7776 and CCITT 84 Recommendations. The changes are as follows:

- X.25 NPSI retransmits a frame reject (FRMR) frame with the same information field that was originally transmitted in response to an I or S frame.
- X.25 NPSI transmits an FRMR response when an unknown response is received with the final bit set on.
- X.25 NPSI transmits a set asynchronous balanced mode (SABM) frame when an unexpected response frame is received with the final bit set on.
- An unnumbered acknowledgment (UA), rather than an SABM/UA, is sent in response to an SABM.
- X.25 NPSI accepts an FRMR as valid, even if all of the X, Y, Z, and W bits are set off. Reinitialization of the MCH is then performed.

Packet Level

The V3R2 enhancements, which allow X.25 NPSI to more closely comply with ISO 8208 and CCITT 84 at the packet level, include:

- The use of CCITT 84 diagnostic codes
- Facility checking for Incoming Call and Call Connected packets
- Checking of nonstandard facilities for Incoming Call and Call Connected packets
- Additional validity checking of received packets
- Reset packet exchange on an SVC followed by an optional Clear packet
- Retries on Clear, Reset, and Restart packets.

Note: Modifications in the packet level section do not apply when using the DATE and GATE functions.

CCITT 84 Diagnostic Codes: When X.25 NPSI sends a Restart, Clear, or Reset packet to the network, it appends cause and diagnostic codes to the created packet. X.25 NPSI selects the appropriate cause and diagnostic codes to send to the DCE, depending on the specification of the CAUSE keyword on the X25.NET statement. See "X25.NET Statement" on page 136 for a description of the CAUSE keyword.

During X.25 NPSI system generation, a cause and diagnostic table is built according to how the CAUSE keyword is coded on the X25.NET statement. One of the following three tables is built:

CCITT	Is cause 00 with CCITT 84 diagnostics
IBM00	Is cause 00 with SNA diagnostics (for IBM migration)
IBM80	Is cause 80 with SNA diagnostics (same as IBM00).

The default value is:

```
CAUSE=IBM00
```

See *X.25 NPSI Diagnosis, Customization, and Tuning* for more information on CCITT cause and diagnostic codes.

Note: Many IBM diagnostics do not have an equivalent CCITT diagnostic code. In such cases, even with CAUSE=CCITT specified, the IBM00 set of codes is sent.

X.25 NPSI Facility Checking for Incoming Call and Call Connected Packets: X.25 NPSI checks the format of the facility field in both the Incoming Call and the Call Connected packets. X.25 NPSI accepts the call if the call is specified in the NSTDFAC keyword of the X25.NET statement, or if the facility codes are any one of the following:

- Fast select
- Reverse charging
- Throughput class negotiation
- Call redirection
- Closed user group (CUG) with basic format
- CUG with outgoing access (basic)
- CUG with extended format
- CUG with outgoing access (extended)
- Bilateral CUG
- Packet size negotiation
- Packet window size negotiation
- High-priority class of traffic.

If the call was not specified, or if these facility codes were not specified, X.25 NPSI clears the call. A Clear Request packet is sent if a format error is found.

X.25 NPSI also scans the facility codes in both the Incoming Call and the Call Connected packets. X.25 NPSI does not check for invalid facility codes.

X.25 NPSI checks the facility field format for the following:

- A facility length greater than the remainder of the packet
- A facility length greater than 109 bytes
- A duplicated facility.

A table of up to nine predefined CCITT facilities can be built at system generation, and you decide the facilities, if any, that you want to reject. Use the keyword RFAC in the X25.NET statement to code the facilities you want to reject. For example:

```
RFAC=(fac1,fac2,fac3,...)
```

where `fac` is the mnemonic code of the facility to reject. Nine facilities are available. Each facility is optional and can be rejected. The default value is NONE, indicating that no facility is rejected. See "X25.NET Statement" on page 136 for the list of facilities that can be rejected.

Note: Fast select is supported only when communicating through a GATE or DATE CTCP.

When an Incoming Call or Call Connected packet containing optional facilities is received, and one of the facilities is coded for rejection, a Clear packet is sent to the network.

Nonstandard X.25 NPSI Facilities Process: In addition to the standard CCITT X.25 user facilities, a table of nonstandard facilities to be accepted can be generated. Although the nonstandard user facilities are not defined in the CCITT Recommendation X.25, they must have the proper facility format.

Use the NSTDFAC keyword in the X25.NET statement to code the nonstandard facilities. The default value is NONE. For example:

```
NSTDFAC=(Nsfac1,Nsfac2,Nsfac3...)
```

A nonstandard facility can be duplicated in a Call packet. In this case, the facility must be coded *as many times* as it might be duplicated. For example:

```
NSTDFAC=(Nsfac1,Nsfac2,Nsfac2,Nsfac2,Nsfac3...)
```

Validity Checking of Received Packets: When a packet is received, X.25 NPSI checks for the following:

- The packet is valid in the current virtual circuit state.
- The length of the packet is valid.
- The packet has a valid format.
- The virtual circuit number allows for the received packet type.
- The packet is valid on the virtual circuit number.

Reset Packet Handling: The following information should be considered when a Reset packet is received by X.25 NPSI.

- For a PVC:
  - When a Reset packet is received, X.25 NPSI confirms the reset and sends an INOP message for the virtual circuit PU.
  - When a Reset packet is sent, X.25 NPSI waits for a Reset Confirmation packet and sends an INOP message for the virtual circuit PU.
- For an SVC:
  - When a Reset packet is received, X.25 NPSI confirms the reset and clears the virtual circuit if CRAFTRC=YES is coded. When X.25 NPSI receives a Clear Confirmation packet, X.25 NPSI deactivates the virtual circuit PU. If CRAFTRC=NO is coded, X.25 NPSI confirms the Reset packet, and the virtual circuit is not cleared or deactivated unless X.25 NPSI is processing a packet sequence with the M bit on for LLC2 and LLC3.
  - When X.25 NPSI detects a reset condition, it sends a Reset packet to the network and waits for a confirmation. If CRAFTRC=YES is coded, X.25 NPSI sends a Clear packet, waits to receive the Clear Confirmation packet, and then causes the virtual circuit PU to become inoperable. If CRAFTRC=NO is coded, the virtual circuit is not cleared or made inoperable unless X.25 NPSI is processing a packet sequence with the M bit on for LLC2 and LLC3.

Note: It is the responsibility of a communication and transmission control program (CTCP) to send a Clear Request packet when a Reset packet is sent or received on a virtual circuit using GATE or DATE.

Retries on Clear, Reset, and Restart Packets: Timer values and retry counts are specified in the X25.NET statement. The default value for the timers is set at 180 seconds, with the exception of T21, which has a default of 200 seconds. The retry count default value is set at 1 for all retry counters, except for R21 (Call) where no retry is attempted.

The system generation keywords specified in the X.25 NET statement are:

Timer Values
T20 Restart Request response timer
T21 Call Request response timer
T22 Reset Request response timer
T23 Clear Request response timer

Retry Counters
R20 Restart Request retries
R22 Reset Request retries
R23 Clear Request retries.

Compliance with ISO Standards and CCITT 84 (V3R3 Enhancements)

This section describes how X.25 NPSI V3R3 complies with ISO standards 7776 and 8208.

Link Level

The link level changes bring X.25 NPSI in closer compliance with ISO 7776 and CCITT 84 Recommendations. The changes include the following:

- Before sending a SABM, X.25 NPSI transmits an FRMR frame N2 times after the T1 timer elapses.
- X.25 NPSI immediately transmits an SABM, if an FRMR frame is received indicating frame rejection.
- X.25 NPSI transmits an FRMR frame and starts the T1 timer when an I or S frame is received. If X.25 NPSI receives an FRMR frame before the T1 timer elapses, X.25 NPSI stops the T1 timer and immediately sends an SABM.
- If an MCH has been inactive for a longer time period than defined by the T4 timer, X.25 NPSI sends a Receive Ready frame, with the polling bit (P bit) on, every T4 seconds across that MCH.

  The T4 timer is defined in seconds during X.25 NPSI generation.

Packet Level

The V3R3 enhancements, which allow X.25 NPSI to more closely comply with ISO 8208 and CCITT 84 at the packet level, include:

- Delivery Confirmation (D Bit) acknowledgment
- Acceptance of duplicate facilities
- Checking of logical channel numbers
- Handling of call collision
- Consideration of non-full data packets
- Consideration of Qualified bit (Q bit) in complete packet sequences
- Interrupt packet time-out
- Facility checking for Call Accepted packets
- Allowing for different packet and window sizes
- Reset packet handling.

Delivery Confirmation Bit (D Bit) Acknowledgment: If you code DBIT=YES on the X25.MCH statement, X.25 NPSI acknowledges the presence of the D bit for the PCNE function (LLC0) only.

For an incoming call, upon receipt of an Incoming Call packet with the D bit set on, X.25 NPSI transmits a Call Accepted packet with the D bit set on. For an outgoing call, X.25 NPSI transmits a Call Request packet with the D bit set on, and waits for a

Call Connected packet with the D bit set on. After the Call Connected packet is received, the data packets from both directions have the D bit set on.

If X.25 NPSI transmits a Call Request packet having the D bit set on, but receives a Call Connected packet with the D bit set off, the data packets should not have the D bit set on. However, if the data packets have the D bit set on, X.25 NPSI does not reset the logical channel, but accepts the data packets and ignores the D bit.

If X.25 NPSI receives a data packet with the D bit set on over a GATE virtual circuit (LLC4), a RESET command is sent to the CTCP with a Diagnostic code of X'A6', and the virtual circuit is reset. The CTCP is responsible for ignoring the error, sending a RESET command to the network, or clearing the connection.

Acceptance of Duplicate Facilities: If you code NETTYPE=4 on the X25.NET statement during system generation, X.25 NPSI rejects duplicate facilities and clears the call. However, if you code NETTYPE=1 or NETTYPE=3, X.25 NPSI accepts the duplicate facility. When a facility code appears more than once, X.25 NPSI uses the last one found.

Note: When DATE or GATE is used on the MCH, X.25 NPSI accepts all functions without regard to NETTYPE, and processes the incoming call packet to the CTCP. It is the responsibility of the CTCP to process the call properly.

Logical Channel Number Attribution: When X.25 NPSI originates a virtual call, it must choose a logical channel. To avoid call collision, X.25 NPSI DTE chooses a channel starting at the high end of the range of the logical channels.

Handling of Call Collision: Call collision occurs when a DTE transmits a Call Request packet over a logical channel and receives an Incoming Call packet over the same logical channel.

To avoid call collision, X.25 NPSI performs one of the following functions:

- When X.25 NPSI acts as a DTE, it holds and does not recognize the Incoming Call packet until it receives acknowledgment from the DCE.
- When X.25 NPSI acts as a DCE, it cancels the Call Request by sending an INOP link message to VTAM for a non-GATE call. For a GATE call, X.25 NPSI sends a CLEAR on Outgoing Call command to the CTCP. The Incoming Call packet is processed.

Consideration of Non-Full Data Packets: X.25 NPSI considers a non-full data packet invalid if the More Data bit (M bit) is set on and the D bit is off. If X.25 NPSI acts as a DTE, the logical channel is reset with a Diagnostic code of X'A5'. When X.25 NPSI acts as a DCE, the M bit is reset.

Consideration of Qualified bit (Q bit) in Complete Packet Sequences: When X.25 NPSI receives a complete packet sequence with a qualified bit (Q bit) discrepancy, the logical channel is reset with a Diagnostic code of X'5E'.

Interrupt Packet Time-Out: X.25 NPSI can send an Interrupt Request packet for GATE, DATE, integrated PAD, or transparent PAD. To receive Interrupt Confirmation for DATE and integrated PAD, you must start the T26 timer. However, if the timer expires for DATE and integrated PAD, X.25 NPSI transmits a Reset packet containing a Diagnostic code of X'91'.

Facility Checking for Call Accepted and Call Connected Packets: X.25 NPSI sets the address and facility length fields to zero in the last two bytes of the Call Accepted packet. X.25 NPSI accepts a Call Connected packet even if the packet is not formatted with the address and facility length fields in the last two bytes.

Allowing for Different Packet and Window Sizes: Nonstandard packet and window sizes are optional user facilities that are defined using the NSTDFAC keyword on the X25.NET statement during system generation. You can use this facility to select packet and window sizes for each direction of data transmission from a list of default packet and window sizes.

X.25 NPSI provides an option to allow negotiation, for individual calls, of the default packet or window sizes through flow control negotiation.

This facility allows X.25 NPSI to propose window and packet sizes through flow control parameters, as well as the ability to adjust packet and window sizes in accordance with the parameters that are returned from the DCE.

Reset Packet Handling: The following information should be considered when a Reset packet is received by X.25 NPSI.

- For a PVC:
  - When a Reset packet is received, if RESETINO=YES is coded on the X25.NET statement, X.25 NPSI confirms the RESET and sends an INOP message for the virtual circuit PU. However, if RESETINO=(ccdd,ccdd,...) is coded, the INOP message is sent for the virtual circuit PU only if the Reset cause and diagnostic codes are not found in the ccdd list. If RESETINO=NO is coded, the INOP message is not sent for the virtual circuit PU.
  - When a Reset packet is sent, X.25 NPSI waits for a Reset confirmation and sends an INOP message for the virtual circuit PU if RESETINO=YES or RESETINO=(ccdd,ccdd,...) is coded, *and* if RESET cause and diagnostic codes are not found in the ccdd list. If RESETINO=NO is coded, the INOP message is not sent for the virtual circuit PU.
- For an SVC:
  - When a Reset packet is received and RESETINO=YES is coded on the X25.NET statement, X.25 NPSI confirms the RESET and clears the virtual circuit. When X.25 NPSI receives a Clear Confirmation packet, it deactivates the virtual circuit PU. If RESETINO=(ccdd,ccdd,...) is coded, X.25 NPSI clears the virtual circuit PU only if the cause and diagnostic codes of the Reset are not found in the ccdd list. If RESETINO=NO is coded, the virtual circuit is not cleared.
  - When a Reset packet is sent, X.25 NPSI waits for a Reset confirmation. If RESETINO=YES or RESETINO=(ccdd,ccdd,...) is coded, and if the cause and diagnostic codes of RESET are not found in the ccdd list, X.25 NPSI sends a Clear packet. When X.25 NPSI receives confirmation, it causes the virtual circuit PU to become inoperable. If RESETINO=NO is coded, X.25 NPSI does not clear the virtual circuit PU.

In all cases (PVC and SVC), if RESETINO=YES or RESETINO=(ccdd,...), the INOP is done unless X.25 NPSI is processing a packet sequence with the M bit on for LLC2 and LLC3.

Planning for X.25 NPSI

This section describes the considerations for X.25 NPSI that you should be familiar with when planning your installation:

- Software and hardware compatibility
- Storage requirements
- Connection without a PSDN
- Logical link control types.

Software and Hardware Compatibility

Software release compatibility for X.25 NPSI can be defined as follows:

Operating System For V3R2 and later releases: MVS, VM, and VSE operating systems.

For V3R1: MVS operating system.

Access Method X.25 NPSI works with the same access methods as the corequisite NCP version. See *Planning and Reference for NetView, NCP, and VTAM* for details.

Host Resident Programs Programs that communicate with non-SNA destinations are either specifically written for the X.25 NPSI environment (for example, GTMOSI™[2]) or have special support for start-stop ASCII devices (for example, CICS, IMS, TSO, and VM). All of these programs have modified support for LU type 1.

For further information on hardware compatibility with X.25 NPSI, see *X.25 NPSI General Information*.

X.25 NPSI supports the IBM 3720 and the IBM 3745 communication controllers. X.25 NPSI allows swapping of the physical circuit to controller lines reserved for backup support. Also, the NCP load module can be loaded from the disk on the communication controller.

Storage Requirements

Because X.25 NPSI works in a communication controller under the NCP, plan your generation definitions to include X.25 NPSI storage requirements. For V3R3, X.25 NPSI increases the NCP storage requirements as shown in Table 2. For V3R2, X.25 NPSI increases the NCP storage requirements as shown in Table 3 on page 30.

Table 2. Storage Requirements (V3R3)

Component	Requirement
X.25 NPSI	70K to 140K
Each virtual circuit	0.9K + 0.3K per LU
Each physical circuit	2K

2 General Teleprocessing Monitor for Open Systems Interconnection (GTMOSI). In certain countries IBM can provide these CTCPs for use with GATE.

Table 3. Storage Requirements (V3R2 and earlier releases)

Component	Requirement
X.25 NPSI	60K to 100K
Each virtual circuit	0.9K + 0.3K per LU
Each physical circuit	2K

Connection without a PSDN

X.25 NPSI generally uses a PSDN to communicate with a remote DTE, but using a PSDN is *not* a requirement. X.25 NPSI can communicate with a destination node without going through a PSDN. However, a PSDN *is* required when using a QLLC subarea node in conjunction with the SVCSC function.

The destination node can be attached through the following:

- Direct connection (communication controller clocks the physical circuit)
- Modem eliminator
- Regular data circuit.

Three cases must be distinguished:

Case 1: Before V3R3, X.25 NPSI functioned as a DCE at the link level and as a DTE at the packet level.

Restriction: The link level in X.25 NPSI acts as a DCE station. Primary and secondary addresses are reversed. DCE to DTE commands carry the address 03, while responses carry the address 01. If STATION=DCE is coded, X.25 NPSI does not send a Ready Receive (RR) packet with poll commands when no activity exists on the line.

The packet level in X.25 NPSI does not work as a DCE station, but instead functions in the following manner:

- For outgoing calls, SVCs are assigned in decreasing order. Call collisions can occur frequently if:
  - Call and Clear frequency is high.
  - There are several SVCs on the MCH, and the other end also assigns SVCs in decreasing order.
- In Call packets, facilities are processed as in a DTE.
- Cause and diagnostic codes are set as in a DTE. See *X.25 NPSI Diagnosis, Customization, and Tuning* for more information on the codes.

  Note: The last two items in this list do not apply for GATE or DATE.

Case 2: For V3R3, X.25 NPSI functions as a DCE.

Restriction: The link level in X.25 NPSI acts as a DCE station. Primary and secondary addresses are reversed. DCE to DTE commands carry the address 03, while responses carry the address 01. If STATION=DCE is coded, X.25 NPSI does not send a Ready Receive (RR) packet with poll commands when no activity exists on the line.

The packet level in X.25 NPSI works as a DCE station with the following differences:

- In Call packets, facilities are processed as in a DTE.
- Cause and diagnostic codes are set as in a DTE. See *X.25 NPSI Diagnosis, Customization, and Tuning* for more information on the codes.

  Note: The last two items in this list do not apply for GATE or DATE.

Case 3: The remote device operates as a DCE. In this case, X.25 NPSI operates as a DTE.

Note: For clarity, the X.25 NPSI library is written so that X.25 NPSI appears to operate as a DTE. Be aware that the X.25 NPSI MCH can also act as a DCE with the previous restriction.

Logical Link Control Types

X.25 NPSI supports five logical link control (LLC) types. The LLC type used depends on the type of device with which X.25 NPSI communicates, and the characteristics of the communication.

LLC types define the support functions required in X.25 NPSI. LLCs can be classified either as SNA to SNA connections or as SNA to non-SNA connections.

- SNA to SNA connections:
  - LLC type 2 connects to SNA peripheral node DTEs through a physical services header (PSH) interface.
  - LLC type 3 connects to SNA peripheral nodes or SNA subarea nodes using qualified logical link control (QLLC).
- SNA to non-SNA connections:
  - LLC type 0 connects to X.25 non-SNA DTEs.
  - LLC type 4 connects to non-SNA DTEs that use GATE support.
  - LLC type 5 connects to non-SNA DTEs through a PAD.

Note: LLC type 1 is not used.

The following sections provide a detailed description of the LLC types, fast connect, and DATE.

SNA Connections

LLC types 2 and 3, which connect to SNA destinations, are explained in this section.

Logical Link Control Type 2: LLC type 2 connects the host to an SNA DTE by using a physical services header (PSH). X.25 NPSI processes the SDLC commands through the PSH.

To create an LLC type 2:

- PVC: Use the X25.LINE, X25.PU, and one or more X25.LU statements; do not use the X25.VC statement.
- SVC: Use the X25.VC statement or the X25.LINE and X25.PU statements together.

See Chapter 4, "Resource Definition Reference," for more information about the X25.VC, X25.LINE, X25.PU, and X25.LU statements.

The following are examples of type 2 connections:

- 3174 cluster controller connected to the PSDN through a Network Interface Adapter (NIA)[3]
- 3174 connected to the PSDN using PSH microcode support.

See Figure 7 on page 33 for an example of an LLC type 2 connection.

[3] A Network Interface Adapter (NIA) is an example of a hardware device that uses LLC 2 to connect an SNA host or a DTE to a network.

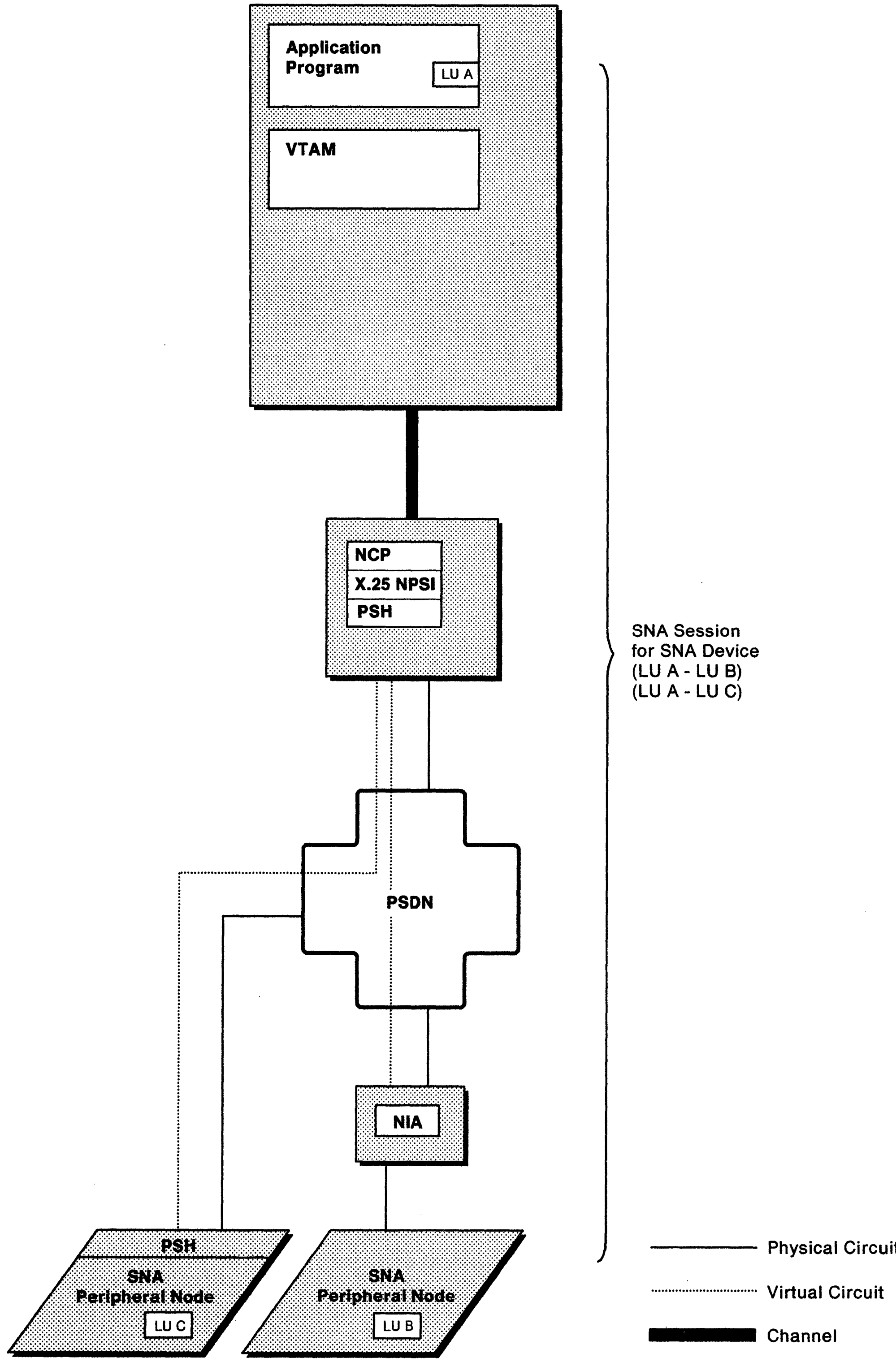

Figure 7. Logical Link Control Type 2

Logical Link Control Type 3: LLC type 3 connects the host with SNA DTEs using qualified logical link control (QLLC). Packets with the Q bit contain SDLC commands. Packets without the Q bit contain Information frames.

For V3R2 and later releases: Peripheral node QLLC supports the SNA type 2.1 node. This type of node allows peer-to-peer sessions to be set up between peripheral nodes. Subarea node QLLC supports the switched virtual circuit subarea communication (SVCSC) function and the short hold mode (SHM). SVCSC allows subarea-to-subarea communication using a switched virtual circuit. A PSDN is required when using the SVCSC function.

For V3R3 only: QLLC also supports a primary SNA type 2.1 peripheral node, which is attached to an NCP through an X.25 NPSI that acts as a secondary node. The enhanced SNA type 2.1 support function (Casual Connection) requires the X.25 NPSI secondary side to be V3R3. The primary side can be either X.25 NPSI V3R2 or V3R3.

Figure 8 on page 35 shows an LLC type 3 that uses peripheral node QLLC support to attach to a peripheral node. Figure 9 on page 36 shows an LLC type 3 that uses subarea network node QLLC support to attach to a communication controller using X.25 NPSI.

To create an LLC type 3:

- Peripheral node
  - PVC: Use the X25.LINE, X25.PU, and one or more X25.LU statements; do not use the X25.VC statement.
  - SVC: Use the X25.VC statement or the X25.LINE and X25.PU statements together.
- Subarea node
  - PVC: Use the X25.LINE and X25.PU statements together; do not use the X25.LU statement.
  - SVC: Use the X25.LINE and the X25.PU statements to define the SNA resources corresponding to the NCP LINE and PU to the remote subarea. Then use the X25.VC statement to define the virtual circuit.

The following examples are LLC type 3 connections:

- SNA host connected to the PSDN through X.25 NPSI
- SNA device with integrated X.25 support connected to the PSDN
- SNA host connected to an SNA DTE through an X.25 network
- SNA type 2.1 node connected to another SNA type 2.1 node through X.25 NPSI and a PSDN.

See Chapter 4, “Resource Definition Reference,” for more information about the X25.VC, X25.LINE, X25.PU, and X25.LU statements.

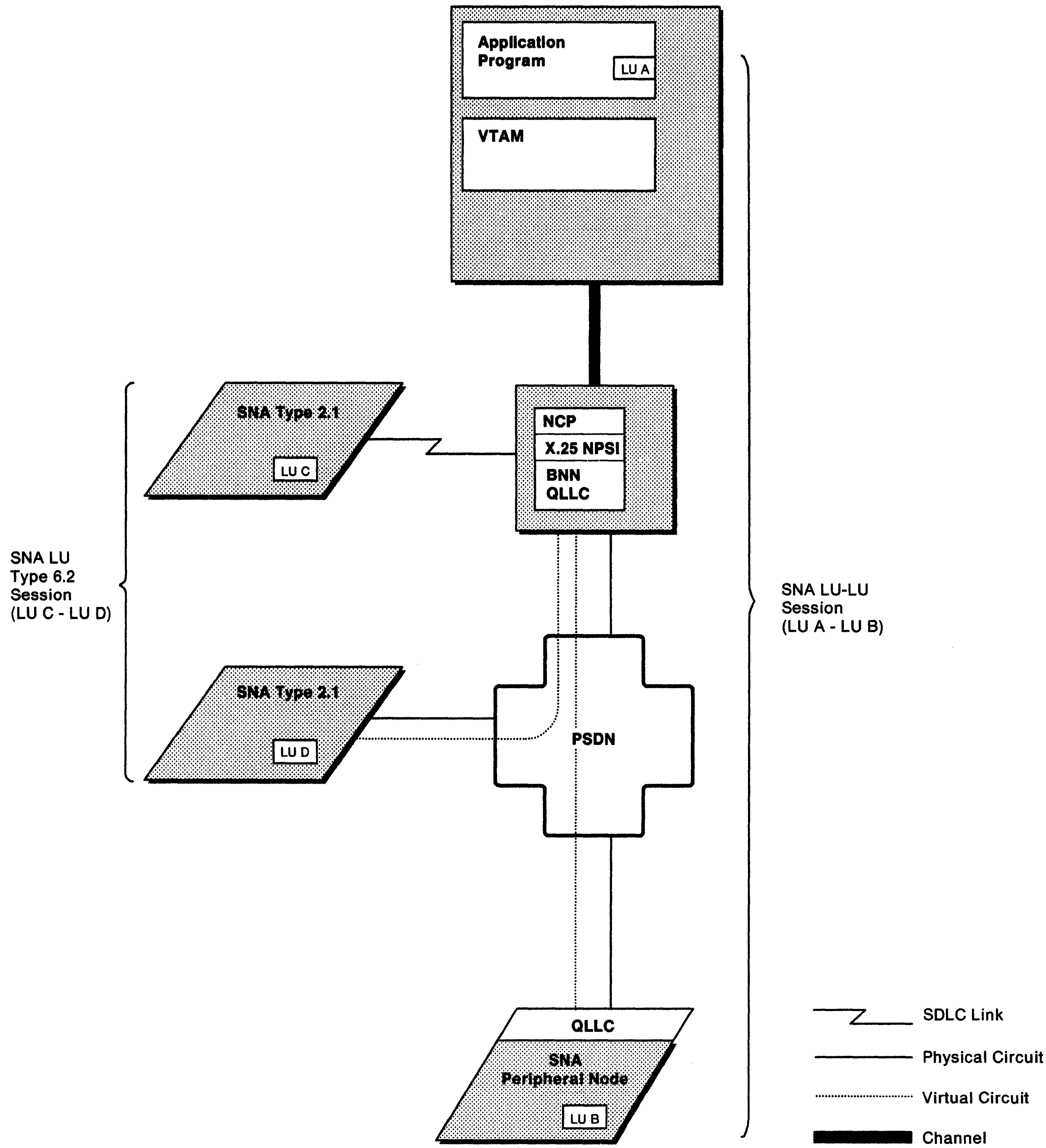

Figure 8. Logical Link Control Type 3 (Peripheral Node)

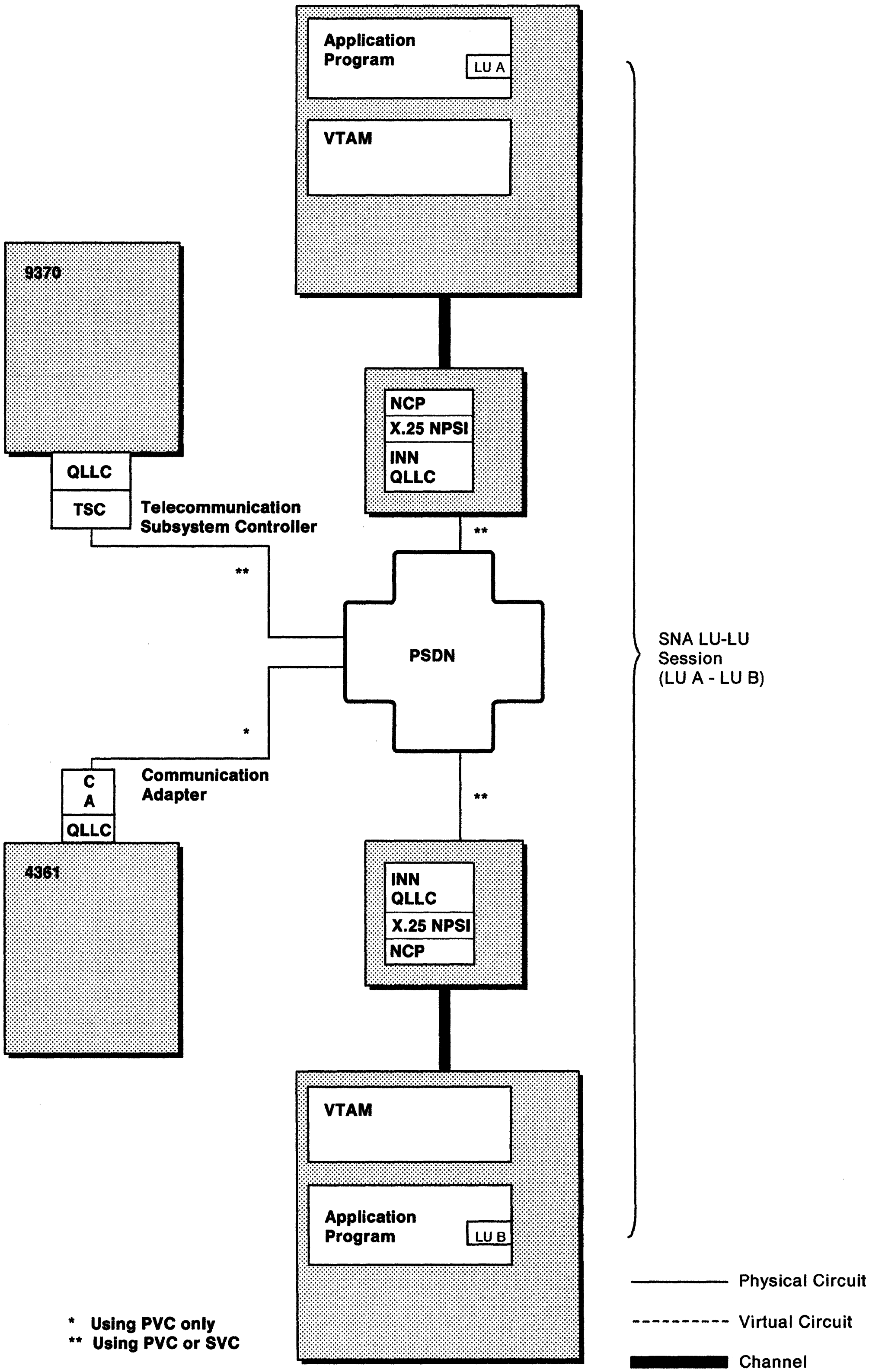

Figure 9. Logical Link Control Type 3 (Subarea Node)

X.25 NPSI V3R2 and V3R3 allow you to activate, load, and dump a remote NCP in different ways. The differences between releases are as follows:

- **For V3R2 only:**

  It is not possible to load a remote communication controller through X.25 NPSI, but initial activation of a remote communication controller is possible when using a PVC. In this case, the NCP/X.25 NPSI load module must already be loaded.

  Initial activation of a remote NCP/X.25 NPSI is not possible using an SVCSC. However, initial activation can be done using a channel, an SDLC leased line, or a PVC. If one of the initial activation paths fails, the host recovers ownership of the NCP with X.25 NPSI if an SVCSC path is established before the failure. Peripheral node PUs and LUs are also recovered. Operation continues through the SVCSC path, enabling the possibility of failure on that single path. Paths that are not dependent on the SSCP-NCP session for their establishment, should be recovered quickly to avoid any additional failures.

  For the SVCSC line to recover ownership, VTAM must send a command to the remote NCP. Figure 10 on page 38 is an example of the way in which SVCSC can be used. The PUs are owned by the host to which they are attached through NCP and the channel. The LUs on the left can log on to host 1 in the same domain. They can also log on to host 2 using cross-domain or cross-network functions. The LUs on the right should be owned by the SSCP on the right, but they should be able to log on to applications on both sides.

  When initially loading a communication controller, the initial load module must be loaded into the controller over a channel or an SDLC line. However, a subarea PVC or SVCSC can be used to store additional load modules onto a 3720 or 3745 disk.

  Only single link transmission groups are supported by X.25 NPSI. Multiple virtual circuits cannot be combined to form a multilink transmission group.

- **For V3R3:**

  V3R3 allows a remote NCP/X.25 NPSI to be activated using an SVCSC connection.

  Once a remote NCP/X.25 NPSI has been activated, you can use an SVC or PVC to transfer a load module from the host to a remote communication controller's disk.

  X.25 NPSI also allows you to use an SVC or a PVC to transmit an initial program load (IPL) request from the host or disk to an active, remote communication controller. The IPL request causes a load module that resides on the 3720 or 3745 communication controller's disk to be loaded into the communication controller. However, you cannot initially load a remote communication controller over an SVC or PVC.

  V3R3 also provides the capability for a host-initiated dump to disk by means of a host-initiated forced abend. The abend causes a dump to disk and a re-IPL of the load module. Once the remote communications controller has been activated, the dump can be transmitted from the disk to a host across a PVC or SVC.

The following are required:

– Switched major nodes when switched X.25 lines are used

– The following keywords on the X25.LINE statement:

  - MONLINK=YES
    NO
    CONTINUOUS/CONT
  - IPL=YES
  - SWMMTID=*name*

The NCP verifies that both MONLINK=YES and IPL=YES are valid specifications for a switched or leased subarea link.

SWMMTID=*name* contains the name of a switched SMMF table defined by a group of SWMMT statements. SWMMT is a new statement, which is valid only for switched subarea lines.

See Chapter 4, "Resource Definition Reference," for more information about the X25.VC, X25.LINE, X25.PU, and X25.LU statements.

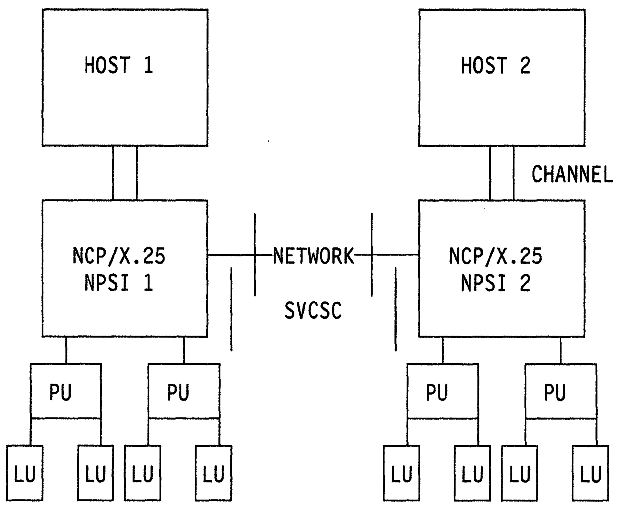

Figure 10. Example of SVCSC Use in Network

Non-SNA Connections

This section explains the logical link control types 0, 4, and 5, which connect to non-SNA destinations.

X.25 NPSI communicates with non-SNA destinations by simulating an SNA physical unit type 1 and logical unit type 1 for each non-SNA device. This simulator allows the SNA host and its associated applications to communicate with the non-SNA devices. The simulation function is called the LU simulator (LUSIM). The LU simulator converts outgoing SNA requests from the host into X.25 packets, and converts the X.25 packets returning from the non-SNA DTE into SNA requests.

LUSIM facilitates host control over the non-SNA destination. Examples of this control include clearing the virtual circuit and operating a dial-out connection.

Logical Link Control Type 0: LLC type 0 (PCNE) connects the host with non-SNA DTEs that use X.25.

To create an LLC type 0:

- PVC: Use the X25.VC statement or the X25.LINE, X25.LU, and X25.PU statements together.
- SVC: Use the X25.VC statement or the X25.LINE and X25.PU statements together.

See Chapter 4, "Resource Definition Reference," for more details on using the X25.VC, X25.LINE, X25.LU, and X25.PU statements.

The following are examples of LLC type 0 connections:

- Non-SNA host connected to the PSDN
- Non-SNA device connected to the PSDN without PAD.

See the LLC type 0 example shown in Figure 11 on page 40.

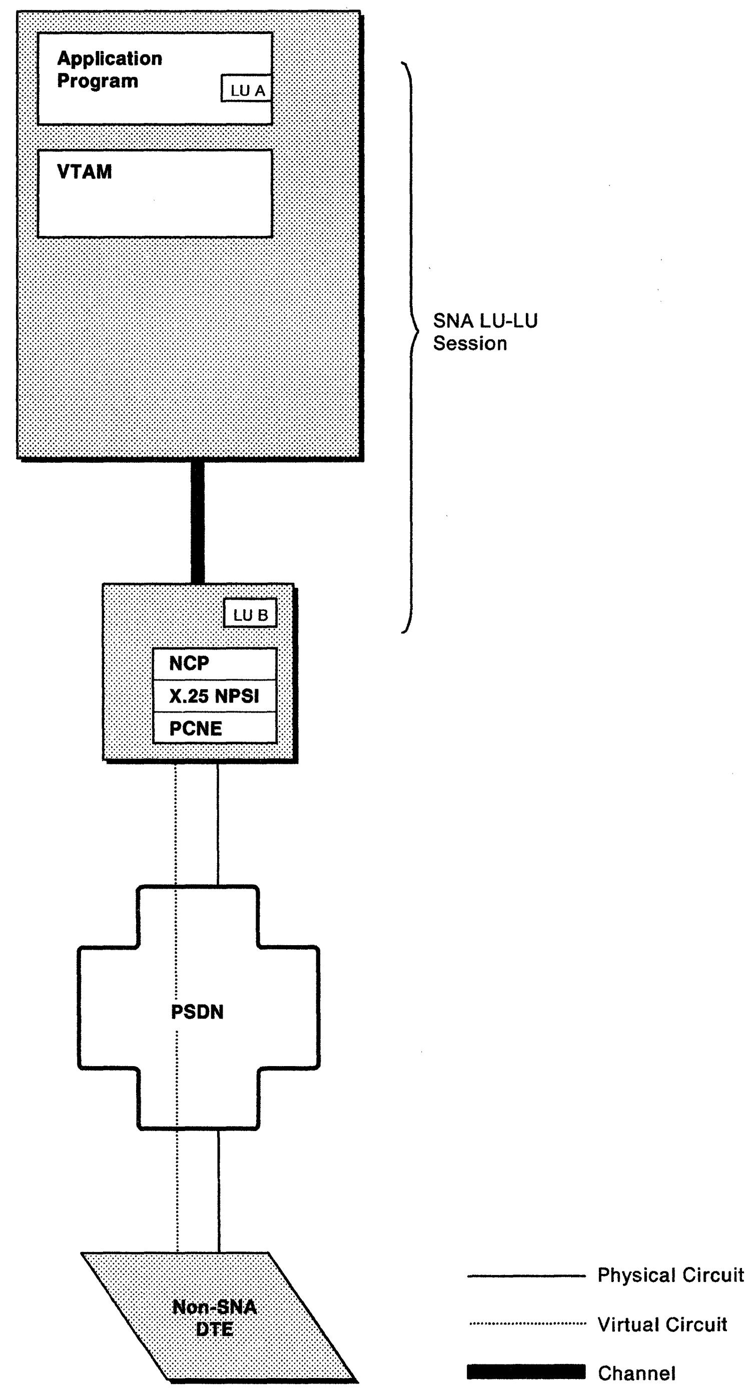

Figure 11. Logical Link Control Type 0

Logical Link Control Type 4: Type 4 LLCs are designed to allow users complete control over their virtual circuit connection through the use of a feature called general access to X.25 transport extension (GATE). The GATE support function is based on PCNE or LLC type 0.

In a type 0 connection, X.25 NPSI handles all the X.25 control packets automatically. However, for a type 4 connection, a host application called the communication and transmission control program (CTCP) must be written to control the virtual circuit.

The CTCP controls the setup and termination of the virtual circuit by exchanging commands with X.25 NPSI GATE. In addition, the CTCP processes all X.25 control and data packets. Command codes are contained in the first byte of each request unit exchanged between the CTCP and X.25 NPSI. Because all application data passes through the CTCP, the GATE CTCP is often called a *relay* program.

GATE converts incoming packets into PIUs. Then, GATE adds the appropriate 1-byte command code to the request unit, depending on the type of packet received, before sending the PIUs to the CTCP. Upon receipt of the request unit, the CTCP interprets the command code and acts upon the command.

GATE converts outgoing PIUs into packets. The packet type is determined by the first byte of the outgoing Request unit or Response unit (RU).

The CTCP communicates with GATE by using one of two types of LU-LU sessions. The first type of session is between the CTCP and one of the logical units for the physical circuit used by the LLC type 4. The second type is between the CTCP logical unit and the logical unit for the virtual circuit.

Logical units for the physical circuit are created according to the number of CTCPs implied by the keywords on the X25.MCH statement. Virtual circuits of a given MCH can communicate with up to 28 CTCPs. The GATE keyword on the X25.MCH statement must be coded as GATE=GENERAL.

To create an LLC type 4:

- PVC: Use the X25.VC statement or the X25.LINE, X25.PU, and X25.LU statements together.
- SVC: Use the X25.VC statement or the X25.LINE and X25.PU statements together.

See Chapter 4, "Resource Definition Reference," for further descriptions of the X25.MCH and X25.VC statements.

An example of a type 4 connection is a GTMOSI. In certain countries, IBM can provide these CTCPs for use with GATE. The CTCP is connected to a videotex terminal, or a start-stop device through GATE and PAD. See the example of GATE shown in Figure 12 on page 42.

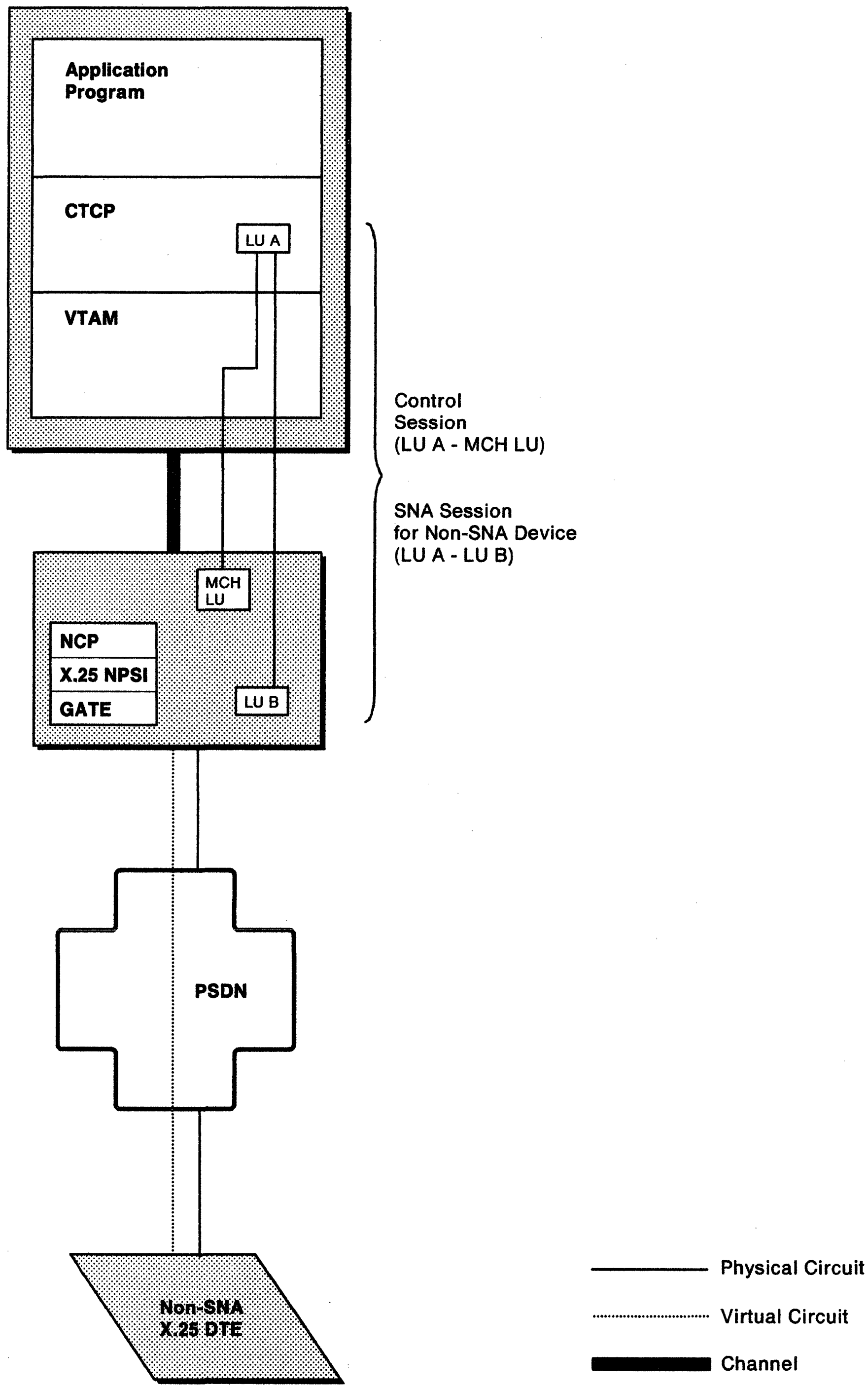

Figure 12. Logical Link Control Type 4 (GATE)

Fast Connect Option for GATE: X.25 NPSI includes an option for GATE virtual circuits called fast connect. Fast connect provides a quick way to connect non-SNA terminals to an SNA host processor. Rather than going through SNA session establishment for each call, fast connect saves time during call establishment by just linking X.25 resources with preestablished SNA sessions. Once SNA session establishment is complete, the sessions remain active when the X.25 virtual circuits are cleared and when the MCH fails or is deactivated.

SNA resources, used to map fast connect switched virtual circuits, are declared as nonswitched to NCP and the access method.

Figure 13 on page 44 shows how fast connect uses a dedicated SNA session to connect to a non-SNA device.

When fast connect is selected on an MCH, the entire MCH is dedicated to the fast connect operation and cannot be used for other LLC types.

At system initialization, all available SNA sessions between the CTCP and X.25 NPSI are opened by VTAM's automatic logon (LOGAPPL). X.25 NPSI fast connect then assigns each incoming call to one of the preestablished sessions, thereby eliminating all VTAM processing associated with SNA session establishment. Once the user activity is complete, the virtual circuit is cleared. However, the associated SNA session is maintained in a ready state to receive any subsequent calls on any virtual circuit.

Fast connect is useful when there is a heavy demand for quick connections of a short duration. In general, you can use fast connect as follows:

- Have a single CTCP for each MCH
- Have a single CTCP for multiple MCHs
- Have multiple CTCPs connected to the same MCH.

For example, you might use fast connect in a system that connects videotex terminals through a PAD to an SNA host processor.

If there is only one CTCP, or if the peak traffic period for each CTCP occurs at the same time, you can choose to connect only one CTCP for each physical circuit. Figure 14 on page 45 shows an example of such a configuration.

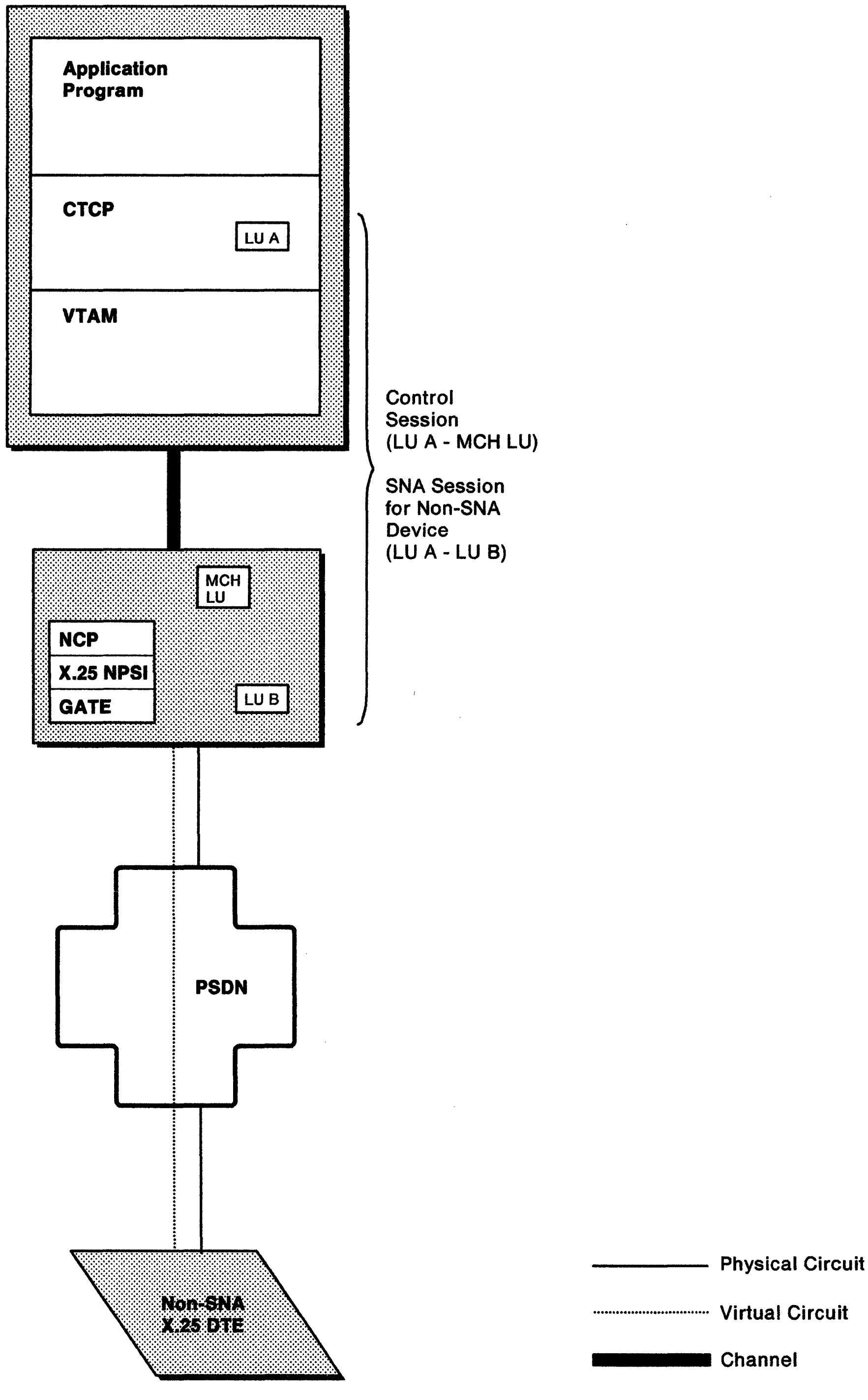

Figure 13. Logical Link Control Type 4 that Use Fast Connect

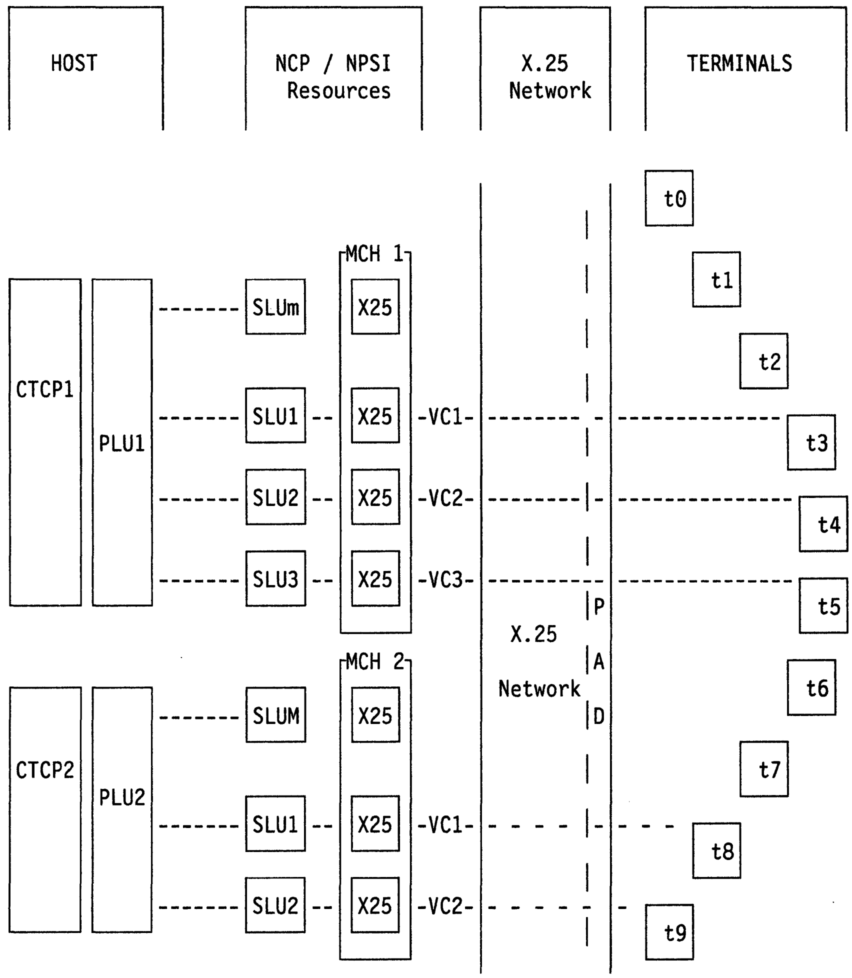

Figure 14. Fast Connect with One CTCP for One Physical Circuit

If peak traffic periods occur at different times on different CTCPs, the set of virtual circuits for one physical circuit can be shared by several CTCPs. Each virtual circuit can connect to only one CTCP at a time. In this case, more than one CTCP is defined for each physical circuit as shown in Figure 15 on page 46.

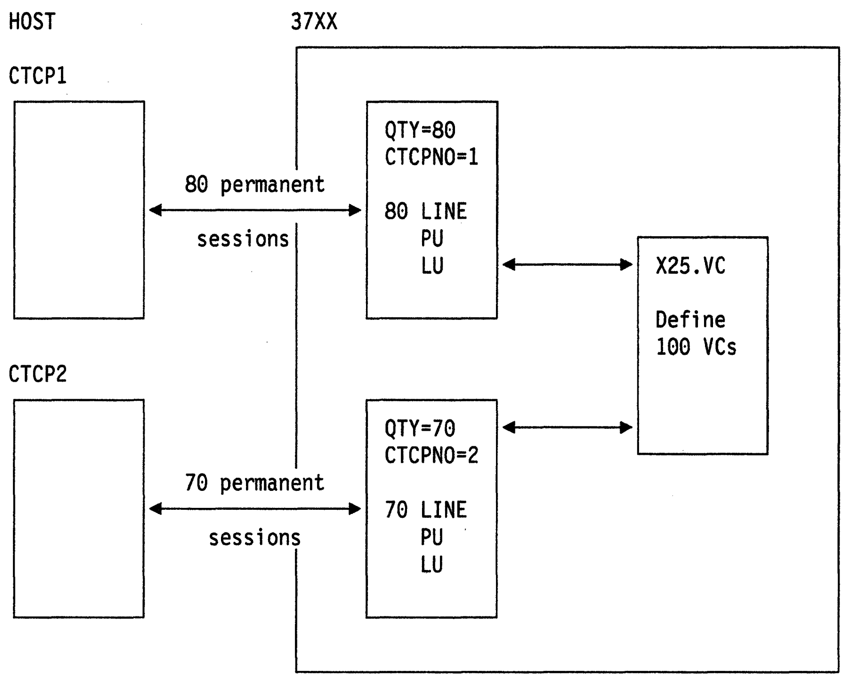

Figure 15. Fast Connect with Two CTCPs for One Physical Circuit

Using Figure 15 as an example, CTCP1 has a peak time from 4:00 p.m. to 5:00 p.m. CTCP2 has a peak time from 7:00 p.m. to 8:00 p.m. CTCP1 can communicate with 80 SNA resources. CTCP2 can communicate with 70 SNA resources. The physical circuit contains 100 virtual circuits.

During peak time for CTCP1, up to 80 virtual circuits can be used for CTCP1. Concurrent with this, CTCP2 handles the remaining 20 virtual circuits.

The reverse occurs during peak time for CTCP2. Up to 70 virtual circuits can be used by CTCP2, which enables CTCP1 to use up to 30 virtual circuits.

To generate fast connect, code GATE=GENERAL on the X25.MCH statement. You also need to use the CONNECT keyword with a value of either YES, CUD0, or SUBD. If you code YES, do not code the CUD0 or the SUBD keywords, because there is only one CTCP for each MCH. If you code CUD0 or SUBD, you must code the corresponding CTCP keyword.

You can also code the following keywords of the X25.MCH statement:

- LUNAME
- LOGAPPL
- MODETAB
- VMODTAB
- TAXUNIT

For V3R3 only: The valid values for the TAXUNIT keyword are 0, 32, 64, or 128, with 0 being the default. When you specify 0 on this keyword, X.25 NPSI counts the number of packets that are sent and received.

If you are connecting the physical circuit to multiple CTCPs, code an X25.FCG statement for each CTCP that is in communication with the MCH. An X25.FCG statement creates LINE, PU, and LU statements for fast connect resources.

Use X25.VC to describe X.25 resources associated with fast connect virtual circuits. The CALL keyword must be coded consistently with your PSDN subscription. TYPE = S must be coded and X25.VC must be used to describe the virtual circuits. X25.LINE cannot be used. The order of the statements must be:

```
X25.MCH     CONNECT=SUBD or CUD0,CTCP=
X25.LCG
X25.VC      LCN=(n1,n2),TYPE=S
X25.FCG     QTY=m1,CTCPNO=x
X25.FCG     QTY=m2,CTCPNO=y
```

See Chapter 4, "Resource Definition Reference," for further descriptions of the X25.MCH, X25.FCG, and X25.VC statements. See Appendix B, "Installation Examples for X.25 NPSI," for examples of fast connect coding.

Logical Link Control Type 5: LLC type 5 connects the host with non-X.25, non-SNA DTEs that use an X.25 PAD. Type 5 connections are similar to type 0 connections. The exception is, with type 5, the host program (transparent option) or X.25 NPSI (integrated option) can send and receive qualified packets in addition to non-qualified packets. PAD service functions are controlled by means of qualified packets. PAD support is indicated by coding the PAD keyword in the X25.MCH statement.

To create an LLC type 5 virtual circuit:

- PVC: Use the X25.VC statement or the X25.LINE and X25.PU statements together. You must also code an X25.LU statement.
- SVC: Use the X25.VC statement or the X25.LINE and X25.PU statements together.

See Chapter 4, "Resource Definition Reference," for details about using the X25.VC, X25.LINE, X25.PU, X25.LU, and X25.MCH statements.

The following examples are type 5 connections:

- Non-SNA, non-X.25 device connected to the PSDN using a PAD that supports CCITT recommendations X.3, X.28, and X.29.
- Non-SNA, non-X.25 device connected to the PSDN using a nonstandard PAD.

Figure 16 on page 48 shows an LLC type 5 connected through integrated PAD support. Figure 17 on page 49 shows an LLC type 5 connected through transparent PAD support.

Note: Transparent PAD can also be used to control non-SNA X.25 remote DTEs that do not use a PAD. The application has control over qualified and unqualified data packets and Reset and Interrupt packets. Control over these packet types is usually a requirement for non-SNA X.25 DTEs offering PAD services that do not comply with CCITT Recommendations X.3, X.28, and X.29.

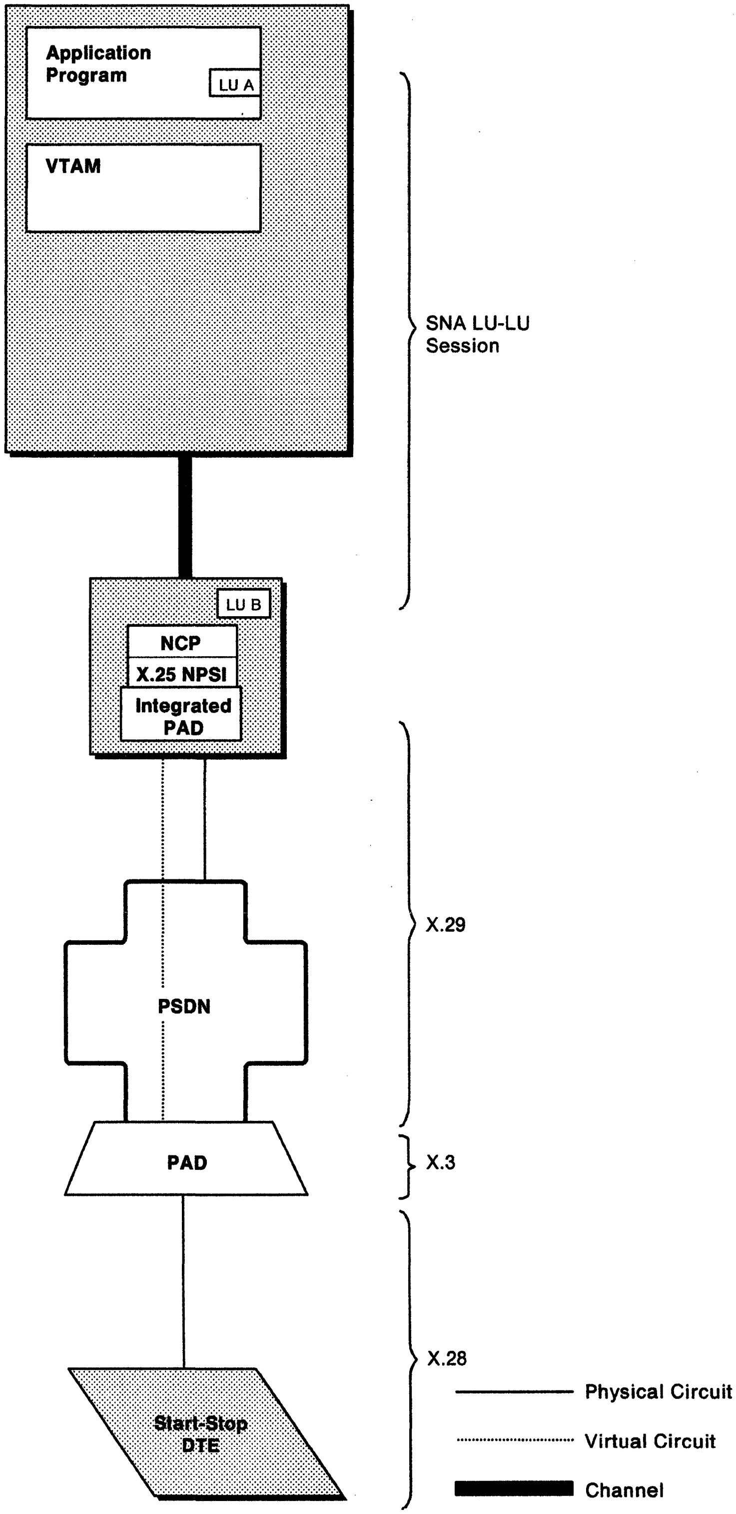

Figure 16. Logical Link Control Type 5 (Integrated PAD)

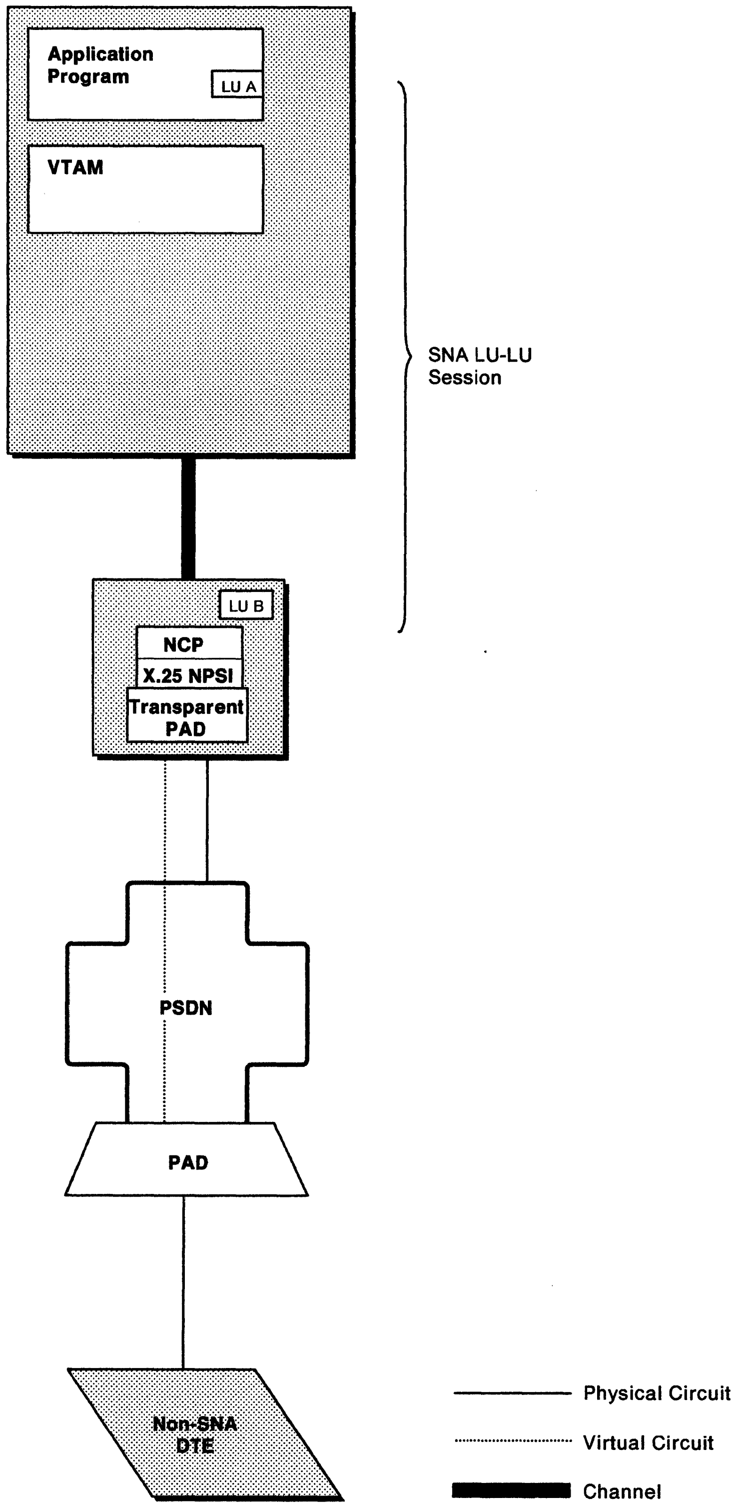

Figure 17. Logical Link Control Type 5 (Transparent PAD)

Virtual Circuits that Use DATE

X.25 NPSI provides extended support, called dedicated access to X.25 transport extension (DATE), for LLC types 0, 2, 3, and 5. You can use DATE for security control, resource allocation, accounting, and other extended requirements.

DATE support requires the use of a CTCP. Virtual circuits that use DATE support are set up and taken down by commands passed between the CTCP and X.25 NPSI. The CTCP controls the setup and the termination of the virtual circuit, and processes all X.25 control and qualified packets, except when using LLC type 5.

DATE converts incoming control packets into PIUs. DATE adds the appropriate 1-byte command code to the Request unit, depending on the type of packet, before sending the PIU to the CTCP. Upon receipt of the Request unit, the CTCP interprets and acts upon the command code.

DATE then converts outgoing PIUs passed by the CTCP into control or qualified packets. Before the packet is sent to the remote DTE, DATE deletes the 1-byte command code, builds the control or qualified packets, and transmits the packets to the PSDN.

Communication with X.25 NPSI is performed using two types of LU-LU sessions. The first type of session is between the CTCP logical unit and the physical circuit logical unit. The second type is between the application logical unit and the virtual circuit logical unit. Once the virtual circuit is set up, the protocol depends on the type of virtual circuit. The CTCP is used during session setup and termination, and to handle control packets and qualified packets.

The application communicates directly with the terminal for data exchange. Consequently, the CTCP is not involved. For control and qualified packets, the CTCP communicates with the X.25 NPSI DATE function over the CTCP to MCH LU session. The third byte of the RU is used to indicate the packet type.

The following examples are DATE-type connections:

- Non-SNA device connected to a PSDN through a nonstandard PAD
- Nonstandard network connected to an SNA host.

To generate DATE support, first code GATE=DEDICAT in the X25.MCH statements, and then for:

- PVC: Use the X25.LINE or X25.VC statement. X25.PU and X25.LU statements must be coded together with the X25.LINE statement.
- SVC: Code the CALL keyword consistent with your PSDN subscription in the X25.VC or X25.LINE statement. X25.PU must be coded with the X25.LINE statement.

GATE and DATE cannot use the same physical circuit. SVCSC is not supported on a DATE MCH.

For V3R2 and previous releases: For LLC type 5, DATE provides support only for transparent PAD.

For V3R3 only: For LLC type 5, DATE provides support for either transparent *or* integrated PAD on the same MCH.

See Chapter 4, "Resource Definition Reference," for detailed information about the X25.MCH, X25.LINE, X25.VC, X25.PU, and X25.LU statements.

Figure 18 shows how DATE works with the CTCP to control the virtual circuit.

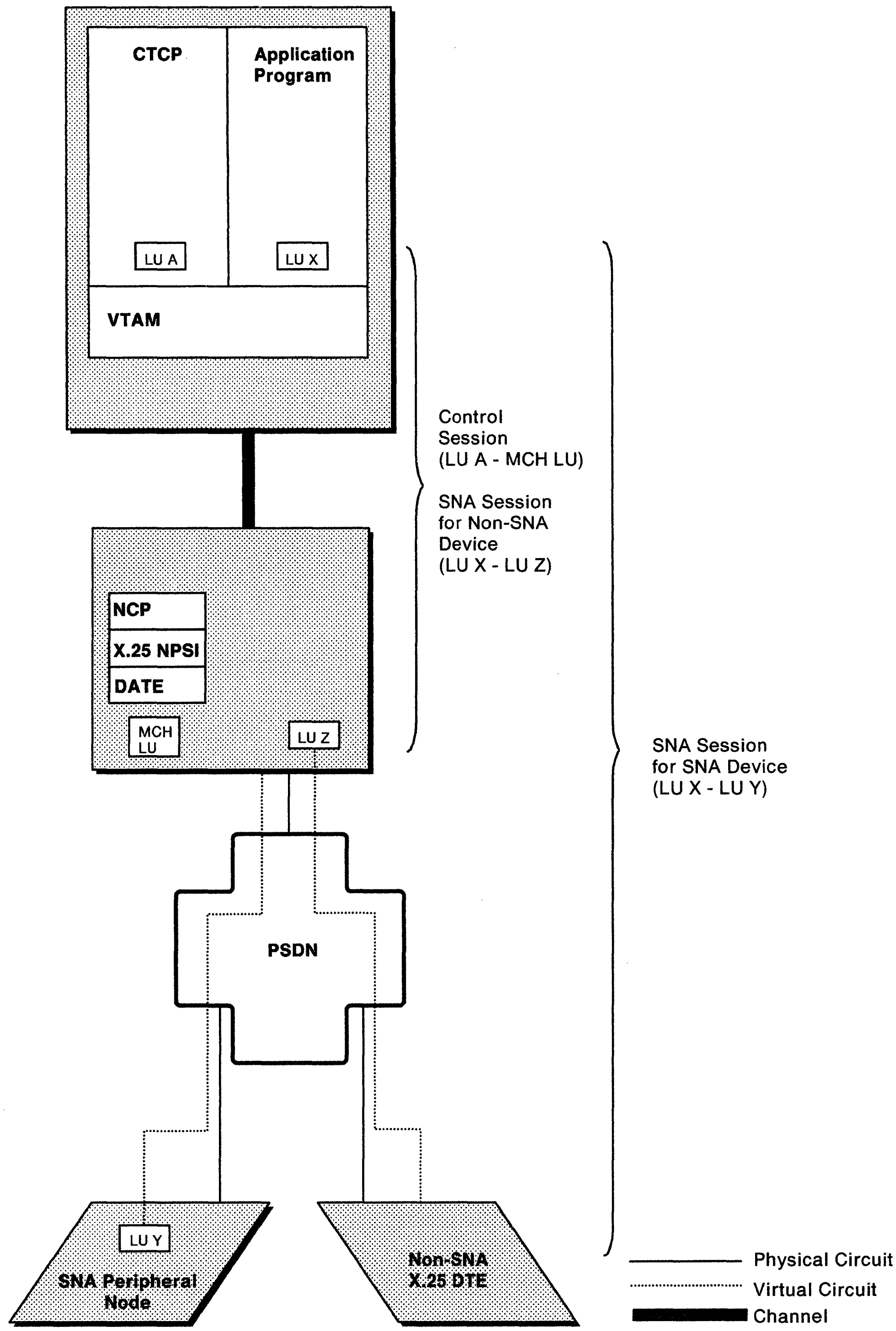

Figure 18. Virtual Circuits that Use DATE

Logical Link Control Type Selection

The LLC type for PVCs is selected through the use of the LLC keyword in the X25.LINE statements or the X25.VC statements associated with the PVCs. The LLC type statement is defined for PVCs during the generation process.

The LLC type for SVCs is not defined at generation. During generation, the LLCLIST keyword of the X25.MCH statement specifies the virtual circuit types allowed on this MCH. The type for any given session is selected during virtual circuit setup.

During call-in, X.25 NPSI decides the LLC type to use by one of the following methods:

- Call user data byte 0 (CUD0)

  An LLC can be selected using IBM-defined standard CUD0 values. If these standard values do not fit your needs, X.25 NPSI allows you to create a correspondence table to specify user-defined CUD0 fields. Through this table, devices and software that do not use the IBM-defined standard CUD0 values can select LLC types.

- Subaddressing

  The last digit in the subaddressing field is used to select an LLC. The subaddressing field is located at the end of the called DTE address.

- CALL ACCEPTED command (if DATE is used)

  In response to the Incoming Call packet, the CALL ACCEPTED command containing the LLC type is sent from the CTCP to the logical unit associated with the physical circuit.

During call-out, the LLC type is selected through VTAM. For virtual circuit types 0, 2, 3, and 5 that do not use DATE, code the type in the L character of the DIALNO keyword in the VTAM PATH statement. For call-outs that use DATE, the CALL REQUEST command from the CTCP to the DATE function of X.25 NPSI specifies the LLC. For GATE, LLC type 4 is automatically selected by X.25 NPSI when a GATE CTCP makes an outgoing call.

X.25 NPSI Support of RU Chaining for Long Non-SNA Messages (V3R3 Only)

During session establishment, the VTAM BIND parameters specify the maximum size of the request unit (RU) that one logical unit can send to another logical unit. To send a message containing more information than will fit into one RU, logical units divide this information into a series of requests. This series is called a chain, and each RU in the chain is defined as one of the following:

- First-in-chain (FIC)
- Middle-in-chain (MIC)
- Last-in-chain (LIC)
- Only-in-chain (OIC).

X.25 NPSI converts these SNA chains to packet sequences using a combination of two bits: the M bit and the D bit. These bits determine how to map RU chains into packet sequences and packet sequences into RU chains. X.25 NPSI can create two types of packet sequences:

- Complete packet sequence (CPS)
- M-bit sequence.

A CPS contains contiguous full data packets, with the M bit set to 1 and the D bit set to 0, followed by any other data packet.

An M bit sequence contains a CPS series. Each packet within the series has the M bit set to 1, except for the last packet of the last CPS.

Inbound Flow

In previous releases of X.25 NPSI, each inbound message from a non-SNA DTE was considered a CPS and converted into an OIC RU. V3R3 provides optional support of RU chaining through the MBITCHN keyword on the X25.MCH statement. If both MBITCHN=YES and DBIT=YES are specified, a CPS series is converted into an RU chain. The length of the RU chain is determined by the length of the CPS.

For X.25 NPSI to support the delivery confirmation bit, you must specify a definite response protocol in the BIND request.

Outbound Flow

On outbound flows, if MBITCHN=YES is specified and DBIT=YES, each chain of RUs is converted into a CPS series that is linked together using the M bit. This series is then sent to the non-SNA DTE as a chain.

If MBITCHN=YES is specified and DBIT=NO, each chain of RUs is converted into a single CPS. The CPS is sent to the non-SNA DTE. X.25 NPSI converts each FIC, MIC, or LIC PIU into an OIC, and then builds and sends a corresponding CPS.

Piggybacking Techniques

Piggybacking means a received frame or packet is acknowledged in the next outgoing frame or packet, rather than in an isolated Receive Ready (RR) frame or packet. Increased piggybacking occurs if the packet or link level window size is greater than 2.

Link Level

X.25 NPSI Version 3 increases the degree of piggybacking by delaying the RR transmission for a short period of time. This delay allows additional information frames (I frames) to arrive in the outbound queue. The acknowledgment is piggybacked on an outbound I frame that uses the same physical circuit.

The RR transmission time delay is defined by the T2 timer. X.25 NPSI calculates the T2 timer as a function of two values defined in the X25.MCH statement:

- SPEED
- T1TIMER

For the link-level piggybacking to occur, the T1TIMER must be coded on the X25.MCH statement. The SPEED keyword defines the line speed of the physical circuit. The T1TIMER keyword defines the maximum time the DCE will wait for a frame acknowledgment.

When service is continuous (24 hours a day, 7 days a week), and the MCH speed must be altered without changing the generation, code SPEED and T1TIMER keywords that will work with both SPEEDs and T1TIMERs. By specifying the SPEED and T1TIMER keyword values that generate the smallest T2, you can benefit from link-level piggybacking in both cases. See *X.25 NPSI Diagnosis, Customization, and Tuning* for computation of T2.

Packet Level

Unless the receive packet window is about to close, an RR packet is not sent to acknowledge a received packet. Instead, the acknowledgment is made by the next packet that is sent. Packet-level piggybacking occurs only if the packet window size is greater than two.

Planning for X.25 NPSI in the Network

This section describes X.25 NPSI planning considerations for the overall network configuration. X.25 NPSI resides in a communication controller under the control of NCP, and accesses host and network resources through an access method, such as VTAM. Statements and keywords in VTAM and NCP that specifically affect X.25 NPSI are discussed in Chapter 5, "Coding NCP and VTAM Parameters for X.25 NPSI."

Other factors that affect your network planning for X.25 NPSI include:

- SNA considerations
- Host application program considerations
- Network resource recovery considerations.

SNA Considerations

Because X.25 NPSI is used to connect SNA equipment through an X.25 interface, the following SNA considerations affect X.25 NPSI planning:

- PIU segmentation
- 3270 printer LU type selection
- Pacing parameters.

PIU Segmentation

Two parameters determine how the user data is segmented for outbound transmissions from the host:

- NCP buffer size (BFRS) specified in the NCP BUILD statement
- MAXDATA keyword on the PU statement.

NCP Buffer Size: The optimal buffer size for the support of SNA peripheral nodes is not the same for X.25 NPSI and NCP. If LLC type 2 is not used, an appropriate value is 124; if LLC type 2 is used, the value 120 reduces the number of excess packets. Set the optimal buffer size to a value that avoids the creation of small packets, which require as much processing as large packets.

MAXDATA Keyword: This keyword specifies the maximum number of bytes in a PIU. These parameters can be tuned to reduce the number of packets flowing across the DTE and DCE interface. See *X.25 NPSI Diagnosis, Customization, and Tuning* for more information.

3270 Printer LU Type Selection

You should use 3270 printers in SNA Character String (SCS) mode LU type 1 rather than in Data Stream Compatibility (DSC) mode LU type 3.

Pacing Parameters

To reduce unnecessary data transfer and pacing delays, you should either specify no pacing or set the pacing counts to the maximum allowed by device buffering. Consult the device component description manual to determine the pacing parameters. An isolated pacing response causes as much central control unit (CCU) utilization as a full data packet.

Host Application Program Considerations

When planning for X.25 NPSI, consider the following host application requirements:

- Non-SNA communication
- Transparent PAD implementation
- CICS, IMS, and TSO adjustments.

Non-SNA DTE Communication

You must synchronize the two end points of the X.25 connection. Synchronization means that the end points manage data formats and application requirements in a compatible manner.

To synchronize end points, make sure that one or both ends know the configuration of the data that the partner is sending. The configuration includes:

- Character set (ASCII, EBCDIC, or other)
- Interface parity
- Data format (information layout within the data stream)
- Control characters and their associated effects
- Application control.

You can discover these details by familiarizing yourself with the end points. If the end point that you want to communicate with is not at your site, call the remote location for the necessary information.

Transparent PAD Implementation

The host application program using transparent PAD support adds a control character to the Request unit in the first byte. This control byte specifies one of the following six message types:

- Data packet without Q bit
- Data packet with Q bit
- Interrupt request
- Interrupt confirmation
- Reset packet
- Reset confirmation.

See *X.25 NPSI Host Programming* for more information about the control byte.

CICS, IMS, and TSO Adjustments

CICS, IMS, and TSO are commonly used applications. To communicate with the simulated LU, you must make adjustments to these applications. The host application program must consider such items as bracketing and presentation.

You might want to design the application program to reduce the required dialogs between the host and remote user. To do this, use formatted screens or modified data fields.

General Adjustments: To enable CICS, IMS, and TSO applications to communicate with a logical unit simulated by X.25 NPSI, consider the following:

- Bracketing

  See *X.25 NPSI Host Programming* for more information regarding bracketing considerations.

- Presentation level

  Presentation level includes character set used, communication parity, and screen layout.

- Application level

  Application level includes application responses, nature of the application behavior, and conversation termination requirements.

- BIND parameters

  CICS and IMS can create their own BIND parameters rather than using the session parameters from the VTAM logmode entry, such as, RUSIZE and PACING. Check the application's terminal for specific parameter information.

- Definite or exception response

  The use of definite or exception response is defined within the BIND parameters and can be created in these subsystems. A definite response ensures message integrity, but can have a disastrous effect on performance in an X.25 interface when used on an LLC type 0, 4, or 5 with the D bit. Whenever possible, you should use exception response in these cases; however, the application requirements or hardware support can be a constraint to this specification. See *VTAM Programming* and *X.25 NPSI Host Programming* for more information.

CICS Adjustments: In CICS, consider the following:

- Definite response can be requested by the:
  - MSGINTEG keyword on the DFHPCT macro
  - DEFRESP parameter on the SEND or CONVERSE commands.
- The WAIT option on the SEND command can cause additional RUs to be sent just for change-of-direction or end-bracket indicators. The WAIT option can slow down response time by increasing the number of transmitted packets.

IMS Adjustments: In IMS, response mode can be more efficient than non-response mode. Consider IMS fast path that automatically uses response mode.

TSO Adjustments: In TSO, the application level requires special consideration because TSO does not include the recovery facilities available in CICS and IMS. Only line mode operation is available when LLC type 0 or 5 is used.

Network Resource Recovery Considerations (V3R2 and Later Releases)

Session continuation allows LU-LU sessions to remain active when the owning system service control point (SSCP) fails. With the owning SSCP inoperable, an alternate SSCP can acquire ownership of the resource. When the original SSCP becomes operable, it can regain ownership. This is true for PVCs and SVCs attached to either SNA or non-SNA remote DTEs. When using virtual circuits that are under DATE, special considerations are needed. See *X.25 NPSI Diagnosis, Customization, and Tuning* for more information.

Planning for X.25 NPSI Migration

If you migrate from Version 1 of X.25 NPSI to Version 3, be aware that the generation process has been modified. All V3R2 stage 1 generation statements must be modified or incorporated into the NCP generation statements. After you modify the generation statements, use the NCP/EP Definition Facility (NDF) to complete the joint NCP and X.25 NPSI generation procedure. NDF, which is provided through the system service program (SSP), performs the entire NCP generation procedure.

See Appendix C, "Statement and Keyword Changes," for a listing of all X.25 NPSI statement keywords that you need to modify.

Migration from V1 to V3 Releases

Verify that you have modified the current X.25 NPSI source statements to allow creation of a valid load module and access method definition. Be sure to:

- Modify all X.25 NPSI statements.

  All Version 1 macros must be changed to include a period between the X25 portion and the suffix. For example, the X25MCH macro becomes the X25.MCH statement.

- Remove the X25BUILD statement.

  If NDF finds an X25BUILD statement, it will be flagged as an error and a load module will not be generated until it is removed. Many keywords previously coded on X25BUILD are not required now that X.25 NPSI is generated under NDF. Others have been moved to the NCP BUILD statement.

- Modify X.25 NPSI keywords to allow NDF and VTAM processing.

  Several X.25 NPSI keywords must be modified. For example, the IDNUMH keyword previously coded in X25BUILD must be coded as X25.IDNUMH and placed on the NCP BUILD statement.

  Also code USERGEN=X25NPSI. The USERGEN keyword on the NCP OPTION statement indicates the name of the load module that processes X.25 NPSI generation statements in NDF.

  Code NEWDEFN=YES so that NDF builds a new generation definition for input into VTAM.

- Place the X.25 NPSI statements after all start-stop (SS) and binary synchronous communication (BSC) definitions, and before SNI statements that define the non-native networks (NETWORK, GWNAU, and PATH).

- Modify the LCGDEF keyword. Change LCGDEF=a(b) to LCGDEF=(a,b) to permit NDF processing. If you need to place more than one pair, use the following format:

  ```
  LCGDEF=((a,b),(c,d),....,(y,z))
  ```

- Be aware of the change in the DSTNODE default value.

  The default value of the DSTNODE keyword on the X25.LINE statement is now BNN (peripheral node) for both PVCs and SVCs.

- Modify the fast connect virtual circuit definitions.

  Fast connect virtual circuits must be declared as SVCs. Previously, they were declared as PVCs in the fast connect programming request for price quotation (PRPQ).

- Modify the fast connect CTCP.

  Formerly, call-outs in the fast connect PRPQ were directed to the MCH LU. However, now they must be directed to the SNA resources that are used to map the SVCs.

- Code SPEED and T1TIMER on the X25.MCH statement.

  To obtain maximum piggybacking, specify the SPEED and the T1TIMER keywords on the X25.MCH statement.

- Be aware of the change in the X25.VC and the X25.LINE of the CALL keyword for the DATE MCH. This is now coded according to the PSDN subscription.

- Be aware that the CUD field for LLC type 3 now only contains X'C3'. The bytes that follow can be added as needed by using the USRFILD keyword of the X25.OUFT statement.

- The ZZZZZ field of the DIALNO keyword of the PATH statement in the SMN must now be coded in all cases where X.25 NPSI is to generate a Call Request for LLC0 or LLC5.

- Be aware that the X25.USGTIER keyword must be coded on the BUILD statement.

- Eliminate X25.END statement keywords.

  If NDF finds keywords coded on the X25.END statement, NDF creates a warning message and suppresses the creation of the load module.

- Be aware that the NSTDFSC keyword on the X25.NET statement is required for X.25 NPSI to accept nonstandard facilities in the Incoming Call packet.

Migration from V3R1 to V3R2

To migrate from V3R1 to V3R2, consider the following:

- The names generated by the PRFLINE, PRFPU, PRFLU, and SUFFIX keywords of the X25.FCG statement are not padded to eight characters. The length of the SUFFIX specification is added to the length of the PRFLINE, PRFPU, and PRFLU keywords to determine the length of the names.

- Names can be built in decimal or hexadecimal. Use the HEXNAME keyword for specification.

- PRFLINE, PRFPU, PRFLU, and SUFFIX keywords are valid for the X25.VC statement.

- **For V3R2 and later releases**: The NSTDFAC keyword is a new keyword on the X25.NET statement, and is used to define the non-standard facilities that are accepted in an Incoming Call Packet.

See Appendix C, "Statement and Keyword Changes," for a listing of all X.25 NPSI statement keywords that you need to modify.

Migration from V3R2 to V3R3

To migrate from V3R2 to V3R3, consider the following:

- The enhanced SNA type 2.1 boundary support function (casual connection) requires one X.25 NPSI V3R3 for secondary support. For primary support, you can use either X.25 NPSI V3R2 or V3R3.
- The IDBLK definitions within VTAM switched major nodes may need to be changed depending on the value chosen for the IDBLKC, IDBLKG, and IDBLKP keywords of the X25.MCH statement.
- The IDNUM definitions within VTAM switched major nodes may need to be changed to reflect the change in the use of the X25.IDNUMH keyword on the NCP BUILD statement.
- The X25.IDNUMH keyword in the NCP BUILD statement specifies only the first hexadecimal digit of the IDNUM value for non-SNA connections rather than the first two hexadecimal digits.
- The support for RU chaining for long non-SNA messages function is now a generation option on the X25.MCH statement.
- NETTYPE=4 must be specified on the X25.NET statement for networks that do not allow duplicate facilities.
- The remote CCU loading enhancement is available when both X.25 NPSIs are at the V3R3 level.
- The CRAFTRC keyword must be replaced by the RESETINO keyword on the X25.NET statements during system generation.

Planning for the Configurator

The CF3720 configurator applies to the 3720 communication controller. The CF3745 configurator applies to the 3745 communication controller.

The CF3720 and CF3745 configurators assist in planning your configuration by:

- Calculating the CCU utilization.

  You should limit the CCU utilization to a maximum of 90 percent to preserve response time and avoid slowdown due to buffer shortages.

- Calculating each physical circuit's utilization.

  IBM configurators compute the MCH load as a function of the traffic on the dependent virtual circuits. It is recommended that you limit the percentage of use of each leg (transmit and receive) to 60 percent to avoid excessive queueing on the MCH. Excessive queueing degrades response time and eventually causes slowdown due to buffer shortage.

The configurator assumes that the link level window is 7, which allows the configurator to assume full piggybacking at link level.

Note: Remember that link level piggybacking is achieved by coding the appropriate values for SPEED and T1TIMER on the X25.MCH statement.

The configurator takes into account the degree of piggybacking at the packet processing level by the receipt of what is coded for the number of input frames per link-level response. If the packet level processing window is less than 3, no piggybacking occurs. The coded response must be 1. If your packet level processing window is 3 or more, and if your inbound traffic is balanced by outbound traffic, full packet level processing piggybacking occurs. The coded response must be 7. The response to the number of output frames per link-level response must be 1. When answering for non-SNA DTEs, the following parameters apply:

- OUT PACING must be coded as 1.
- IN PACING must be coded as 0.
- VPACING must be equal to the value coded either at generation or in the switched major node (SMN).

Chapter 3. Network Definition

Chapter 3. Network Definition

This chapter provides information needed to define your network configuration using X.25 NPSI. Chapter 3 describes the following areas:

- Physical circuits
- Logical channels
- Virtual circuits
- Logical link control selection
- CTCP definitions
- PAD support
- PCNE to PCNE considerations.

Physical Circuits

A physical circuit, or multichannel link (MCH), is a hardware connection between two locations. X.25 NPSI defines physical circuits between the communication controller that contains X.25 NPSI and the X.25 connection. The X25.MCH statement is used to define a physical circuit and characteristics common to all the groups of logical channels associated with the physical circuit.

The following are examples of the physical-level interfaces specified in the X25.MCH statement:

- Disable time-out value
- Enable time-out value
- Activation after a VTAM cold start.

The physical circuit must be defined to allow X.25 NPSI to operate the connection. The definition of the physical circuit includes the communication controller port address and a number of link-level parameters, such as:

- Frame size
- Frame window size
- Retry counts
- DTE or DCE distinction.

Logical Channels

A *logical channel* is the path on which data travels either between its origin DTE and the PSDN, or between the PSDN and its destination DTE. The PSDN creates a virtual circuit by allowing communication between logical channels connected to two DTEs. When a virtual circuit is established, the PSDN and X.25 NPSI use a logical channel group number and logical channel number to identify the virtual circuit. These two numbers comprise the *logical channel identifier* for that virtual circuit. Figure 19 on page 64 is an example of a logical channel definition.

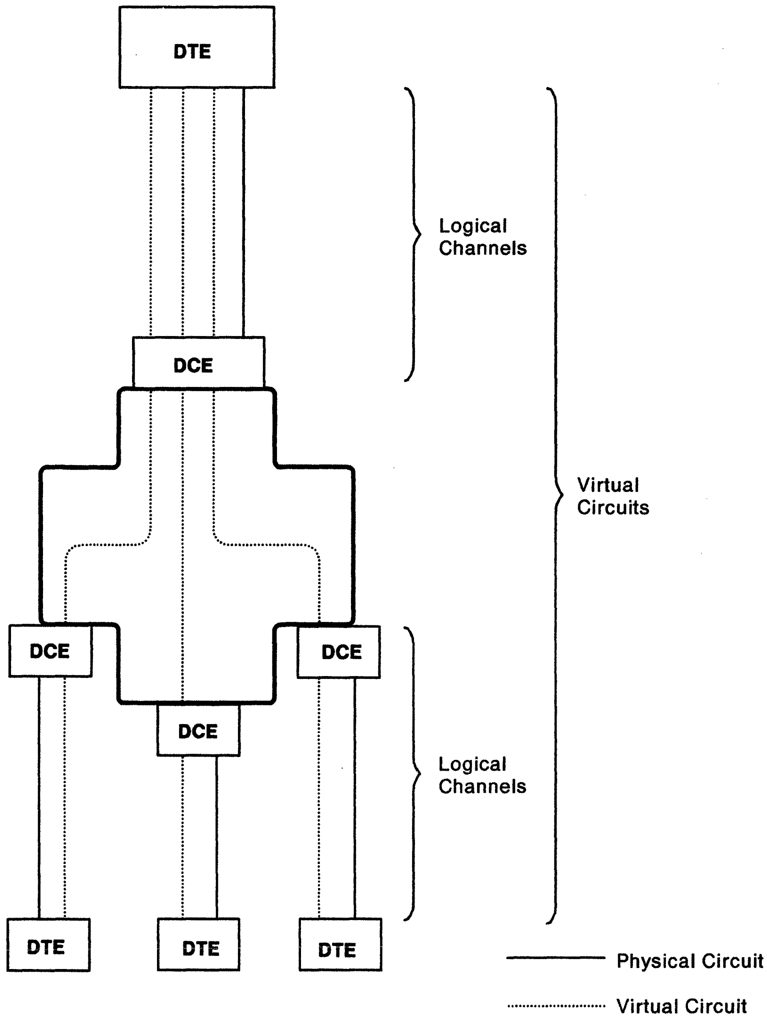

Figure 19. Logical Channel Definition

The logical channel identifier consists of three hexadecimal digits. Digit 1 is the logical channel group number; digits 2 and 3 are the logical channel number.

Each packet that X.25 NPSI exchanges with the PSDN contains, in its packet header, the logical channel identifier for the appropriate virtual circuit. X.25 NPSI uses the logical channel identifier to associate a packet with a particular virtual circuit and then sends the packet to the PSDN. The PSDN assigns a new logical channel identifier to route the packet through the network to its destination DTE. Also, the PSDN keeps a record of the pair of logical channel identifiers associated with each virtual circuit.

By keeping the logical channel pairings consistent, the PSDN ensures that data is not passed to an inappropriate destination. DTEs use the logical channel identifier from the PSDN to associate the logical channel with the virtual circuit.

Use the following statements and keywords to define logical channels to X.25 NPSI:

```
X25.MCH      LCGDEF=((lcg,lcnhi),(lcg,lcnhi),...)
X25.LCG      LCGN=number
X25.VC       LCN=(number1,number2)
X25.LINE     LCN=number
```

Several logical channels can be assigned to the same physical circuit.

The LCGDEF keyword of the X25.MCH statement specifies the logical channel groups associated with the defined physical circuit. The LCGDEF keyword also defines the greatest logical channel number within each logical channel group. This allows you to define a separate range of logical channel numbers for each logical channel group.

An X25.LCG statement follows each X25.MCH statement. One X25.LCG statement must be created for each logical channel group defined in the X25.MCH statement. The LCGN keyword of the X25.LCG statement defines the logical channel group number for all the virtual circuits specified by the subsequent X25.VC or X25.LINE statements.

Use the X25.VC statement or a combination of the X25.LINE, X25.PU, and possibly the X25.LU statements to define the virtual circuits that are members of the logical channel group defined by the X25.LCG statement. Code these statements following each X25.LCG statement. Use the LCN keyword of the X25.VC and X25.LINE statements to assign a logical channel number to each virtual circuit. The X25.VC and X25.LINE statements must be arranged in ascending order by logical channel number. The X25.LU statement defines logical units for the PVC DTEs that are associated with the virtual circuit for peripheral node connections.

Note: Additional X25.LINE and X25.PU statements not associated with a particular logical channel number are included to define resources to be used with SVCSC.

This coding creates a hierarchical relationship of the physical circuit to the logical channel group to the logical channel number. In addition, you must define each virtual circuit for one logical channel group before defining the next logical channel group. As a result, if a physical circuit contains logical channel groups 2 and 3, *all* of the definitions for logical channel group 2 *precede* the definitions for logical channel group 3. The following is an example of the order of these statements.

```
X25.LCG  LCGN=2

X25.LINE LCN=1,...
X25.PU   ...
X25.LU   ...
X25.LU   ...
X25.VC   LCN=(2,5),...

X25.LCG  LCGN=3

X25.LINE LCN=1,...
X25.PU   ...
X25.LU   ...
X25.VC   LCN=(2,5),...
```

Virtual Circuits

Virtual circuits are defined through the interaction of several statements. X.25 NPSI uses the interactions between these statements to generate NCP definitions. The virtual circuit definition includes designations for:

- PVC or SVC
- Logical link control (LLC)
- Call-in or call-out
- Packet window size
- Packet size.

Virtual circuits differ from physical circuits in that virtual circuit connections are logical rather than physical. The use of virtual circuits provides a multiplexing technique that increases the use of the physical circuit. This path flexibility allows any DTE to connect with any other DTE that is connected to the PSDN.

The PSDN configuration determines which physical circuits are used.

PVC Definition

A permanent virtual circuit (PVC) does not perform any dial procedures through the PSDN. PVCs simulate the action of a dedicated line and are activated with the physical circuit. Connection definitions are located in X.25 NPSI.

You can use the X25.VC statement to define PVCs that connect to non-SNA DTEs. The X25.VC statement produces one NCP LINE, PU, and LU statement per virtual circuit.

Use the X25.LINE, X25.PU, and X25.LU statements to define PVCs that connect to SNA peripheral nodes. You can also use these statements to define PVCs that connect to non-SNA DTEs. Use the X25.LINE and X25.PU statements to define PVCs that connect to SNA subarea nodes.

You can use the X25.LINE, X25.PU, and X25.LU statements to create network names that meet a customized naming standard. Use statement labels as you do for NCP generation. You can also use the X25.VC statement with PRFLINE, PRFPU, PRFLU, SUFFIX, and HEXNAME to build customized names.

After the generation process is complete, your X.25 NPSI resources are represented as NCP LINE, PU, and possibly LU statements. These statements correspond to your original X25.LINE, X25.PU, and X25.LU statements, as appropriate, or to your original X25.VC statements. You can activate, deactivate, and test them as you would any other NCP resource.

Arrange the statements in ascending order by logical channel numbers within the same logical channel group, as shown in the sample program in Appendix B, "Installation Examples for X.25 NPSI."

SVC Definition

A switched virtual circuit (SVC) is established in response to either the arrival of an Incoming Call Packet, or a request for an Incoming Call Packet by a host SSCP. For an Incoming Call Packet, the SVC is established when the Incoming Call Packet originates as a Call Request packet sent by a remote DTE. For a request by a host SSCP, X.25 NPSI originates a Call Request packet that should be received as an Incoming Call Packet by the remote DTE. A switched virtual circuit (SVC) is established either in response to the arrival of an Incoming Call packet originating as a Call Request packet sent by the remote DTE, or on request by a host SSCP that causes X.25 NPSI to originate a Call Request packet that should be received as an Incoming Call packet by the remote DTE.

To define SVCs, use either the X25.VC statement or the X25.LINE and X25.PU statement sequence.

Note: No X25.LU statement is associated with this definition.

The physical unit and, where appropriate, the logical unit definitions for an SVC are contained in members of the VTAMLST source library called the switched major node (SMN). There can be one or more members within the VTAMLST library. SMNs contain definitions for all switched facilities that run under VTAM, whether or not they use X.25 NPSI. The X.25 NPSI switched resource entries contain the physical unit and, where appropriate, the logical unit definitions that include VTAM and NCP parameters used for resource activation.

The NCP LINE and PU statements that are generated either from the X25.LINE and X25.PU statements, or from the X25.VC statements appear in an order that is the reverse of the X25.LINE and X25.PU or X25.VC order of specification. This causes VTAM to select the LINE resource with the highest logical channel identifier when requesting an outgoing call. The network selects the lowest available logical channel identifier when presenting an Incoming Call packet, reducing the chance of a call collision. See Figure 21 on page 181 and Figure 22 on page 184.

The names defined for the PU in VTAM and X.25 NPSI *do not* need to match. The name used by VTAM and the NetView™ program[4] is the name in the SMN. The PU defined in the NCP is used to create only the control block structure. To locate the proper PU statement in the SMN, use either the IDNUM/IDBLK combination or CPNAME.

SVCSC and Short Hold Mode Definitions (V3R2 and Later Releases)

Switched virtual circuit subarea communication (SVCSC) provides connectivity between two subarea nodes over switched virtual circuits. Six keywords in the X25.MCH statement are associated with the SVCSC function:

SVCINN Is the number of simultaneously active switched subarea node connections. It represents the number of switched virtual circuits allocated to subarea node traffic. SVCINN must equal the number of LINE and PU statements defined with DSTNODE=INN,TYPE=S.

SVCINN=0 means that no SVCSC is on the MCH. The default value is 0.

SDRTCNT Is the number of retries attempted when the short hold mode (SHM) reconnection cannot be established during call setup and the switched XID exchange.

The default value is 0 (no retry).

SDRTIME Is the timer used between two retries.

The default value is 10 seconds.

[4] NetView is a trademark of International Business Machines Corporation.

SHM Specifies whether short hold mode is to be used by SVCSC on the MCH. SHM=NO specifies that no SVCSCs on the MCH use SHM. SHM=YES specifies that at least one SVCSC on the MCH uses SHM. The default is YES.

Short Hold Mode is used only if it is specified in the following four places:

- The X25.MCH statements of the two X.25 NPSIs that are in contact
- Both PATH definitions associated with the PU statements in the switched major nodes that are selected when the two link stations make contact.

If SHM is not specified in all of these places, SHM is not used.

ACTIVTO Determines an inactivity timer that can be set for the MCH. The inactivity timer starts when the connection is no longer sending and receiving PIUs, and is reset when a PIU is scheduled to be sent or begins to be received.

The ACTIVTO keyword is coded on the X25.MCH statement. ACTIVTO can be used when operating with an Enterprise System/9370™ processor[5] through a Telecommunication Subsystem Controller (TSC). The conditions under which the ACTIVTO mechanism is in effect is determined by the specification of the BRKCON keyword. ACTIVTO determines the maximum number of seconds of inactivity before X.25 NPSI clears the virtual circuit and sends an INOP message to the host. (The ES/9370™ does not support SHM.)

An initial connection using the V NET,DIAL command must be repeated after an ACTIVTO.

See the description of SHM to determine when SHM can be in effect.

BRKCON The BRKCON keyword of the X25.MCH statement determines when the ACTIVTO timer mechanism comes into effect. Use the following values for the BRKCON keyword to determine when ACTIVTO is activated:

- CONNECTO— Specifies that the inactivity timer mechanism is always active.
- NOWNERTO— Specifies that the inactivity timer mechanism is active only when the link and link station are no longer owned by an SSCP.
- NONE— Specifies that the inactivity timer mechanism is never active.

The required virtual circuit definitions consist of two parts. The parts are the SNA and X.25 resource sets. This requirement is similar to the coding needed for the fast connect function.

The SNA set of resources is defined with the X25.LINE and X25.PU statements. The X25.LINE statement must specify:

```
TYPE=S|SWITCHED
DSTNODE=INN
```

[5] Enterprise System/9370 and ES/9370 are registered trademarks of International Business Machines Corporation.

The LCN keyword must be omitted in the X25.LINE statement. The X25.PU statement must specify PUTYPE=4, defining the definitions as applying to a subarea connection.

Note: The specification of PUTYPE=4 should be understood to include PU type 5, as is the case with an ES/9370™ processor through a TSC.

The X.25 resources must be defined using the X25.VC statements or sets of X25.LINE and X25.PU statements. These statements define the virtual circuits to X.25 NPSI. The virtual circuits defined with these statements can be used by either subarea or peripheral node connections.

X.25 NPSI establishes the connection between the SNA and the X.25 resources. The connection of the resources is done during the establishment of the virtual circuit. For an incoming call, this connection is established *after* the prenegotiation exchange because the call must be identified as a newly established connection or a short hold mode reconnection.

Note: When using the SVCSC function, note the following:

- The number of SNA resources (X25.LINE and X25.PU statement pairs, or the number implied by the X25.VC statement) must match the specification of the SVCINN keyword on the X25.MCH statement.
- The virtual circuits, defined for SVCSC, are taken into account when determining the default IDNUM *if* the LLCLIST keyword on the X25.MCH statement includes any of the following:
  - LLC0
  - LLC4
  - LLC5
- A PSDN is required.

Only single link transmission groups are supported by X.25 NPSI.

Call Definitions

To perform a call-in or call-out procedure, X.25 NPSI must be operating with SVCs. PVCs do not perform any type of call operation. SVCs use SMN in the VTAM statement library to complete the call operation.

See “SVCSC Considerations (V3R2 and Later Releases)” on page 76 for more information.

Call-In Definitions

The PUTYPE, CPNAME, and IDBLK and IDNUM keywords are used for the call-in definitions.

PUTYPE: The PUTYPE keyword for the PU statement in the SMN specifies the physical unit type. Code PUTYPE=1 for LLC types 0, 4, and 5. Code the PUTYPE keyword according to the type of device for LLC types 2 and 3. The PUTYPE of an SNA peripheral node can be obtained from device documentation. Note that an SNA type 2.1 node must be defined as a PU type 2.

CPNAME: For SNA type 2.1 node switched resources, the identification is obtained from the resource, but two possibilities exist. The link-level identification procedure can be the same as for other SNA switched resources, or it can result in obtaining a CPNAME value rather than the IDNUM and IDBLK values. When a CPNAME value is obtained, the CPNAME value must match the CPNAME operand of a PU statement in an active SMN.

For V3R2: The specification of IDNUM and CPNAME is usually part of the product customization for SNA switched resources. The value of IDBLK is fixed according to the type of product; for example, X'017' is the value for the 3174. The required value is contained in the product documentation.

For V3R3 only: X.25 NPSI allows you define the IDBLK value using the X25.MCH statement during system generation and the IDNUM values using the X25.LINE and X25.VC statements.

IDBLK and IDNUM (V3R2 Only): When a switched resource either contacts or is contacted by NCP, NCP presents a resource identification to the host (VTAM). The type of identification presented depends on the nature of the link-level identification exchange procedure.

In the case of LLC0 without subaddressing, the IDNUM is obtained from the Incoming Call packet CUD field.

In the case of other non-SNA resources supported by X.25 NPSI, IDBLK and IDNUM are created internally by X.25 NPSI. This creation is based on the sequence of the virtual circuit definition and the specification of the X25.IDNUMH operand of the BUILD statement. The identification must match the IDNUM and IDBLK operands of a PU statement in an active SMN.

At generation, X.25 NPSI V3R2 generates a default IDNUM for each SVC, except in the following cases:

- SVCs on a fast connect MCH
- SVCs on an MCH where LLCLIST does not require LLC0, LLC4, or LLC5.

These identification numbers appear in the order in which the SVCs appear in the Resource Resolution Table. This order corresponds with the resource order in the VTAMLST NCP source statements, which is the *reverse* order of the X.25 NPSI source statements.

Default IDNUM values start at X'002' and increment by X'02'. The following example shows the default identification numbers for the SVCs defined in Appendix B, "Installation Examples for X.25 NPSI."

```
SVC              Default
                 Identification
                 Number
SP3002        X'002'
SP3001        X'004'
SP2002        X'006'
SP2001        X'008'
SP1100        X'00A'
SP0004        X'00C'
SP0003        X'00E'
SP0002        X'010'
SP0001        X'012'
SP7007        X'014'
SP7006        X'016'
SP7005        X'018'
SP7004        X'01A'
SP7003        X'01C'
SP7GGH        X'01E'  (allocated for SVCSCs but not used)
SP7GGI        X'020'  (allocated for SVCSCs but not used)
```

The X25.IDNUMH keyword of the BUILD statement defines the first byte of the five-digit IDNUM. The one byte IDNUMH value is appended with the three-rightmost digits of the default IDNUM. Therefore, if X25.IDNUMH=02 and the default IDNUM is X'124', the IDNUM that is created is X'02124'.

Note: The IDNUM creation process results in a limit of 2048 uniquely numbered values. The maximum number of SVCs using a default IDNUM that can be created in one NCP/X.25 NPSI load module is 2048. The IDNUM creation process allows only 16 distinct values for the IDNUMH keyword. This means that no more than 16 communication controllers can be under the control of one host running X.25 NPSI in contact with non-SNA resources.

When an incoming call specifies a non-SNA LLC, the default IDNUM within the Request Contact (REQCONT) command is used. X.25 NPSI uses its own IDBLK specification of X'003' in the REQCONT command to create the identification number for selecting the correct SMN entry.

When an incoming call specifies an SNA LLC, IDNUM and IDBLK are used. IDNUM and IDBLK are specified within the XID sent by the remote SNA device.

Table 4 on page 72 defines the IDNUM assignment in X.25 NPSI.

Table 4. IDNUM Assignment in X.25 NPSI (V3R2 Only)

LLC Type	Physical Circuit	Call-In	Call-Out
LLC type 0	GATE=NO	CUD field	ZZZZZ field of DIALNO
	GATE=DEDICAT	Default IDNUM	Default IDNUM
	GATE=GENERAL SUBADDR=NO	CUD field	ZZZZZ field of DIALNO
	GATE=GENERAL SUBADDR=YES	Default IDNUM	ZZZZZ field of DIALNO
LLC type 2		PU ID from remote SNA DTE	PU ID from remote SNA DTE
LLC type 3 peripheral node		PU ID from remote SNA DTE	PU ID from remote SNA DTE
LLC type 3 subarea node		Value specified in IDNUM of remote end PATH statement	Value specified in IDNUM of remote end PATH statement
LLC type 4		Default IDNUM	Default IDNUM
LLC type 5	GATE=NO or GATE=GENERAL	Default IDNUM	ZZZZZ field of DIALNO
	GATE=DEDICAT	Default IDNUM	Default IDNUM

Note: The NCP anonymous caller feature is not supported by X.25 NPSI V3R2.

IDBLK and IDNUM (V3R3 Only): For X.25 NPSI V3R2 and previous releases, the IDBLK and the IDNUM values were created internally by X25.NPSI. However, X25.NPSI V3R3 allows you to define the IDBLK and IDNUM values.

IDBLK: You can define the IDBLK value during system generation using the IDBLKP, IDBLKC, and IDBLKG keywords of the X25.MCH statement. The value for IDBLK is generated from a range of 13 numbers (X'62' to X'6E'). The value that you define for IDBLK allows for PAD, PCNE, and GATE connections to coexist on the same MCH. IDBLKC specifies a PCNE connection, IDBLKP specifies a PAD connection, and IDBLKG specifies a GATE connection. If you do not specify the IDBLK value, the default value is X'003'. However, do not specify this default value, X'003', as an IDBLK value, because it may already be used by another SNA resource within the network.

IDNUM: In the case of SNA switched resources, the identification is still obtained by the resource. The IDBLK and IDNUM operands must match. In the case of LLC0 without subaddressing, the IDNUM is still obtained from the Incoming call packet CUD field. In the case of other non-SNA resources supported by X25.NPSI, the first digit of the IDNUM value is obtained from the value of the IDNUMH keyword on the X25.BUILD statement. The last four digits of the IDNUM value are obtained from the value of the IDNUMT keyword on both the X25.LINE and X25.VC statements. Therefore, if the IDNUMH value is 2 and the IDNUMT value is X'1234', the resulting IDNUM value is X'21234'. When you define the SVCs on the X25.VC statement during system generation, X.25 NPSI V3R3 automatically increments the IDNUMT value by 2. Therefore, if the X25.VC statement defines 4 SVCs, if IDNUMH=2 is coded on the BUILD statement, and if the IDNUMT value is X'1234', the IDNUM value for each SVC is: X'21234', X'21346', X'21238', and X'2123A'.

The IDNUMT values must be even.

Defining the IDNUMT keyword restricts X.25 NPSI from generating any default values for other SVCs. Therefore, during system generation, you must specify either all of the IDNUMT values or none of the IDNUMT values, because during the second stage of generation, X.25 NPSI generates IDNUM default values in the *reverse* order from the way the SVCs were initially defined. X.25 NPSI aborts the generation process if you define only some, but not all, of the IDNUM values for non-SNA SVCs.

Note: The IDNUM creation process results in a limit of 32 768 uniquely numbered values. The maximum number of SVCs using a default IDNUM that can be created in one NCP/X.25 NPSI load module is 32 768. The IDNUM creation process allows more than 16 distinct values for the IDNUMH keyword. This means that no more than 16 communication controllers can be under the control of one host running X.25 NPSI in contact with non-SNA resources.

The following are definition examples of the various IDBLK values:

```
No separation between LLC's:

NCP1:     IDBLKG=062     IDNUMH=0      (32000 SVC's)
          IDBLKP=062
          IDBLKC=062


With separation for GATE/PAD/PCNE:

NCP2:     IDBLKG=062     IDNUMH=1      (32000 SVC's)
          IDBLKP=063
          IDBLKC=064


With separation of GATE from PAD/PCNE:

NCP3:     IDBLKG=062     IDNUMH=2      (32000 SVC's)
          IDBLKP=063
          IDBLKC=063


With separation for GATE/PAD/PCNE:

NCP16:    IDBLKG=062     IDNUMH=F      (32000 SVC's)
          IDBLKP=063
          IDBLKC=064


With separation for GATE/PAD/PCNE:

NCP17:    IDBLKG=065     IDNUMH=0      (32000 SVC's)
          IDBLKP=066
          IDBLKC=067
```

NCP Anonymous Caller ID Definitions

X.25 NPSI V3R3 supports the NCP anonymous caller function. However, you must use the ID keyword on the X25.LINE and X25.VC statements. This applies to MCHs supporting only one kind of SVC (either peripheral SNA or PCNE SVCs without sub-addressing or DATE). You must define the ID keyword on all SVCs for a given MCH.Table 5 defines the IDNUM assignment in X.25 NPSI.

Table 5. IDNUM Assignment in X.25 NPSI (V3R3 Only)

LLC Type	Physical Circuit	Call-In	Call-Out
LLC type 0	GATE=NO	CUD field	ZZZZZ field of DIALNO
	GATE=DEDICAT	DEFAULT IDNUM or User-specified (even numbers)	DEFAULT IDNUM or User-specified (even numbers)
	GATE=GENERAL SUBADDR=NO	CUD field	ZZZZZ field of DIALNO
	GATE=GENERAL SUBADDR=YES	DEFAULT IDNUM or User-specified (even numbers)	ZZZZZ field of DIALNO
LLC type 2		PU ID from remote SNA DTE	PU ID from remote SNA DTE
LLC type 3 peripheral node		PU ID from remote SNA DTE	PU ID from remote SNA DTE
LLC type 3 subarea node		Value specified in IDNUM of remote end PATH statement	Value specified in IDNUM of remote end PATH statement
LLC type 4		DEFAULT IDNUM or User-specified (even numbers)	DEFAULT IDNUM or User-specified (even numbers)
LLC type 5	GATE=NO or GATE=GENERAL	DEFAULT IDNUM or User-specified (even numbers)	ZZZZZ field of DIALNO
	GATE=DEDICAT	DEFAULT IDNUM or User-specified (even numbers)	DEFAULT IDNUM or User-specified (even numbers)

Call-Out Definitions

The PUTYPE, IDBLK, and IDNUM keywords are used for the call-out definitions. The PATH definition statement is also used for the call-out definitions.

PUTYPE: The PUTYPE keyword for the PU statement in the SMN specifies the physical unit type. Code PUTYPE=1 for LLC types 0, 4, and 5. Code the PUTYPE keyword according to the NCP rules for LLC types 2 and 3. See *NCP, SSP, and EP Resource Definition Guide* for NCP rules.

IDBLK and IDNUM: For SNA remote DTEs, the parameters specified for these keywords must match the IDBLK and the IDNUM of the remote SNA DTE.

For V3R2 and previous releases: For non-SNA remote DTEs, the IDBLK is 003, and the IDNUM must match the value specified in the ZZZZZ field of the DIALNO keyword.

For V3R3 only: For non-SNA remote DTEs, the IDBLK value can be specified with the IDBLKC, IDBLKG, or IDBLKP keywords on the X25.MCH statement using the range X'62'–X'6E'. Specifying an IDBLK value of X'003' is not recommended.

PATH Definition Statement: The PATH definition statement in a switched major node is used to define a dial-out path to a remote PU. Up to 256 PATH statements can be specified for each PU. The PATH statement must immediately follow the PU statement that defines the associated PU. VTAM searches the PATH statements for an available path in the order specified in the configuration deck.

The ZZZZZ field of the DIALNO keyword must be coded for LLC0 and LLC5, and must match the IDNUM specified in the PU statement corresponding to the involved PATH statement.

See Chapter 5, "Coding NCP and VTAM Parameters for X.25 NPSI," for more detailed information on the required keywords and their exact coding requirements.

SNA Type 2.1 Node Definition (V3R2 and Later Releases)

SNA type 2.1 nodes can communicate with each other, as well as with applications in VTAM. VTAM determines whether a peripheral node is PU type 2.1 or PU type 2.0 either during activation of the node or at contact time for switched nodes.

In a switched environment, VTAM can locate the appropriate PU/LU pair either by using the normal IDNUM/IDBLK combination or by using the CPNAME keyword on the PU statement in a switched major node source statement member of VTAM.

For call-in and call-out definitions, SNA type 2.1 uses QLLC with X'C3' in CUD0. For a call-out, LLC3 is used as in the normal peripheral node QLLC.

XID=YES must be coded, and PUTYPE=2 should be specified, in the X25.PU statement for PVCs of SNA type 2.1 nodes.

Enhanced SNA Type 2.1 Boundary Function Support—Casual Connection (V3R3 Only)

The enhanced SNA type 2.1 boundary function support provided in X.25 NPSI V3R3 extends the NCP's X.25 boundary node support, by allowing a primary SNA type 2.1 peripheral node to be attached to an NCP through an X.25 NPSI that is acting as the secondary partner.

The enhanced SNA type 2.1 boundary function support is also called *casual connection*. Casual connection allows a VTAM, NCP, and X.25 NPSI configuration, working as a node T2.1, to communicate with another node T2.1 over a peripheral link. On a subarea link, you must define the remote partner to the local VTAM. On a peripheral link, VTAM does not need to know about the remote partner. The remote partner is an SNA type 2.1 node working as a primary or secondary mode. This type 2.1 node can be a VTAM/NCP/X.25 NPSI configuration. This type of configuration is called a Composite End Node (CEN). For a casual connection, only one CEN needs to support the casual connection function to add role negotiation and secondary support. The other CEN should be LEN-level, but it does not need to support casual connection.

The following keywords apply to casual connection:

- CCXDELAY on the X25.MCH statement for SVC
- MODE=SEC on the X25.LINE statement for PVC
- ROLE=PRI/NEG on the X25.MCH statement for SVC.

SVCSC Considerations (V3R2 and Later Releases)

The PU statement involved in the SVCSC connection is located by VTAM using the following three keywords:

- NETID
- SUBAREA
- IDNUM

The PATH and the PU to be used with the connection is determined if and when these three parameters match the values obtained from the remote subarea station in the exchange of identification process.

The following mechanisms, which are based on the integrity of the network, are considered when using SVCSC within switched major nodes.

- Calling DTE address

  X.25 networks always provide the address of the calling DTE. The called DTE can then check this address against a list of authorized callers. This mechanism, which uses the VERIFY keyword of the PATH statement, is optional.

  VTAM does not support the outbound verification of the DTE address. As a result, when used with X.25 NPSI, the VERIFY keyword on the PATH statement must be coded as VERIFY=IN.

- Called DTE address

  Call Redirection and Hunt Group are supported except when SHM is used on the virtual circuit. If SHM is used in either of these cases, the SHM reconnection will fail.

  Call Redirection is a PSDN subscription option that allows incoming calls, destined for a DTE that is out of order, to be redirected. When a call is redirected, a search for a specified group of DTEs (Hunt Group) is initiated.

- Closed user group (CUG)

  The closed user group (CUG) facilities enable the PSDN to control access to or from DTEs that belong to the CUG. CUG facilities can be subscribed to so that a Call Request is only accepted by the PSDN when the called DTE belongs to the same CUG as the calling DTE. This situation is particularly relevant to SVCSC.

Clear SVC on Inactivity Time-out (V3R3 only)

The INACTO parameter has been created to clear and free an SVC connection, if data activity does not occur during an interval specified at generation time. Monitoring does not occur on VCs working in INN, GATE, or DATE.

Associated Tables

In addition to defining LLC types, you must define parameters that are to be associated with each virtual circuit. The following are two types of virtual circuit parameters:

- Virtual circuit connection variables

  The virtual circuit connection variables apply to all virtual circuits and include:

  - Maximum packet size (in the absence of packet size negotiation)
  - Packet-level window size (in the absence of packet window size negotiation)
  - Parameters to prevent NCP slowdown.

- Optional user facilities

  The optional user facilities apply to X.25 facility codes and user data copied into the Call Request packet when X.25 NPSI makes an outgoing call for LLC types where a CTCP does not create the Call Request packet directly.

X25.VCCPT Statement

Virtual circuit connection variables are defined using the X25.VCCPT statements. These statements create a table that X.25 NPSI uses to specify the virtual circuit connection parameters. Each X25.VCCPT statement is one entry in this table. See "X25.VCCPT Statement" on page 156 for the format of, and coding information about, X25.VCCPT.

Call-In Specifications: For call-in, to define the VCCPT entry, use the VCCINDX keyword on either the X25.VC or X25.LINE statement. This keyword corresponds to the INDEX keyword of the X25.VCCPT statement. For example, if you want to use the entry specified by INDEX=2 on the X25.VCCPT statement, code VCCINDX=2 on the statement that you are using to define your virtual circuit.

When you use a GATE or DATE CTCP, the packet size and packet window size are selected through the CALL ACCEPTED command. Byte 3 of this command contains the packet window size. Bytes 4 and 5 contain the packet size. All sizes are in hexadecimal.

Values for packet size and packet window size can be specified in the Flow Control Parameter Negotiation facility in the Incoming Call packet. This allows an SVC to work with a different set of values from those defined by the VCCINDX keyword. See Appendix A, "Defining X.25 PSDN Facilities," for further information.

X.25 NPSI slowdown parameter definitions for virtual circuits are not affected by the use of GATE or DATE. These values are taken from the applicable VCCPT entry pointed to by the VCCINDX keyword on the virtual circuit definition.

Call-Out Specifications: For call-out, to define the VCCPT entry, use the XX component of the DIALNO keyword on the VTAM PATH statement. The XX component value specifies which VCCPT entry to use, or designates the entry defined on the X25.VC or the X25.LINE statement. Thus, the XX field can be used to override the default VCCPT for the virtual circuit. See "Activating Calls that Use SVCSC (V3R2 and Later Releases)" on page 177 for more information.

Specify the XX as zero ("00") to designate the use of the VCCINDX on the X25.VC or X25.LINE statement. When you use a GATE or DATE CTCP, the packet size and packet window size are selected through the CALL REQUEST command from the CTCP to GATE or DATE. Byte 3 of this command contains the packet window size; bytes 4 and 5 contain the packet size. All sizes are in hexadecimal.

For V3R2 and previous releases: With DATE and GATE, flow control parameters received in a Call Connected packet are ignored by X.25 NPSI. If they do not match the values specified by the CTCP in the call-out, the CTCP must clear the call.

For V3R3 only: When INTFAC=YES is specified on the X25.MCH statement, X.25 NPSI will interpret and use the flow control parameters that are contained in the Call Connected packet under GATE and DATE. Therefore, X.25 NPSI will clear fewer calls because of incompatible packet sizes and window sizes.

X.25 NPSI slowdown parameter definitions for virtual circuits are not affected by the use of GATE or DATE. Their values are taken from the applicable VCCPT entry pointed to by the VCCINDX keyword on the virtual circuit definition.

X25.OUFT Statement

Use the X25.OUFT statements to create a table of optional user facility fields and a call user data (CUD) field for Call Request packets. X.25 NPSI uses these fields to specify the optional user facilities used on the virtual circuits. Each X25.OUFT statement defines one table entry. See "X25.OUFT Statement" on page 141 for more information on the X25.OUFT statement coding.

X25.OUFT applies only to a call-out from X.25 NPSI, because the optional user facilities field and the CUD field created are placed in the Call Request packet.

Call-Out Specifications: When performing a call-out, X.25 NPSI obtains the OUFT entry through the use of the YY component of the DIALNO keyword on the VTAM PATH statement. This component specifies the OUFT entry or specifies using the OUFT entry defined on either the X25.VC or the X25.LINE statement. A X'00' value indicates that the default value coded on the X25.VC or X25.LINE statement should be used. Any non-zero value specifies an OUFT table entry. You can use the DIALNO keyword to override the default OUFT entry.

When you use GATE or DATE, the CTCP creates the optional user facilities and CUD field. The CTCP sends them in the Call Request packet at the end of the CALL REQUEST command sent to X.25 NPSI.

Logical Link Control Selection

X.25 NPSI connects through five logical link control (LLC) types as described in "Logical Link Control Types" on page 31. LLCs define the DTE type to which the virtual circuit connects. DTE types include SNA peripheral nodes, subarea connections, and non-SNA DTEs. Each DTE type requires different data flow processing.

In addition, X.25 NPSI allows you to use a CTCP to control the virtual circuit. This support is supplied through either the GATE or the DATE function of X.25 NPSI.

For more information on GATE and DATE see "GATE" on page 84 and "DATE" on page 83. For detailed programming information, see *X.25 NPSI Host Programming.*

When X.25 NPSI uses GATE or DATE, X.25 NPSI does not process X.25 commands. Instead, X.25 NPSI places the command in a buffer and forwards it to the CTCP. The CTCP initiates the response to the command.

X.25 NPSI processes a virtual circuit based on whether the virtual circuit is a PVC or an SVC, and whether a CTCP will be used.

PVC Selection

To define the LLC for a PVC, use the LLC keyword of the X25.VC or X25.LINE statement. The LLC keyword specifies the LLC type of the virtual circuit. The LLC for the PVC always stays the same.

Using a CTCP with a PVC gives you better session control, because you can use the CTCP to monitor use and to provide more security.

With GATE, code the OSITYPE keyword of the X25.VC or the X25.LINE statement to specify the CTCP.

SVC Selection

SVC definitions require careful planning, because SVCs are selected dynamically when calls are established. An SVC can be defined as any LLC type.

For Call-In

For an SVC used for call-in, define the LLC type in one of the following:

- Byte 0 of the CALL USER DATA field (CUD0)
- The subaddressing field of the incoming Call Request packet
- The CTCP response to an Incoming Call packet (DATE only).

Using CUD0 for LLC Type and CTCP Selection: The following are default CUD0 values and the associated LLC types:

CUD0	LLC Type
X'01'	Type 5 (PAD)
X'41'	Type 5 (PAD)
X'51'	Type 5 (PAD)
X'81'	Type 5 (PAD)
X'C0'	Type 0 (PCNE)
X'C2'	Type 2 (PSH)
X'C3'	Type 3 (Peripheral node QLLC)
X'C4'	Type 4 (GATE)
X'E3'	Type 3 (Subarea node QLLC)

You can also use the CUD0 field to specify the CTCP to use for GATE processing. The ways to do this include:

- Omit CUD0 on the X25.MCH statement.

  In this case, there can be only *one* CTCP. This CTCP is chosen if the first byte of the CUD field is:

  - NULL
  - X'00'
  - Any value from X'02' through X'2F'
  - X'C4'.

- Code CUD0=ALL

  This specification allows for two CTCPs. The first CTCP is chosen if the first byte of the CUD field is:

  - X'02'
  - X'C4'.

  The second CTCP is chosen if the CUD field has one of the following values:

  - NULL
  - X'00'
  - Any value from X'03' through X'2F'.

- Use the correspondence table.

  If a CUD0 to CTCP correspondence table is created, the CTCP is selected as specified in the table. Any of the 28 CTCPs can be selected in this manner. Each physical circuit can use a different set of rules for CTCP selection.

Using Subaddressing for LLC Type and CTCP Selection: When you define subaddressing to select LLC type, X.25 NPSI uses the *last* digit of the called DTE address to select the LLC type. X.25 NPSI assumes the last digit to be a subaddress digit. CCITT Recommendation X.121 defines the format of the addresses used by Recommendation X.25 and also specifies a maximum address length of 14 digits. X.25 NPSI allows up to 15 digits; thus, one address digit is always available. The network ignores address digits after those actually needed for addressing.

Note: X.25 NPSI cannot tell whether the last address digit is part of the address or is added by the calling DTE for LLC selection purposes.

The following example shows how you can define subaddressing digits to select LLC types:

```
LLC0=(1,2),LLC4=(0,3,4,7),LLC5=(6,5),LLCI=(8)
```

The coding shown above produces the following correspondence:

- Type 0 (PCNE) if 1 or 2 is the last subaddressing digit
- Type 4 (GATE) if 0, 3, 4, or 7 is the last subaddressing digit
- Type 5 (PAD) if 5 or 6 is the last subaddressing digit
- Type 3 (Subarea node QLLC) if 8 is the last subaddressing digit.

When LLC type 4 is selected through subaddressing, if not working in Fast Connect, X.25 NPSI will always connect the virtual circuit to the first CTCP. Even though a GATE CTCP is not active and is not intended to become active, to use subaddressing you must code both GATE=GENERAL and SUBADDR=YES on the X25.MCH statement.

Note: If LLC type selection through subaddressing is specified, but the last digit of the called DTE address in the Incoming Call packet does not correspond to one of the generation-defined subaddress digits, LLC type and CTCP selection is performed using CUD0.

Using DATE for LLC Type Selection: An SVC using DATE is defined with the GATE=DEDICAT keyword of the X25.MCH statement. Such an SVC can be a type 0, 2, 3, or 5 virtual circuit. Type selection occurs when the incoming Call Request packet is passed to the DATE CTCP. The CTCP reads information in the CALL REQUEST command, selects the type, and sends a CALL ACCEPTED command to the DATE portion of X.25 NPSI. Byte 6 of this command specifies the virtual circuit type.

For Call-Out

Call-out is performed to a known destination. The LLC type is known before the call is actually established. For GATE and DATE, the Call Request packet for call-out is built entirely by the CTCP.

Use the VTAM PATH statement to specify the LLC type for non-GATE and non-DATE virtual circuits. The VTAM PATH statement is coded in the switched major node entry of the VTAM definition library.

X.25 NPSI uses a modified version of the DIALNO keyword of the PATH statement. The dial number contains various parameters required to perform the call-out function. This keyword format can be found in "PATH Definition Statement" on page 165.

X.25 NPSI uses the L field of the DIALNO to determine the LLC type. Table 6 shows the L values, the LLC type created, and the beginning of the CUD field.

Table 6. DIALNO L Values

L	LLC Type	Beginning of the CUD Field
0	LLC0	X'C0'
1	LLC3 (Subarea node)	X'E3'
2	LLC2	X'C2'
3	LLC3 (Peripheral node)	X'C3' X'C30100008dddwwwww0000000' for use by 3710 Controller ddd 3-decimal digit upstream address (USA) of the terminal addressed by this outgoing call. wwwww 5-decimal digit ID number of the PU used to map the terminal addressed by the outgoing call.
5	LLC5	X'01000000'
6	LLC5	X'51000000'
7	LLC5	First positional parameter specified in CUD0 keyword corresponding to an 85 in the CTCP keyword. See "Extended LLC Type and CTCP Selection" on page 82 for more information.
8	LLC5	X'81000000'
9	LLC5	X'41000000'
colon (:)	LLC0	First positional parameter specified in CUD0 keyword corresponding to an 80 in the CTCP keyword, followed by ZZZZZ. See "Extended LLC Type and CTCP Selection" on page 82 for more information.
period (.)	LLC0	First positional parameter specified in CUD0 keyword corresponding to an 80 in the CTCP keyword. See "Extended LLC Type and CTCP Selection" on page 82 for more information.

Note: When the call-out is initiated by a CTCP using GATE, X.25 NPSI automatically uses LLC type 4.

Call initiation from a DATE CTCP allows you to specify the LLC type within the CALL REQUEST command. The physical circuit is defined to X.25 NPSI as being controlled by a DATE CTCP. The DATE CTCP must:

1. Acquire an MCH LU.
2. Select an LLC type.
3. Establish the session to the virtual circuit LU. This is done by any one of the following:
   - X.25 NPSI generates a logon request.
   - A user performs LOGON from a remote device.
   - A LOGAPPL keyword is coded on the LU statement in the SMN.

Extended LLC Type and CTCP Selection

If GATE=GENERAL is defined on the MCH, you can create a user-defined table for selecting LLC types by using the CUD0 and CTCP keywords of the X25.MCH statement.

Use the CUD0 and CTCP keyword correspondence to create a one-for-one correspondence between LLC type and CUD0 codes.

To code a one-for-one correspondence, code the CTCP keyword of the X25.MCH statement with the number of subkeywords equal to the number of CUD0 codes in the CUD0 keyword. The *position* of each code determines the LLC type or CTCP number to which it corresponds. You must code the LLC type numbers as the LLC type plus 80, as shown in Table 7.

Table 7. LLC Numbers

LLC Type	Code	Type
LLC0	80	PCNE—non-SNA, X.25
LLC2	82	PSH—SNA using NIA
LLC3	83	Peripheral node/QLLC— SNA/QLLC (Peripheral node)
LLC5	85	PAD – non-SNA using PAD

Because the CUD0 and CTCP keywords are coded on the X25.MCH statement, you can use them to create a different table for each physical circuit. For call-outs, the value placed in CUD0 can also be user-specified for LLC0 and LLC5.

The following is an example for coding a user-defined table. Any CUD0 value can be specified, including a NULL value.

```
CUD0=(00,01,C1,C5,02,FF,03,04,E3,73,61,NULL)
CTCP=(00,01,80,85,85,80,01,02,83,02,85,80)
```

The result is in the following user-defined table (Table 8).

Table 8. Coding Example of CUDO Value

CUDO	CTCP Keyword	Result
00	CTCP 00	
01	CTCP 01	
C1	LLC 0	C1 will go in CUD0 for L=. or : on call-out *
C5	LLC 5	C5 will go in CUD0 for L=7 on call-out *
02	LLC 5	
FF	LLC 0	
03	CTCP 01	
04	CTCP 02	
E3	LLC 3	
73	CTCP 02	
61	LLC 5	
NULL	LLC 0	

Note: * Is the first value facing an 80 (for C1) or an 85 (for C5) in the CUD0 keyword.

In addition, default LLC type selection is made *except* for X'00', X'01', X'02', X'03', and X'04', which were overridden within the table.

CTCP Definitions

GATE and DATE programming facilities use the CTCP for virtual circuit setup, termination, and control. The following sections outline the network requirements for GATE and DATE and define special requirements for using the GATE fast connect option.

DATE

DATE is used with all virtual circuits that reside on a physical circuit defined as GATE=DEDICAT; consequently, you are unable to:

- Have a physical circuit where *both* DATE and GATE virtual circuits reside
- Bypass the CTCP when performing any CALL REQUEST.

For V3R2 and previous releases: DATE and integrated PAD are not supported on the same physical circuit.

For V3R3 only: X.25 NPSI V3R3 supports DATE and integrated PAD on the same physical circuit.

To generate DATE support, code GATE=DEDICAT on the X25.MCH statement as shown in the following example:

```
X25.MCH   ADDRESS=xxx,
              .
              .
          GATE=DEDICAT
              .
              .
```

When you use DATE, you must code the CALL keyword of the X25.LINE or X25.VC statement in accordance with your PSDN subscription. This allows X.25 NPSI to verify that the CTCP is functioning in accordance with the PSDN subscription.

A call-out made by the CTCP is simulated by a call-in to NCP and the access method. Therefore, X.25 NPSI forces CALL=IN on all NCP LINE statements created during X.25 NPSI generation.

GATE

Because GATE defines its own LLC type (type 4), GATE cannot reside on the same physical circuit as DATE.

To generate GATE support, code GATE=GENERAL on the X25.MCH statement as shown in the following example:

```
X25.MCH   ADDRESS=xxx,
              .
              .
          GATE=GENERAL
              .
              .
```

To specify the selection of GATE CTCP when the first byte of the CUD field is not X'C4', you must define the following keywords of the X25.MCH statement:

- CUD0
- CTCP
- SUBADDR

  When SUBADDR=YES, specify the keywords that select subaddress digits.

PVC Specifications

PVCs that use GATE can be defined for virtual circuits in the following ways:

- Code GATE=GENERAL on the X25.MCH statement.
- Code LLC=LLC4 on the X25.VC or the X25.LINE statement.
- Code TYPE=PERMANENT on the X25.VC or the X25.LINE statement.

Note: If you use the X25.LINE statement, you must also define the X25.LU and the X25.PU statements.

SVC Specifications

Specifying GATE on an SVC differs for call-in and call-out. For either operation, you must code the GATE=GENERAL keyword on the X25.MCH statement.

Call-In: To perform call-in on a virtual circuit, code the CALL keyword as either CALL=IN (the default value), or CALL=INOUT.

You can determine the LLC type through the use of the CUD0 field or the subaddressing field. If you want to control the virtual circuits, select the CTCP by using one of the following:

- Omit CUD0 on the X25.MCH statement.

  In this case, there can be only *one* CTCP. This CTCP is chosen if the first byte of the CUD field is:

  - NULL
  - X'00'
  - Any value from X'02' through X'2F'
  - X'C4'.

- Code CUD0=ALL

  This specification allows for two CTCPs. The first CTCP is chosen if the first byte of the CUD field is:

  - X'02'
  - X'C4'.

  The second CTCP is chosen if the CUD field has one of the following values:

  - NULL
  - X'00'
  - Any value from X'03' through X'2F'.

- Use the correspondence table.

  If a CUD0 to CTCP correspondence table is created, the CTCP is selected as specified in the table. Any of the 28 CTCPs can be selected in this manner. Each physical circuit can use a different set of rules for CTCP selection.

In addition to the X.25 NPSI generation specifications, the CTCPs must be numbered sequentially according to the logical unit associated with the physical circuit. The CTCP numbers range from 00—27.

When you use a table, you can define specific CTCPs to establish sessions with the appropriate physical circuit logical unit. All LU-LU sessions between the CTCPs and logical units do not have to be continuously active. Additional LU-LU sessions can be established as network traffic requires.

When subaddressing is used to select the LLC, the first CTCP is selected if the subaddressing digit of the call packets matches one of the values specified for the LLC4 keyword of the X25.MCH statement. If it does not match any of these values, X.25 NPSI uses the CUD0 of the Incoming Call packet to select the CTCP.

Call-Out: When GATE is used and a call-out is requested by the CTCP, X.25 NPSI simulates a call-in to the NCP and VTAM. Therefore, all the virtual circuits that can be used for GATE call-out must be declared as CALL=IN or CALL=INOUT at generation. Because all virtual circuits on an MCH are not dedicated to operating through GATE, NDF passes the coded CALL keyword (without change) to the NCP and VTAM.

When you want to reserve a certain number of virtual circuits for non-GATE call-outs, code CALL=OUT for this number of virtual circuits.

When the CTCP requests call-out on a physical circuit coded as using GATE, the call must use a type 4 virtual circuit and must meet the following two specifications in order to be successful:

- Include LLC4 in the LLCLIST keyword of the X25.MCH statement.
- Code CALL=IN or CALL=INOUT on the X25.LINE or X25.VC statement to ensure the availability of a virtual circuit.

Fast Connect Option

MCH Keywords: Fast connect support requires that you add the CONNECT keyword on the X25.MCH statement at the time of generation. To select the CTCP, use one of the four CONNECT options:

- CONNECT=NO

  CONNECT=NO is the default and results in a non-fast connect MCH.

- CONNECT=YES

  When CONNECT=YES is specified, *neither* the CUD0 nor SUBD keywords can be used. Only a single CTCP can be used with CONNECT=YES.

- CONNECT=CUD0

  When CONNECT=CUD0 is specified, the first byte of the CUD field (CUD0) is used to select the CTCP. This keyword is paired with the CTCP keyword to create a correspondence table between the positional parameters specified within the CUD0 and CTCP keywords. This specification allows you to define up to 28 different CTCP destinations.

- CONNECT=SUBD

  When CONNECT=SUBD is specified, the subaddressing digit is used as the selection method for CTCP destination. In the case of fast connect, the *last* subaddressing digit determines the correct CTCP destination. Like CUD0, this keyword is paired with the CTCP keyword to create a correspondence table. Unlike CUD0, only 10 different destinations can be defined.

  Note: When subaddressing is used for CTCP selection with fast connect, but a subaddressing digit is not found in the correspondence table, the CUD0 field *cannot* be used as an alternative connection method, as it is in GATE. In this case, the call will be cleared.

For each different CTCP specified in the CTCP keyword, a set of additional keywords can be specified in relation to the CTCP number. Thus, CTCP-0 is specified as the first positional parameter on each of these keywords, CTCP-1 is the next positional parameter and so on through CTCP-27. A maximum of 28 parameters can be specified on the following keywords:

- LUNAME

  LUNAME specifies the MCH_LU names corresponding to each CTCP. These secondary logical units (SLUs) are in session with the appropriate CTCP.

- LOGAPPL

  LOGAPPL specifies the application name to which the LU is attached once the LU is successfully activated. This keyword places the VTAM-only keyword on the LU statements created by the X25.MCH statement and on the LUs created for the SNA resources used to map the SVCs related to the CTCP.

- MODETAB

  MODETAB defines the logmode entry table used between the MCH LUs defined in the LUNAME keyword and the CTCPs defined in the LOGAPPL keyword.

- TAXUNIT

  TAXUNIT specifies the number of characters that define a network tax unit that can be used for billing purposes. Valid values for this keyword are 32, 64, or 128. When this keyword is specified and either a CLEAR command, CLEAR CONFIRMATION command, or information/error report is sent to the CTCP, X.25 NPSI appends the billing information to the specified command.

  For V3R3 only: The valid values for the TAXUNIT keyword are 0, 32, 64, or 128, with 0 being the default. When you specify 0 on this keyword, X.25 NPSI counts the number of packets that are sent and received.

  Note: For V3R3, the use of billing units as statistical data affects panels NPDA-51F and NPDA-53F in NetView. In these panels, both the TRANSMISSION TOTAL and RECEIVE TOTAL can reflect billing units and not packet totals.

- VMODTAB

  VMODTAB defines the logmode table entry used for the sessions between the virtual circuits and the CTCPs. These virtual circuits are defined in the X25.FCG statement and the X25.VC statement.

FCG Keywords: Fast connect also requires that specific keywords be used in the X25.FCG statement. If more than one destination CTCP is attached to a particular MCH, an X25.FCG statement must be coded for each CTCP. This statement also defines the number of SNA sessions that will be allocated for fast connect use. Use the following keywords to achieve this:

- CTCPNO

  CTCPNO specifies which CTCP is being defined by the statement. Valid values range from 0—27.

- QTY

  QTY defines the number of SNA sessions created by this statement. The maximum value of this keyword is 4096.

The X25.FCG statement also defines the fast connect LINE, PU, and LU names with the following five keywords:

- PRFLINE—defines the prefix used for all LINEs.
- PRFPU—defines the prefix used for all PUs.
- PRFLU—defines the prefix used for all LUs.
- SUFFIX—defines the lower limit of the resource numbers.
- HEXNAME—defines whether the suffix incrementation is in hexadecimal or decimal; the default is YES.

The resource name is created by appending the suffix to the appropriate prefix. The length of the names is constant and is defined by the sum of the length of PRFLINE, PRFPU, or PRFLU, added to the length of the SUFFIX parameter.

Note: Because there is an 8-character limitation on labels, as the prefix increases, the suffix size decreases, reducing the number of resources that can be defined.

PRFLINE, PRFPU, PRFLU, and SUFFIX have no default. Choose either the X.25 NPSI default naming convention or specify the names using the PRFLINE, PRFPU, PRFLU, and SUFFIX keywords. The specifications cannot be mixed. X25.FCG also creates a GROUP statement for each instance of X25.FCG.

The following X25.FCG keywords are used to define specifications that sift down to the LINE, PU, and LU statement levels:

- MAXDATA
- ISTATUS
- NCPGRP
- OWNER
- SPAN
- ANS

Figure 20 on page 89 shows an example of a fast connect configuration. To create this environment, you can use the following X.25 NPSI keywords as an example:

```
X25.MCH        ADDRESS=XXX,
               CONNECT=CUD0,
               LOGAPPL=(CTCP1,CTCP2),
               CUD0=(00,09,01),
               CTCP=(00,01,00)

X25.LCG        LCGN=4

X25.VC         LCN=(1,100),
               VCCINDX=01,
               TYPE=S,
               CALL=IN

X25.FCG        QTY=80,
               CTCPNO=0,
               MAXDATA=2580,
               PRFLINE=XL12,
               PRFPU=XP12,
               PRFLU=XL12,
               SUFFIX=01

X25.FCG        QTY=70,
               CTCPNO=01,
               MAXDATA=2580,
               PRFLINE=XL13,
               PRFPU=XP13,
               PRFLU=XL13,
               SUFFIX=01
```

Note: SNA resources are defined using the X.25 FCG statement. Virtual circuits are defined using the X25.VC statement.

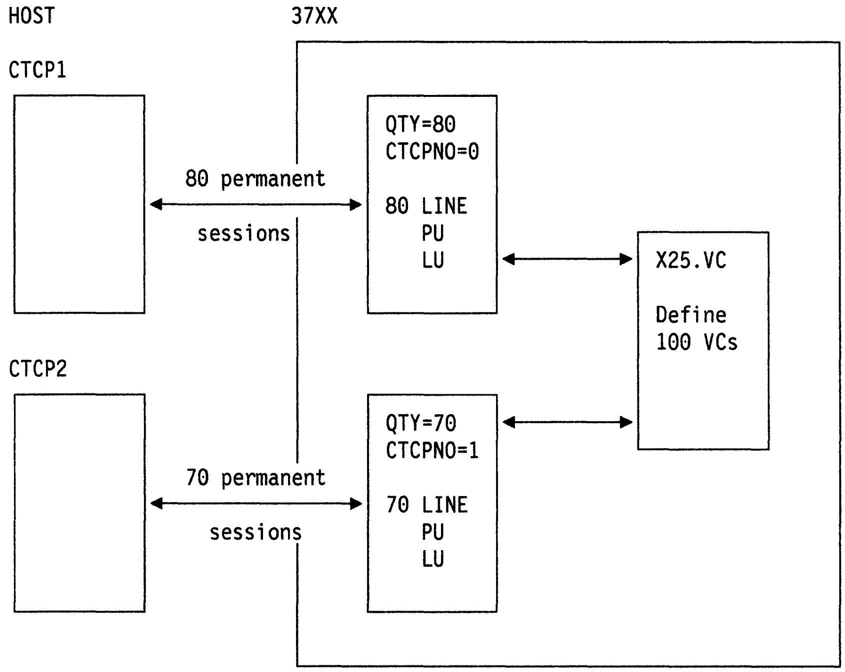

Figure 20. Fast Connect with Two CTCPs for One Physical Circuit

X.21 Leased Connections (V3R3 Only)

For X.21 leased connections or lines that use a speed greater than 19 200 bps, the scanner (TSS) must have knowledge of the line speed to select the LIC type 4B mode of operation.

For leased lines using speeds greater than 19 200 bps, you must define the following keywords on the X25.MCH statement:

- X21INTWK=OLD or 1984
- SPEED=xxxx

X.21 Switched Connections (V3R3 Only)

X.25 NPSI V3R3 provides support for X.21 switched connections. X.21 switched connections allow for DTE-to-DTE communication using an IBM 7820 terminal adapter across an integrated services digital network (ISDN). ISDN is a set of standards that provides for advanced high-speed communications and allows the simultaneous transmission of voice and data across the same line.

X.21 switched connections allow you to use ISDN services through X.25 NPSI. The physical resource associated with an X.21 switched connection is a GATE MCH that is dedicated to the ISDN connection. Only one CTCP, such as the Open Systems Interconnection Communication Subsystem (OS/Interconnection Communication Subsystem), can be associated with this MCH.

During system generation, you must define the following keywords on the X25.MCH statement to provide for X.21 switched connections:

- X21SW

  X21SW specifies that the physical line is an X.21 switched line. When you specify X21SW=YES, you must code the X25.MCH statement with the following keywords:

  X21NTWK=1984
  GATE=GENERAL
  LLCLIST=LLC4
  CONNECT=NO
  DIRECT=NO
  SPEED=xxx

  Note: You must specify SPEED=xxx to allow for the selection of LIC type 4B when speed is greater than 19 200 bps.

- X21NTWK

  The keyword X21NTWK on the X25.MCH statement specifies whether the physical line is attached to an X.21 network. At system generation, the value used for SPEED is processed and passed to the scanner at link activation only when X21NTWK=OLD or X21NTWK=1984 is specified on the X25.MCH statement.

- X21RTYTO

  X21RTYTO specifies the time-out interval that the scanner waits before retrying a call-out.

- X21RTYCT

  X21RTYCT specifies the number of retries that will be performed by the scanner following a time-out.

- X21INACT

  X21INACT specifies an inactivity timer, which checks for an active VC on the MCH. If no activity is found during the specified time, the X.21 connection is cleared.

The MCH defined for X.21 switched connections is dedicated to X.21 switched access. You can only define switched virtual circuits on this MCH.

PAD Support

PAD support is defined on the X25.MCH statement using the PAD keyword. X.25 NPSI provides two types of PAD support:

- Integrated PAD
- Transparent PAD.

Integrated PAD support is used to define a PAD that conforms to CCITT Recommendation X.28. To define integrated PAD support, you must code the PAD keyword as PAD=INTEG on the X25.MCH statement.

Integrated PAD support also allows applications to take advantage of X.25 NPSI password protection. To do this, the application must use the inhibit presentation (INP) or the enable (ENP) presentation characters. Hexadecimal codes for these are:

```
INP=24
ENP=14
```

Use transparent PAD support for all other types of PADs, except for the SDLC PAD. You should use transparent PAD support if you require more PAD control than is provided with the integrated PAD. To define transparent PAD, you must code the PAD keyword as PAD=TRANSP on the X25.MCH statement.

The default on the PAD keyword is PAD=NO. If you code NO or leave the PAD keyword off, PAD support is not available for virtual circuits on the physical circuit.

Note: LLC5 must be included in the LLCLIST to use PAD SVCs.

Generation of PAD Parameters (V3R3 Only)

You can generate one or more strings of PAD parameters by using the X25.PAD statement. You can select one parameter for each X25.PAD statement by coding an index value on the PADINDX keyword on the X25.MCH statement.

PCNE-to-PCNE Considerations

If you specify a PU associated with a type 0 virtual circuit, remember that the remote identification number generated in the Call Request packet is in CUD field bytes 1—3. This remote identification number, received from an Incoming Call packet by the remote DTE, will equal the ZZZZZ field plus 1.

The only relationship between two SNA domains is made by the remote identification number specified in the Call Request and Incoming Call packets.

The IDNUM keywords coded in the two domains need to be correlated so that it is clear which PU of one domain calls which PU of the other domain. Code your PU and PATH statements as illustrated in the following example:

```
    SNA Domain 1                      SNA Domain 2

PU11  PU  IDBLK=003,              PU22  PU  IDBLK=003,
          IDNUM=90001,                      IDNUM=90002,
              .                                 .
              .                                 .
              .                                 .
PA11  PATH DIALNO...*90001,     * No PATH (PU is used for call-in)
              .
              .
              .
```

The ZZZZZ field of PU11 is used as IDNUM for PU11 and is incremented by 1 to be used as IDNUM for calling in PU22.

Multichannel Link Compatibility

Table 9 shows the compatibility of GATE, DATE, integrated PAD, transparent PAD, and PCNE on the same multichannel link for X.25 NPSI.

Note: X.25 NPSI V3R3 allows both integrated PAD and DATE to coexist on the same multichannel link.

Table 9. Enhanced Multichannel Link Compatibility

	GATE	**DATE**	**Integrated PAD Support**	**Transparent PAD Support**	**PCNE**
GATE	N/A	No	Yes	Yes	Yes
DATE	No	N/A	Yes	Yes	Yes
Integrated PAD Support	Yes	Yes	N/A	No	Yes
Transparent PAD Support	Yes	Yes	No	N/A	Yes
PCNE	Yes	Yes	Yes	Yes	N/A

Chapter 4. Resource Definition Reference

Chapter 4. Resource Definition Reference

This chapter contains general-use programming interfaces. See "About This Book" on page xi for the proper use of these interfaces.

This chapter presents the resource naming conventions and resource definition statement formats in alphabetical order, uses tables to illustrate the statement format, and describes the keywords for each statement. For purposes of clarity, each statement section starts on a new page.

Read "Planning for X.25 NPSI Migration" on page 57 to learn about X.25 NPSI changes in the generation process.

Resource Naming Conventions

X.25 NPSI resource names are used by VTAM, the NetView program, and teleprocessing subsystems, such as CICS or IMS, during the operation of the network system.

X.25 NPSI resource names can be created in three ways:

- NDF creates default resource names during the generation process if you do not specify a label on the resource statement. Be sure that your own user-specified names are not duplicated by the default resource names built by NDF.
- You can override the default and code your own user-specified names on the X25.LINE, X25.MCH, X25.PU, and X25.LU definition statements.
- You can specify resource names generically on the X25.FCG and X25.VC definition statements.

All resource names built by default during X.25 NPSI generation use the letter specified by the value of the X25.PREFIX keyword on the NCP BUILD statement. This is by default, an X. See "BUILD Definition Statement" on page 99 for information on replacing X with a user-specified letter.

NDF builds the resource names for the following:

- Physical circuit

```
pLxxx LINE
pPxxx PU
pUxxx LU or
pUxxxLnn (for any LU other than the first, if more than one LU
          is defined for the MCH GATE)
```

where:

p — Is the X25.PREFIX keyword of the BUILD statement (default=X).

xxx — Is the physical circuit line address specified by the ADDRESS keyword on the X25.MCH statement.

nn — Is the number of the LU (for example 01 for LU1, 02 for LU2 and so on, up to 27). The first LU (LU number 00) is named pUxxx.

- GROUP statement created by X25.MCH

  Each X25.MCH statement creates a unique GROUP statement.

  ```
  pNETnm
  ```

  where:

  p Is the X25.PREFIX keyword of the BUILD statement (default=X).

  n Is the position of the previous X25.NET statement within the X.25 NPSI generation source statements.

  m Is the rank of this MCH within the previous X25.NET statement.

- Virtual circuit

  ```
  pLxxxyzz LINE
  pPxxxyzz PU
  pUxxxyzz LU
  ```

  where:

  p Is the X25.PREFIX keyword of the BUILD statement (default=X).

  xxx Is the physical circuit line address specified by the ADDRESS keyword on the X25.MCH statement.

  y Is the logical channel group number (in hexadecimal) of the current virtual circuit.

  zz Is the logical channel number (in hexadecimal) of the current virtual circuit.

  Note: The same defaults are generated for LINE, PU, and LU. There is no distinction between the X25.VC, X25.LINE, X25.PU, or X25.LU statements relative to the generation of these defaults.

- GROUP statement created by X25.LINE or X25.VC statement

  ```
  p25Pxxxy for PVCs
  p25Sxxxy for SVCs
  ```

  where:

  p Is the X25.PREFIX keyword of the BUILD statement (default=X).

  xxx Is the physical circuit line address as coded in the X25.MCH ADDRESS keyword (1—3 digits).

  y Is the letter specifying the group sequence on the physical circuit. The first group will be assigned an A, the second group a B, and so on.

- SVCSC

  ```
  pLxxxvvv LINE
  pPxxxvvv PU
  ```

  where:

  p Is the X25.PREFIX keyword of the BUILD statement (default=X).

  xxx Is the address of the MCH.

  vvv Is the number of the SVCSC line or PU within the MCH expressed in base 20, with letters G—Z used to represent the numbers 0—19, respectively. For example, the first name is pLxxxGGH; the second name is pLxxxGGI, and so on.

- X25.FCG statement

  ```
  pLGmnggg   LINE
  pPGmnggg   PU
  pUGmnggg   LU
  ```

  where:

  p — Is the X25.PREFIX keyword of the BUILD statement (default=X).

  m — Is the number of the X25.MCH with CONNECT=CUD0 or CONNECT=SUBD. This single alphanumeric number ranges from 0–9 and A–Z. The number of MCHs with fast connect is limited to 36.

  n — Is the number of the CTCP defined within the MCH. This number is then converted into a single alphanumeric in the range 0–9 and A–R.

  ggg — Is the SNA resource number in hexadecimal.

- GROUP statement created by X25.FCG statement

  Each X25.FCG statement creates a unique GROUP statement.

  ```
  p25PGmnj   GROUP
  ```

  where:

  p — Is the X25.PREFIX keyword of the BUILD statement (default=X)

  m — Is the number of the X25.MCH with CONNECT=CUD0 or CONNECT=SUBD. This single alphanumeric number ranges from 0–9 and A–Z. The number of MCHs with fast connect is limited to 36.

  n — Is the number of the CTCP defined within the MCH. This single alphanumeric number ranges from 0–9 and A–R.

  j — Is an alpha character in the sequence A–Z.

In addition to NDF-generated names, you can specify unique rules for name creation using the following keywords:

- PRFLINE
- PRFPU
- PRFLU
- SUFFIX
- HEXNAME

The following examples show coding for the keywords PRFLINE, PRFPU, PRFLU, and SUFFIX, and the names that are generated. The first example is:

```
X25.VC  LCN=(1,100),TYPE=S,OUFINDX=1,VCCINDX=1,
        PRFLINE=AL1,PRFPU=AP1,SUFFIX=001,HEXNAME=NO
```

The names generated are as follows:

```
AL1001 to AL1100 for the LINEs
AP1001 to AP1100 for the PUs
the SUFFIX goes from 001 to 100 in decimal.
```

The second example is:

```
X25.VC  LCN=(1,100),TYPE=P,VCCINDX=1
        PRFLINE=AL1,PRFPU=AP1,PRFLU=AU1,SUFFIX=001
```

The names generated are as follows:

```
AL1001 to AL1064 for the LINEs
AP1001 to AP1064 for the PUs
AU1001 to AU1064 for the LUs
the SUFFIX goes from 001 to 064 in hexadecimal.
```

Note: To simplify X.25 NPSI resource identification in the host processor, use the NDF default naming convention. In X25.NPSI, entering duplicate names and values is not allowed for either resource names or concatenated PRFxx names and SUFFIX values.

X.25 NPSI uses macros to describe its control blocks during NCP stage 2 generation. Because these macros are prefixed with BAK, you cannot use BAK to define other macros.

Also, because the entry points within the X.25 NPSI load module begin with the prefix BAL, you cannot use BAL to define other entry points in any customized X.25 NPSI code.

Conventions Used in This Chapter

The following conventions are used throughout this chapter:

- Capital letters represent values you code directly, without changing.
- Small letters represent variables for which you must supply values.
- Commas separate keywords and the keyword values.
- Brackets [ ] enclose *optional* or *conditional* keywords and symbols.

An *optional* keyword can be coded or omitted, independent of other keywords. If certain keywords are omitted, default values will be used. A keyword's default value is always given as one of the choices.

A *conditional* keyword can be coded or omitted, depending on how you code (or omit) other keywords in the same or other definition statements.

Within the definition statement description, required keywords appear first in alphabetical order. Then, the conditional or optional keywords follow in alphabetical order.

- Braces { } indicate that you must choose from the enclosed values.
- OR symbol | indicates that you must choose from the values on either side of the symbol.
- An underlined value represents the default value of the keyword. X.25 NPSI generation uses that value if you omit the keyword.
- Parentheses ( ) must enclose a sequence of values coded for one keyword.
- Single quotation marks must enclose a character string if that character string can be confused with a value for a keyword. Enclosing the character string in quotation marks lets you use certain names as symbols that you would be prevented from using otherwise.

- Numbers have a period between the whole and fractional portions of the numeral. For example, 1.5 denotes one and a half.

In the syntax lists at the beginning of each definition statement, each required keyword, except the last, is followed by a comma. Similarly, each optional keyword, after the last required keyword, is preceded by a comma. However, if the lists consist of optional keywords only, each optional keyword, except the first keyword, is preceded by a comma. These commas are shown to emphasize that you must code a comma between each keyword, but not after the last keyword or before the first keyword of each definition statement.

The X.25 NPSI generation procedure does not check NCP, NetView, or VTAM keywords for proper syntax. The generation process also does not verify that any related keywords are absent or present. For the meaning of the keywords, see the appropriate NCP, NetView program, or VTAM installation books.

BUILD Definition Statement

The X25BUILD statement is no longer a valid X.25 NPSI definition statement. Information provided by this macro must now be specified on the NCP BUILD statement. If you code an X25BUILD statement, it is flagged with a severity 4 warning message. No keyword processing occurs for the statement found in error.

Several keywords previously coded on the X25BUILD statement are now coded by using equivalent keywords on the NCP BUILD statement. However, some keywords do not have a corresponding NCP keyword. See Appendix C, "Statement and Keyword Changes," for a complete list of X25BUILD keywords.

Former keywords must be modified before they are added to the NCP BUILD statement. To do this, add the prefix 'X25.' to each keyword to designate it as a unique X.25 NPSI keyword. For example, IDNUMH is now coded as X25.IDNUMH.

X.25 NPSI specifies the following eight keywords that are valid for the NCP BUILD statement:

X25.IDNUMH (For V3R2 and Previous Releases): X25.IDNUMH specifies the first 2 digits of the IDNUM for PUs used to map non-SNA resources. Code the IDNUMH value in hexadecimal. The default value is 00; valid values range from 00 – 0F.

X25.IDNUMH (For V3R3 only): X25.IDNUMH specifies the first digit of the IDNUM for PUs used to map non-SNA resources. Code the IDNUMH value in hexadecimal. The default value is 0; valid values range from 0 – F.

X25.MAXPIU (For V3R2 and Previous Releases): X25.MAXPIU specifies the maximum length for inbound PIUs. Code the length in kilobytes or in bytes. The default value is 64K. The X25.MAXPIU value ranges from 2K – 64K for kilobytes and 1296 – 65 535 for bytes.

X25.MAXPIU (For V3R3 only): X25.MAXPIU specifies the maximum length for inbound PIUs. Code the length in kilobytes or in bytes. The default value is 64K. The X25.MAXPIU value ranges from 2K – 1000K for kilobytes and 1296 – 102 4000 for bytes.

X25.MCHCNT: X25.MCHCNT specifies the number of physical circuits defined in the X.25 NPSI generation statements. Code X25.MCHCNT in decimal. The default value is 1; valid values range from 1–4095.

X25.MWINDOW: X25.MWINDOW specifies the frame window size used by link access procedure balanced (LAPB). Valid values range from 1–7.

Note: MWINDOW applies to all X25.MCH statements that follow unless the X25.MCH statement overrides the X25.MWINDOW.

X25.PAHINDX (For V3R3 Only): X25.PAHINDX specifies the largest *index* value coded in the X25.PAD statements. Valid values range from 1–99; the default value is 1.

X25.PREFIX: X25.PREFIX specifies the first letter for X.25 NPSI default resource names. Code the X25.PREFIX value as an alphabetic character that ranges from A–Z. The default value is X.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI.

X25.SNAP: X25.SNAP sets the SNAP trace facility on during generation. Code YES when you want the SNAP trace facility. The default value is NO. See *X.25 NPSI Diagnosis, Customization, and Tuning* for instructions on how to use the SNAP trace facility with X.25 NPSI.

X25.USGTIER: X25.USGTIER specifies the usage tier where this X.25 NPSI Version 3 load module will operate. The value must be less than or equal to the usage tier installed with this X.25 NPSI. To determine the ordered usage tier, look at your IBM licensing agreement. The default value is 1; valid X25.USGTIER values are; 1, 2, 2.5, 3, 4, and 5.

For V3R2 and later releases: A value of 2.5 is added. If you specify a value that exceeds the installed feature level, the X.25 NPSI generation will fail.

The X25.USGTIER value specified for X.25 NPSI generation must *not* be less than the usage tier value specified by the USGTIER keyword of the NCP BUILD statement for the associated NCP Version 5. If you specify an X25.USGTIER value that is less than the USGTIER value specified for the associated NCP, the X.25 NPSI generation will fail. The MCHs that can be generated for X.25 NPSI depend on the NCP USGTIER. The MCH addresses cannot exceed the USGTIER coded for the NCP.

An example of how to code the usage tier parameters is as follows:

```
BUILD USGTIER=3,        NCP Version 5 usage tier
      X25.USGTIER=3,    X.25 NPSI Version 3 usage tier
          .             Other parameters
          .
          .
```

NCP V5R1 requires that at least one NCP LINE, PU, and LU statement be defined in an X.25 NPSI generation before any user LINE statement is defined. A dummy LINE can be defined if ISTATUS=INACTIVE is specified.

See Appendix B, "Installation Examples for X.25 NPSI," for an example of coding NCP GROUP, LINE, PU, and LU statements.

SWMMT Definition Statement

SWMMT is a new statement that is valid only for switched subarea lines. The SWMMT statements follow the NCP BUILD and SYSCNTRL statements and are placed before the first GROUP statement.

The format of the SWMMT statement is:

name	SWMMT	IDNUM=specific ID NETID=network ID, MAXOUT=number

name must match the SWMMTID=*name* on the X25.LINE statement.

For more information on the SWMMT statement, see *NCP, SSP, and EP Resource Definition Reference.*

X25.END Statement

USAGE: Required.

POSITION: Last in X.25 NPSI definition statements.

FORMAT AND KEYWORDS: The format of the X25.END definition statement is:

symbol	X25.END

Use the X25.END statement to end X.25 NPSI generation. Do not include any keywords with this statement.

Keywords

This definition statement has no keywords.

symbol

Is an optional label for the X25.END statement.

Note: If this statement is not included with your X.25 NPSI source statements, NDF will produce a severity 8 warning message. NDF will also flag the following keywords with a severity 4 warning message:

- INCHI
- INCINIT
- INCL2HI
- INCL2LO
- INCPRFX
- LSTUACB
- NCPSTG1
- ORDHI
- ORDINIT
- ORDL2HI
- ORDL2LO
- SRCHI
- SRCLO
- X25VTAM

X25.FCG Statement

USAGE: Defines the SNA resources used with fast connect. Use the X25.FCG statement to define SNA resources (LINE, PU, and LU) that will map to SVCs connected to more than one CTCP.

POSITION: X25.FCG statements follow the corresponding X25.MCH statement in the source statements and follow the X25.VC statements related to that MCH.

The mandatory order of the statements is as follows:

- X25.MCH
- X25.LCG
- X25.VC
- X25.FCG

When you connect several fast connect CTCPs through one physical circuit, you must have one X25.FCG statement for each CTCP. Do *not* code an X25.FCG statement if you use only one CTCP. Code CONNECT=YES on the X25.MCH statement instead. The sample generation in Appendix B, "Installation Examples for X.25 NPSI," contains sample X25.FCG statements and shows their position within a generation deck.

FORMAT AND KEYWORDS: The format of the X25.FCG definition statement is:

```
symbol      X25.FCG      keywords
```

VTAM Users: Appearing after the keyword list are VTAM keywords that can be coded on this definition statement. These keywords provide information only to the VTAM initialization process and are not required in the generation definition used as input to NCP generation. See the appropriate VTAM installation book for descriptions of these keywords and for information on the VTAM initialization process.

Keywords

```
CTCPNO=number,

QTY=number

[,ANS={CONTINUE|CONT}]
      {STOP         }

[,HEXNAME={NO }]   (For V3R2 and later releases)
          {YES}

[,ISTATUS={ACTIVE  }]
          {INACTIVE}

[,MAXDATA={number}]

[,NCPGRP={NEW       }]
         {identifier}

[,PRFLINE=x]

[,PRFLU=z]

[,PRFPU=y]
```

Keywords

```
[,SPAN=name]
[,STATOPT=text string] (For V3R3 only)
[,SUFFIX=number]
```

VTAM Keywords

```
[,DISCNT=...]
[,DLOGMOD=...]
[,ENCR=...]
[,FEATUR2=...]
[,LOGTAB=...]
[,OWNER=...]
[,SSCPFM=...]
[,TERM=...]
[,USSTAB=...]
[,VPACING=...]
```

symbol

Is an optional name for the X25.FCG statement. It is not used by VTAM or NCP.

CTCPNO=*number*

General-Use Programming Interface

Is the number of the CTCP defined by the X25.FCG statement. Refer to the X25.MCH statement for the CTCP keyword. The range, written in decimal from 0—27, cannot exceed the maximum CTCP number for the physical circuit.

End of General-Use Programming Interface

QTY=*number*

General-Use Programming Interface

Is the number of simultaneous SNA sessions authorized for the specified CTCP. The number can range from 1—4096, but it must be less than or equal to the number of virtual circuits defined for the physical circuit.

End of General-Use Programming Interface

[ANS={CONTINUE|CONT}]
{STOP }

Specifies the ANS keyword that is copied in the NCP PU statement for the SNA resources that are defined. CONTINUE can be abbreviated as CONT. Code ANS=CONT if session continuation is desired for the dependent virtual circuits. X.25 NPSI provides no default.

[HEXNAME={NO }]
{YES}

V3R2 and later releases: Specifies whether the suffix of the LINE name, PU name, and LU name for the NCP builds in hexadecimal or decimal when the SUFFIX keyword is used. Coding HEXNAME=NO requires the coding of PRFLINE, PRFPU, PRFLU, and SUFFIX. The default value is YES.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to code the related statement keywords.

[ISTATUS={ACTIVE }]
{INACTIVE}

Specifies whether the lines, physical units, and logical units are activated following a VTAM first start or cold restart. X.25 NPSI provides no default. This keyword and parameter are copied to the generated NCP LINE statements.

[MAXDATA={*number*}]

Specifies the maximum number of bytes in a PIU. Because X.25 NPSI does not support SNA segmenting for non-SNA DTEs, the value specified for MAXDATA should be greater than the maximum PIU size sent by the application. See *NCP, SSP, and EP Resource Definition Reference* for calculation and more information about MAXDATA.

[NCPGRP={NEW }]
{*identifier*}

Is a label applied to the NCP group. If you code NEW or omit this keyword, the default name for the NCP group will be:

```
p25PGmnj
```

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to code the related statement keywords.

[PRFLINE=_x_]

Specifies a user-defined prefix for the name of the LINE statement used for fast connect. The default prefix generated by X.25 NPSI is:

```
pLGmnggg
```

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to code the related statement keywords.

[**PRFLU**=*z*]

Specifies a user-defined prefix for the name of the LU used for fast connect. The default prefix generated by X.25 NPSI is:

pUGmnggg

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to code the related statement keywords.

[**PRFPU**=*y*]

Specifies a user-defined prefix for the name of the PU used for fast connect. The default prefix generated by X.25 NPSI is:

pPGmnggg

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to code the related statement keywords.

[**SPAN**=*name*]

Specifies that the NetView program operator's access to the virtual circuit line is restricted. This specification is copied to the LINE, PU, and LU statements generated by the X25.FCG statement.

[**STATOPT**=*text string*]

For V3R3 only: The STATOPT keyword and its text string operand are copied as specified into a comment statement following the LINE statement generated by NDF.

[**SUFFIX**=*number*]

Specifies a number that is the lower limit for each set of names built. There is no default. This keyword must be coded together with PRFLINE, PRFPU, and PRFLU if user-defined names are to be generated. The length of the names is equal to the length of PRFLINE, or PRFPU, or PRFLU, added to the length of the SUFFIX parameter. Values range from 0—X'FFF' if HEXNAME=YES, and from 0—4095 if HEXNAME=NO.

PRFLINE, PRFPU, PRFLU, and SUFFIX must be coded together.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to code the related statement keywords.

X25.LCG Statement

USAGE: Use this statement to describe the logical channel group (LCG). You must code an X25.LCG statement for each LCG defined on a physical circuit.

POSITION: This statement follows the X25.MCH statement and precedes the virtual circuit definition for this group.

FORMAT AND KEYWORDS: The format of the X25.LCG statement is:

X25.LCG keywords

Keywords

LCGN=*number*

LCGN=*number*

Specifies the logical channel group number (LCGN) for all virtual circuits specified by the subsequent X25.VC or X25.LINE statements. Valid values range from 0—15. You must define the number in the LCGDEF keyword of the preceding X25.MCH statement.

Note: If you use more than one LCG, code the LCG numbers in the X25.LCG statements in ascending order.

X25.LINE Statement

USAGE: Use the X25.LINE statement to define the characteristics of a virtual circuit. This statement is similar to the X25.VC statement. The X25.LINE statement generates an NCP LINE statement and allows you to control the LINE name and some parameters of the NCP LINE statement.

POSITION: Arrange X25.LINE statements that define virtual circuits associated with the same logical channel group in ascending order by logical channel number. Each X25.LINE statement must be followed by one X25.PU statement. If you are defining a non-subarea node PVC, it also must be followed by at least one X25.LU statement.

FORMAT AND KEYWORDS: The format of the X25.LINE statement is:

symbol	X25.LINE	keywords

VTAM Users: Appearing after the keyword list are VTAM keywords that can be coded on this definition statement. These keywords provide information only to the VTAM initialization process and are not required in the generation definition used as input to NCP generation. See the appropriate VTAM installation book for descriptions of these keywords and for information on the VTAM initialization process.

You cannot modify the X.25 level 3 DTE timer with X25.LINE. These values, set according to the CCITT 84 Recommendations, are as follows:

Timer and Seconds	Packet
T20=180 seconds	Restart Request
T21=200 seconds	Call Request
T22=180 seconds	Reset Request
T23=180 seconds	Clear Request
T26=180 seconds	Interrupt Confirmation (For V3R3 only) Specifies the waiting time for Interrupt Confirmation under integrated PAD or GATE. The valid range is from 10—225; the default is 180 seconds.

If these values do not meet your specific requirements, use the DATE function to select appropriate values or select the values using the T20, T21, T22, T23, or T26 keywords of the X25.NET statement.

Keywords

```
TYPE={SWITCHED |S },
     {PERMANENT|P},

[,CALL={OUT  }]
       {IN   }
       {INOUT}

[,COMMITO={1}]
          {2}
          {4}
          {8}
```

Keywords

```
[,DSTNODE={BNN}]
         {INN}

[,ID={bbbfffff}] (For V3R3 only)

[,IDNUMT={ffff}] IDNUMT must be an even number (For V3R3 only)

[,IPL={NO}] (For V3R3 only)
      {YES}

[,ISTATUS={ACTIVE  }]
          {INACTIVE}

[,LCN=number]

[,LLC={LLC0}]
      {LLC2}
      {LLC3}
      {LLC4}
      {LLC5}

[,MODE={SECONDARY}]   (For V3R3 only)
       {SEC}

[,MONLINK={YES }]
          {NO  }
          {CONT}   (For V3R3 only)

[,NCPGRP={label}]
         {NEW  }

[,OSITYPE={number}]
          {0     }

[,OUFINDX=index]

[,RETVCCT={count}]
          {3    }

[,RETVCTO={timeout}]
          {30     }

[,SPAN=name]

[,STATOPT=text string]  (For V3R3 only)

[,SWMMTID=name]  (For V3R3 only)

[,TADDR=chars]

[,TRANSFR=count]

[,VCCINDX=index]
```

VTAM Keywords

```
[,OWNER=...]
```

symbol

Is an optional name that labels the corresponding LINE statement in the NCP source statements, and serves as the symbolic name for the virtual circuit that you define. The default name generated by X.25 NPSI is:

pLxxxggg

See "Resource Naming Conventions" on page 95 for X.25 NPSI default name resources.

```
TYPE={SWITCHED|S }
     {PERMANENT|P}
```

Specifies the virtual circuit type. This keyword is required and has no default value. To define an SVC, code TYPE=SWITCHED or TYPE=S. To select a PVC, code TYPE=PERMANENT or TYPE=P. If the MCH is dedicated to fast connect, code TYPE=S.

```
[CALL={OUT   }]
      {IN    }
      {INOUT }
```

Specifies the way an SVC is established. You can use this keyword only if TYPE=SWITCHED or TYPE=S is coded.

Use CALL=IN if the virtual circuit that you define will be established at the request of a remote DTE rather than X.25 NPSI.

Do not specify CALL=IN on any virtual circuit definition following an X25.MCH statement that specifies a value greater than 0 for the SVCINN keyword.

Use CALL=OUT if the virtual circuit that you define will be established at the request of the local host access method through X.25 NPSI.

CALL=INOUT means that a virtual circuit can be established in either way.

For a DATE physical circuit, you must code the CALL keyword to match your PSDN subscription.

For a GATE MCH, if you want to reserve a certain number of virtual circuits for non-GATE call-outs, code CALL=OUT for the required number of virtual circuits. The number of virtual circuits used to call out by the CTCP should be declared as CALL=INOUT or CALL=IN.

```
[COMMITO={1}]
         {2}
         {4}
         {8}
```

Specifies, in seconds, the idle virtual circuit commit time-out. When this time elapses, buffers that were committed for this virtual circuit are decommitted. The default value is 4.

Do not specify COMMITO when TYPE=SWITCHED or TYPE=S, and DSTNODE=INN.

[DSTNODE={BNN}]
{INN}

Specifies the type of destination node. The DSTNODE keyword is meaningful only for virtual circuit type 3. DSTNODE=BNN means that the virtual circuit is connected to a peripheral node, such as a cluster or a terminal. DSTNODE=INN means that the virtual circuit is connected to a subarea node, such as another communication controller. The default value is BNN. With V3R2 and later releases, you can specify DSTNODE=INN together with TYPE=SWITCHED or TYPE=S.

[ID={bbbfffff}]

For V3R3 only: Specifies the ID parameter used to support the NCP anonymous caller function, where bbb is the IDBLK value and fffff represents five hexadecimal digits and is the IDNUM value on the X.25 LINE group. If ID is not specified, the value is taken from the IDBLK/IDNUM of the remote DTE.

Note: The ID keyword can only be applied to LLC2 and LLC3 without SVCSC, and to LLC0 without subaddressing or DATE. These LLC types are mutually exclusive on a unique MCH.

[IDNUMT={ffff}]

For V3R3 only: Specifies four hexadecimal digits to add to the hexadecimal digit specified by the NCP BUILD X25.IDNUMH keyword to form the IDNUM that X25.NPSI can use for connections with a non-SNA DTE. See Table 5 on page 74 for the circumstances that use IDNUM to establish virtual calls. The default is a number that is generated internally by X.25 NPSI based on the order of the SVCs in the generation. The IDNUMT keyword must be an even number.

[IPL={YES}]
{NO }

For V3R3 only: Specifies whether the NCP being generated can be loaded and dumped over this line. The default is NO.

[ISTATUS={ACTIVE }]
{INACTIVE}

Specifies whether the line is activated following a VTAM first start or cold restart. X.25 NPSI provides no default. This keyword and parameter are reported on the generated NCP LINE statements.

[LCN=*number*]

Specifies the logical channel number (LCN) of the defined virtual circuit. Code this value in decimal notation. Valid values range from 0—255.

Do not specify LCN when TYPE=SWITCHED or TYPE=S, and DSTNODE=INN. For all other combinations of TYPE and DSTNODE, specified or defaulted to, LCN must be specified.

Note: Some networks do not use the value 0 within logical channel group 0.

```
[LLC={LLC0}]
     {LLC2}
     {LLC3}
     {LLC4}
     {LLC5}
```

General-Use Programming Interface

Specifies the type of PVC defined by this statement. This keyword is used only for PVCs, because X.25 NPSI defines the LLC type for SVCs at call setup. This keyword is mandatory when you code TYPE=PERMANENT or TYPE=P.

- Code LLC0 if the virtual circuit goes to a non-SNA DTE and does not require GATE or PAD support (type 0 virtual circuit).
- Code LLC2 if the virtual circuit goes to an SNA peripheral node (type 2 virtual circuit) attached with PSH protocol.
- Code LLC3 if the virtual circuit goes to an SNA peripheral node attached with QLLC protocol or to another subarea node (type 3 virtual circuit).
- Code LLC4 if the virtual circuit requires GATE support (type 4 virtual circuit).
- Code LLC5 if the virtual circuit connects to a terminal requiring PAD support (type 5 virtual circuit). Specify the type of PAD support (integrated or transparent) using the PAD keyword of the X25.MCH statement.

End of General-Use Programming Interface

```
[MODE={SECONDARY}]
      {SEC}
```

For V3R3 only: The MODE keyword is only applicable to Casual Connection on PVC. MODE specifies the type of operation for a line group. MODE=SEC must be coded on the secondary side. You must not code the primary side. The NDF facility of X.25 NPSI generates one GROUP statement when a change is detected in the MODE keyword. It is not recommended to interleave primary and secondary mode definitions. MODE is valid only if LLC3 is coded on the X25.LINE statement. If MODE=SEC, you must code the TADDR keyword in X25.LINE.

```
[MONLINK={YES }]
         {NO  }
         {CONT} (For V3R3 only)
```

Specifies the value given to this keyword in the corresponding NCP LINE statement. There is no default value. Code YES if this is a remote NCP to be activated over the subarea node PVC. See *NCP, SSP, and EP Resource Definition Reference* for details.

If the only connection to the communication controller is over a PSDN, the associated X.25 MCH statement must specify XMONLNK=YES and ANS=CONT if any subarea communication PVC specifies MONLINK=YES.

[**NCPGRP**={*label*}]
{**NEW** }

Specifies the label of the NCP GROUP statement that includes the virtual circuit. If you do not specify this value, the name is generated by NDF. You can code this keyword if you want to modify the group name to which this LINE belongs.

If you specify a *label*, a new NCP GROUP statement is created that uses this label as its name.

If you specify NEW, a new NCP GROUP statement is automatically created at X.25 NPSI generation.

X.25 NPSI creates one group of PVCs, one group of SVCs, and one group of SVCSCs by default for each X25.MCH definition. If you omit the NCPGRP keyword, the virtual circuit will belong to the group with the most recently created name. The default name is generated as follows:

```
p25Pxxxy for PVCs
p25Sxxxy for SVCs
```

See "Resource Naming Conventions" on page 95 for X.25 NPSI default naming resources.

Note: This keyword can no longer be used to make a call-out on a virtual circuit belonging to a given set of virtual circuits within an MCH. If a virtual circuit is within an MCH, X.25 NPSI allocates the virtual circuits for call-outs starting from the largest virtual circuit number available for call-out.

[**OSITYPE**={*number*}]
{**0** }

General-Use Programming Interface

Specifies, in decimal, the GATE CTCP with which this virtual circuit must communicate. This parameter applies to PVCs only, and must be used when the MCH is capable of communicating with several GATE CTCPs. If the MCH is not capable of communicating with more than one GATE CTCP, this keyword must be omitted. Valid values range from 0—27. The default value is 0.

End of General-Use Programming Interface

[**OUFINDX**=*index*]

Specifies the default index value in the X25.OUFT table. The index value points to the table entry that builds the facility field and the end of the CUD field in a Call Request packet. OUFINDX serves as a default for call-outs if you code yy=00 in the DIALNO keyword. Valid values range from 1—99. This keyword is required when you code TYPE=SWITCHED or TYPE=S. This keyword is not required when you code DSTNODE=INN.

[**RETVCCT**={*count*}]
{**3** }

Specifies the number of retransmissions of a physical services command. RETVCCT is used only when the virtual circuit goes to an SNA DTE. Valid values range from 0—255; the default value is 3.

[**RETVCTO**={*timeout*}]
{**30** }

Specifies the time between retransmissions of physical services commands when the virtual circuit is connected to an SNA DTE. Valid values range from 0—255 seconds; the default value is 30 seconds.

For the 3710, specify a value greater than the time needed to perform recovery for a downstream device.

[**SPAN**=*name*]

Specifies that the NetView program operator's access to the virtual circuit line is restricted. This specification is copied to the LINE, PU, and LU statements generated by the X25.LINE statement.

[**STATOPT**=*text string*]

For V3R3 only: The STATOPT keyword and its text string operand are copied as specified into a comment statement following the LINE statement generated by NDF.

[**SWMMTID**=*name*]

For V3R3 only: This keyword is valid only on a LINE dedicated to SVCSC. It contains the name of a switched SMMF table defined by a group of SWMMT statements.

[**TADDR**=*chars*]

For V3R3 only: The TADDR keyword is required if you specify MODE=SEC. TADDR specifies a symbolic link station address for a type 4 PU NCP on a subarea link.

chars is the 2-digit hexadecimal representation of the EBCDIC character you choose for the symbolic address. If you omit TADDR, the default is the EBCDIC representation of the subarea address of this NCP. For example, if this NCP has a subarea address of 3 and a symbolic address of D, code TADDR=C4. However, if you do not code TADDR, the default address for this controller is be generated as TADDR=03.

[**TRANSFR**=*count*]

Specifies the number of NCP buffers corresponding to the maximum amount of data that can be received from the line during a single data transfer operation. This keyword applies only to subarea node virtual circuits.

[**VCCINDX**=*index*]

Specifies the entry in the connection parameter table that contains the operational characteristics of the virtual circuit defined by this X25.LINE statement.

Valid values range from 1—99. The index serves as a default for call-outs if you code XX=00 in the DIALNO keyword.

Packet and window sizes defined in the corresponding entry of the VCCPT must be the same as the values assigned by the PSDN.

Do not specify VCCINDX when TYPE=SWITCHED or TYPE=S, and DSTNODE=INN. For all other combinations of TYPE and DSTNODE specified or defaulted to, VCCINDX must be specified.

X25.LU Statement

USAGE: Use this statement to define an LU associated with the DTE. The keywords are the same as those for the NCP LU statement.

POSITION: This statement follows the X25.PU statement for PVC definitions.

FORMAT AND KEYWORDS: The format of the X25.LU statement is:

symbol	X25.LU	keywords

Code one X25.LU statement for each logical unit associated with a virtual circuit. For more information on the LU statement and its keywords, see *NCP, SSP, and EP Resource Definition Reference*.

Keywords

[LOCADDR=number]

[,LUDR=NO]

[,NPACOLL=NO]

symbol

Is an optional field that provides a resource name for the logical unit. The default name is:

pUxxxyzz

When multiple LUs are attached to the same PU, you must use *symbol* on each X25.LU statement. However, SNA naming conventions do not permit the term *symbol* to be duplicated within a single network.

See "Resource Naming Conventions" on page 95 for X.25 NPSI default name resources.

[**LOCADDR**=*number*]

Specifies the local address of the logical unit in decimal with no leading zeros. For LLC types 0, 4, and 5 you must code LOCADDR=0.

[**LUDR**=**NO**]

Specifies whether the logical unit can be deleted by dynamic reconfiguration. Because X.25 NPSI does not support dynamic reconfiguration, X.25 NPSI places LUDR=NO in the statement.

[**NPACOLL**=**NO**]

Specifies whether data transmitted and received by this logical unit is eligible for collection by the NetView performance monitor (NPM). Because X.25 NPSI does not support NPM, X.25 NPSI places NPACOLL=NO in the statement. The sample program in Appendix B, "Installation Examples for X.25 NPSI," contains sample X25.LU statements for several types of virtual circuits.

[**,STATOPT**=*test string*]

For V3R3 only: The STATOPT keyword and its text string operand are copied as specified into a comment statement following the LU statement generated by NDF.

X25.MCH Statement

USAGE: Use this statement to describe a physical circuit to X.25 NPSI. It generates an NCP LINE statement, an NCP PU statement, and one or more NCP LU statements.

POSITION: This statement follows the X25.NET statement. The X25.MCH statement is then followed by the X25.LCG statement and other statements that define the virtual circuits.

FORMAT AND KEYWORDS: The format of the X25.MCH statement is:

```
symbol    X25.MCH    keywords
```

VTAM Users: Appearing after the keyword list are VTAM keywords that can be coded on this definition statement. These keywords provide information only to the VTAM initialization process and are not required in the generation definition used as input to NCP generation. See the appropriate VTAM installation book for descriptions of these keywords and for information on the VTAM initialization process.

Keywords

```
ADDRESS=xxx,

FRMLGTH=length,

LCGDEF=(lcg,lcnhi),    or
       ((lcg,lcnhi),(lcg,lcnhi),...),

MWINDOW=window

[,ACTIVTO=timer]   (For V3R2 and later releases)

[,ANS={CONTINUE|CONT}]
      {STOP         }

[,BRKCON={CONNECTO}]   (For V3R2 and later releases)
         {NOWNERTO}
         {NONE    }

[,CCXDELAY={timer}]   (For V3R3 only)
           {2}

[,CONNECT={NO  }]
          {YES }
          {CUD0}
          {SUBD}

[,CTCP=(m1,m2,m3,...,mn)]

[,CUD0=(n1,n2,n3,...,nn)]

[,DBIT={YES}]
       {NO }

[,DIRECT={YES}]
         {NO }

[,DSABLTO=timer]

[,ENABLTO=timer]
```

Keywords

```
[,GATE={DEDICAT}]
       {GENERAL}
       {NO     }

[,IDBLKC={ccc for PCNE}]   (For V3R3 only)

[,IDBLKG={ggg for GATE}]   (For V3R3 only)

[,IDBLKP={ppp for PAD}]   (For V3R3 only)

[,INTFAC={NO }]   (For V3R3 only)
         {YES}

[,ISTATUS={ACTIVE  }]
          {INACTIVE}

[,ITRACE={YES}]
         {NO }

[,LCN0={NOTUSED}]
       {USED   }

[,LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5)]

[,{LLC0=(m1,m2...)},...]
  {LLC2=(m1,m2...)}
  {LLC3=(m1,m2...)}
  {LLC4=(m1,m2...)}
  {LLC5=(m1,m2...)}
  {LLCI=(m1,m2...)}

[,LOGAPPL=(appl0,appl1,...,applm)]

[,LSPRI={YES}]   (For V3R3 only)
        {NO }

[,LUNAME=(luname0,luname1,...lunamem)]

[,MACB=(labelx,labelr)]

[,MBITCHN={YES}]   (For V3R3 only)
          {NO }

[,MODETAB=(table0,table1,...tablem)]

[,NCPGRP={label}]
         {NEW  }

[,NDRETRY={count}]
          {1    }

[,NETID=(name,ANY)]   (For V3R2 and later releases)

[,NPRETRY={count}]
          {7    }

[,PAD={INTEG }]
      {TRANSP}
      {NO    }

[,PADBRKCD=(cc1dd1,cc2dd2,...)]   (For V3R3 only)
           {0084,0085}

[,PADINDX={index}]   (For V3R3 only)
          {0    }
```

Keywords

```
[,PKTMODL={128}]
          {8  }

[,PUNAME=puname]

[,PWPROT={YES}]
         {NO }

[,ROLE={PRI}]
       {NEG}

[,SDRTCNT=count]   (For V3R2 and later releases)

[,SDRTIME=time]   (For V3R2 and later releases)

[,SHM={YES}]   (For V3R2 and later releases)
      {NO }

[,SHUTD={INVCLR  }]
        {NOINVCLR}

[,SPAN=name]

[,SPEED={rate}]
        {9600}

[,SPNQLLC={YES}]
          {NO }

[,STATION={DCE}]
          {DTE}

[,STATOPT=text string]  (For V3R3 only)

[,SUBADDR={YES}]
          {NO }

[,SUBD=(n1,n2,n3,...nn)]

[,SVCINN={number}]   (For V3R2 and later releases)
         {0     }

[,T1TIMER={time}]
          {0   }

[,TAXUNIT={0  }]   (Default for V3R3 only)
          {32 }
          {64 }   (Default for V3R2 and previous releases)
          {128}

[,T4=timer]   (For V3R3 only)

[,TDTIMER=timer]

[,TPTIMER=timer]

[,TRAN={ODD  }]
       {EVEN }
       {NO   }
       {MARK }    (For V3R3 only)
       {SPACE}    (For V3R3 only)
       {USER1}    (For V3R3 only)
       {USER2}    (For V3R3 only)

[,VCID={YES}]   (For V3R2 and previous releases)
       {NO }
```

Keywords

```
[,VMODTAB=(v0,v1,v2,...vm)]
[,XMONLNK={YES}]   (For V3R2 and later releases)
          {NO }
[,X21INACT={time}]   (For V3R3 only)
[,X21NTWK={NO  }]
          {OLD }
          {1984}
[,X21RTYCT={count}]   (For V3R3 only)
[,X21RTYTO={time}]   (For V3R3 only)
[,X21SW={YES}]   (For V3R3 only)
        {NO }
```

VTAM Keywords

```
[,OWNER=...]
```

symbol

Is an optional label. When coded, it overrides the automatic resource name generation for the corresponding NCP line. The automatic name generation creates:

pLxxx

See "Resource Naming Conventions" on page 95 for X.25 NPSI default naming resources.

ADDRESS=*xxx*,

Specifies the duplex line interface address in 1–3 decimal digits. Valid values range from 0–63 for the 3720 and 0–895 for the 3745. The value specified must be in the range allowed by the NCP USGTIER value specified on the BUILD statement. For example, line addresses 32–63 are not allowed on a 3720 with a USGTIER of 1.

Note: If several resources are included in the NCP GEN, such as NRF, you may have to use three decimal digits for the address. For example, if the line address is 1, code ADDRESS=001. The X25.PREFIX keyword can also be used on the BUILD statement.

See *NCP, SSP, and EP Resource Definition Reference* for the ranges of addresses corresponding to NCP USGTIER values.

FRMLGTH=*length*,

Specifies the maximum frame length, in bytes, that flows over the physical circuit. *length* is the data packet maximum length added to the packet header length. Valid values range from 35—4100 (according to the network subscription). Packet header length is:

- 3 bytes for packet modulo 8
- 4 bytes for packet modulo 128.

Note: The minimum value for an MCH that supports subarea node virtual circuits is 131.

LCGDEF=(*lcg*,*lcnhi*)
((*lcg*,*lcnhi*),(*lcg*,*lcnhi*),...)

Specifies the greatest logical channel number in decimal (*lcnhi*) for each logical channel group (LCG). The *lcg* must be in decimal also.

You must define at least one pair of values; however, you can define up to 16 pairs in any order. Define only LCGs that will actually be used.

MWINDOW=*window*

Specifies the frame window size to be used by the X.25 Link Access Protocol (LAP) level 2. Valid values range from 1—7. This parameter is mandatory unless it has been specified in the BUILD statement. If it is specified in the X25.MCH and in the BUILD statement, the value specified in the X25.MCH overrides the value specified in the BUILD statement.

[**ACTIVTO**=*timer*]

For V3R2 and later releases: Specifies the value of the inactivity time-out in seconds. An SVCSC is cleared and the PU is made inoperable after the specified ACTIVTO seconds lapse and BRKCON = CONNECTO or if BRKCON = NOWNERTO is specified, and if SHM is not in effect. The connection must be reestablished using a VARY NET,DIAL command after such an inactivity time-out. Range is from 1 – 5400 seconds. This keyword applies to SVCSC only and is valid only when SVCINN has a non-zero value.

[**ANS**={**CONTINUE**|**CONT**}]
{**STOP** }

Specifies the ANS keyword that is copied in the NCP PU statement for the defined physical circuit. CONTINUE can be abbreviated as CONT. Code ANS = CONTINUE or ANS = CONT if CONT is coded in any of the X25.VC, X25.FCG, or X25.PU statements associated with the dependent virtual circuits. Also, code ANS = CONT if XMONLNK = YES is specified.

[**BRKCON**={**CONNECTO**}]
{**NOWNERTO**}
{**NONE** }

For V3R2 and later releases: Specifies that X.25 NPSI breaks a switched connection if a line is idle (not sending or receiving data) for a period of time specified by ACTIVTO on the GROUP statement. BRKCON is valid only if you code DIAL = YES and PUTYPE = 4.

If you code BRKCON = CONNECTO or BRKCON = NOWNERTO, X.25 NPSI starts the inactivity timer after each data sent or received, and breaks the connection after ACTIVTO time-out. The default is BRKCON = NONE.

[**CCXDELAY**={*timer*}]
{2 }

For V3R3 only: The CCXDELAY keyword only applies to casual connection on SVC. CCXDELAY specifies the amount of time that X.25 NPSI delays its initial transmission after answering an incoming call on a QLLC peripheral link. CCXDELAY is valid only if you code LLC3 on the LLCLIST. Valid values range from 1—255. The default value is 2 seconds. If casual connection is not established, code CCXDELAY = NONE.

```
[CONNECT={NO  }]
         {YES }
         {CUD0}
         {SUBD}
```

Specifies whether the fast connect function of X.25 NPSI is used on this physical circuit.

NO Specifies that fast connect is not used on this physical circuit. It is the default value.

YES Specifies that fast connect is used on this physical circuit. CONNECT=YES is used when only one CTCP is used on this fast connect MCH.

CUD0 Specifies that fast connect with multiple CTCPs is used on this physical circuit, and that the CTCP is selected through CUD0. When CONNECT=CUD0 is specified, the CUD0 and CTCP keywords must be coded on the X25.MCH statement. Then the following optional keywords can be specified on the X25.MCH statement:

- LUNAME
- LOGAPPL
- MODETAB
- VMODTAB

A value is specified for each *unique* CTCP value. Thus, if 10 parameters were specified on the CTCP keyword, but there were only two unique values (00 and 01), these keywords should contain only two corresponding values.

The parameters are specified in a position corresponding to the CTCP number. The parameter in the first position corresponds with CTCP 0, the second with CTCP 01, and so on.

SUBD Specifies that fast connect with multiple CTCPs is used on this physical circuit and the CTCP is selected through subaddressing. When CONNECT=SUBD is specified, the SUBD and CTCP keywords must be coded on the X25.MCH statement. Then the following optional keywords can be specified on the X25.MCH statement.

- LUNAME
- LOGAPPL
- MODETAB
- VMODTAB

A value is specified for each *unique* CTCP value. Thus, if 10 parameters are specified on the CTCP keyword, but there are only two unique values (00 and 01), these keywords should only contain two corresponding values.

The parameters are specified in a position corresponding to the CTCP number. The parameter in the first position corresponds with CTCP 0, the second with CTCP 01, and so on.

[**CTCP**=(*m1*,*m2*,*m3*,...,*mn*)]

General-Use Programming Interface

The CTCP keyword works in conjunction with the CUD0 or SUBD keyword if GATE=GENERAL is coded. Valid values (in decimal) range from 0—27. You can code CTCP depending on the CUD0 keyword as follows:

- Omit the CUD0 keyword. Do not code the CTCP keyword.
- Code CUD0=ALL. This provides a set of default values. Do not code the CTCP keyword.
- Code CUD0=(set of numbers). CTCP numbers or LLC numbers must correspond to the values coded in the CUD0 or SUBD keywords.

Values 00—27 select the CTCP. Values 80—85 select LLC types 0—5, respectively. In the case of fast connect, you must code the CTCP keyword if the SUBD keyword is coded.

End of General-Use Programming Interface

[**CUD0**=(*n1*,*n2*,*n3*,...,*nn*)]

General-Use Programming Interface

The CUD0 keyword works in conjunction with the CTCP keyword if GATE=GENERAL is coded. You can code these keywords in three ways:

- Omit the CUD0 keyword. The GATE CTCP is selected if there is no CUD (NULL CUD), or if CUD0 contains X'00', or any value from X'02'—X'2F'. Do not code the CTCP keyword.
- Code CUD0=ALL. This provides a set of default values.
  - The first GATE CTCP (0) is selected when CUD0 is equal to X'02' or X'C4'.
  - The second CTCP is selected when there is no CUD (NULL CUD), or if CUD0 contains X'00', or any value from X'02'—X'2F'.
- Code CUD0=(set of numbers). This provides maximum flexibility for selecting the CTCP or the LLC.

  Specified values override the default values defined in CUD0=ALL. Unspecified values take the default values shown with CUD0=ALL. Hexadecimal values should be coded as one or two digits.

  Values range from X'00'—X'FF' plus NULL, with NULL designating an empty CUD field. If one of the default values is to be rejected, the CTCP will issue the CLEAR command at reception of the invalid call-in.

Examples of CUD0 and CTCP coding are:

```
CUD0=(00,01,02,03,04,C1,CC,71,61,NULL)
CTCP=(00,00,01,00,01,80,80,85,85,01)
```

The result of this coding is:

- The first CTCP is selected when CUD0 is coded with X'00', X'01', and X'03', including the non-overridden default value X'C4'.
- The second CTCP is selected when CUD0 is coded with X'02', X'04', and NULL, including the non-overridden default values X'05' to X'2F'.
- LLC0 is selected by X'C1' and X'CC'.
- LLC5 is selected by X'71' and X'61' in addition to the non-overridden values X'41', X'51', and X'81'.

Specify or omit the leading zero in the CTCP keyword and CUD0 keywords. This allows you to align the corresponding subkeywords by coding them one above the other.

End of General-Use Programming Interface

[DBIT={YES}]
{NO }

Specifies whether the D bit is to be used. The D bit is an indicator in the packet header of data packets flowing to and from non-SNA DTEs supported by type 0 virtual circuits. It confirms that a packet was received at its destination. The default value is NO. If you code DBIT=YES, the following events occur:

- The D bit is set in the last packet of a packet sequence built from an outgoing PIU carrying any of the definite response bits.
- The definite response bit is set on in an incoming O/C PIU when the corresponding incoming packet (or the last packet of a packet sequence) has the D bit on, and, if at BIND time, the definite response was requested on the secondary-to-primary flow.
- If MBITCHN=YES is also coded, the CPS series is processed as described in Chapter 2, "X.25 NPSI Support of RU Chaining for Long Non-SNA Messages (V3R3 Only)."

[DIRECT={YES}]
{NO }

Specifies whether the physical circuit is directly attached to a communication controller or to a peripheral node. The default value NO specifies modem attachment.

[DSABLTO=*timer*]

Specifies the value of the disable time-out in seconds. This timer value is set by the modem and represents the maximum delay during which the DTE expects the Data Set Ready (DSR) signal to end, once the DISABLE command has been issued. The range is 0.1 second—1632.0 seconds in increments of 0.1 second; the default is 3.0 seconds.

[ENABLTO=*timer*]

Specifies the value of the enable time-out in seconds. This timer value is set by the modem, and represents the maximum delay during which the DTE expects the Data Set Ready (DSR) signal to begin after the ENABLE command has been issued. The range of values is 0.1 second—1632.0 seconds in increments of 0.1 second; the default is 3.0 seconds.

The timer is also used for modem retrain and DSR recovery. You should specify a large enough value for this keyword so that the time during which Data Set Ready (DSR) or Clear To Send (CTS) are down is exceeded. The DSR or the CTS might be down temporarily for tests or malfunctions.

This procedure keeps the physical circuit and all its virtual circuits up despite temporary CTS or DSR down conditions induced by the network.

```
[GATE={DEDICAT}]
      {GENERAL}
      {NO      }
```

General-Use Programming Interface

Specifies whether the GATE or the DATE function is supported on this physical circuit. Code:

- GATE=DEDICAT for the DATE function.
- GATE=GENERAL for the GATE function (with or without fast connect).
- GATE=NO if neither the GATE nor the DATE function is used.

If you code GATE=GENERAL, you can also code the SUBADDR, CTCP, CUD0, and SUBD keywords. The default value is NO.

End of General-Use Programming Interface

```
[IDBLKC={ccc for PCNE}]
```

For V3R3 only: Specifies the value of IDBLK for PCNE connections. Valid values for *ccc* range from X'062' to X'06E'. This keyword allows improved concurrent use of GATE, PAD, and PCNE connections on the same MCH.

```
[IDBLKG={ggg for GATE}]
```

General-Use Programming Interface

For V3R3 only: Specifies the value of IDBLK for GATE connections. Valid values for *ggg* range from X'062' to X'06E'. This keyword allows improved concurrent use of GATE, PAD, and PCNE connections on the same MCH.

End of General-Use Programming Interface

```
[IDBLKP={ppp for PAD}]
```

For V3R3 only: Specifies the value of IDBLK for PAD connections. Valid values for *ppp* range from X'062' to X'06E'. This keyword allows improved concurrent use of GATE, PAD, and PCNE connections on the same MCH.

```
[INTFAC={NO }]
        {YES}
```

General-Use Programming Interface

For V3R3 only: Specifies whether X.25 NPSI interprets and uses the flow control parameters of the Call Connected packet under GATE or DATE. The default is NO.

End of General-Use Programming Interface

```
[ISTATUS={ACTIVE  }]
         {INACTIVE}
```

Specifies whether the line, physical units, and logical units are activated following a VTAM first start or cold restart. X.25 NPSI provides no default value for this keyword. This keyword and parameter is reported on the generated NCP LINE statements.

For DATE or GATE, ISTATUS=ACTIVE is forced by X.25 NPSI generation on the LUs generated for this MCH. In any other case, ISTATUS=INACTIVE is forced on the LU generated by this X25.MCH statement.

```
[ITRACE={YES}]
        {NO }
```

Specifies whether LAP internal trace is performed on this physical circuit. The default is YES.

```
[LCN0={NOTUSED}]
      {USED   }
```

Specifies if logical channel number 0 of the logical channel group 0 designates a virtual circuit. The default value is USED.

Note: If you specify USED, LCN=0 must be defined in a subsequent X25.LINE or X25.VC statement.

```
[LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5)]
```

Specifies the types of SVCs that are supported on this physical circuit. LLCLIST is mandatory if you want to associate any SVCs with this physical circuit; however, it is not required if only PVCs are associated with this physical circuit. These keyword values are not positional. Code one value for each SVC type as follows:

- Code LLC0 if one or more SVCs can connect to a non-SNA DTE, and these circuits do not require GATE or PAD support (type 0 virtual circuits).
- Code LLC2 if one or more SVCs can connect to an SNA peripheral node with PSH protocol (type 2 virtual circuits).

- Code LLC3 if one or more SVCs can connect to an SNA peripheral or subarea node with protocol QLLC (type 3 peripheral or subarea node virtual circuit).
- Code LLC4 if one or more SVCs can require GATE support (type 4 virtual circuits).
- Code LLC5 if one or more SVCs can require transparent or integrated PAD support (type 5 virtual circuits).

```
[,{LLC0=(m1,m2...)},...]
  {LLC2=(m1,m2...)}
  {LLC3=(m1,m2...)}
  {LLC4=(m1,m2...)}
  {LLC5=(m1,m2...)}
  {LLCI=(m1,m2...)}
```

LLC0=(*m1,m2,...*)
Specifies the values in the subaddress field of Incoming Call packets, which indicates that the calling DTE is a non-SNA DTE not requiring GATE or PAD support. *m* is any decimal digit from 0–9. This keyword is valid only when you code SUBADDR=YES.

LLC2=(*m1,m2,...*)
Specifies the values in the subaddress field of Incoming Call packets, which indicates that the calling DTE is an SNA peripheral node attached with PSH protocol. *m* is any decimal digit from 0–9. This keyword is valid only when you code SUBADDR=YES.

LLC3=(*m1,m2,...*)
Specifies the values in the subaddress field of the Incoming Call packets, which indicates that the calling DTE is an SNA peripheral node attached with the peripheral node QLLC protocol. *m* is any decimal digit from 0–9. This keyword is valid only when you code SUBADDR=YES.

LLC4=(*m1,m2,...*)
Specifies the values in the subaddress field of Incoming Call packets, which indicates that the calling DTE requires GATE support. *m* is any decimal digit from 0– 9.

LLC5=(*m1,m2...*)
Specifies the values in the subaddress field of Incoming Call packets, which indicate that the calling DTE requires integrated or transparent PAD support. *m* is any decimal digit from 0–9. This keyword is valid only when you code SUBADDR=YES.

LLCI=(*m1,m2...*)
Specifies the values in the subaddress field of the Incoming Call packets, which indicate that the calling DTE requires switched subarea node. *m* is any decimal digit from 0–9. This keyword is valid only when you code SUBADDR=YES on the X25.MCH statement. If this feature is used, the caller must insert at least an extra digit at the end of the called DTE address in the DIALNO (NN field in DIALNO) of the PATH statement in the remote SMN.

Note: You must code different values for *m* in each of the LLC0, LLC2, LLC3, LLC4, LLC5, and LLCI keywords. This allows you to select a given LLC based on the subaddressing digit values.

[**LOGAPPL**=(*appl0,appl1,...,applm*)]

General-Use Programming Interface

Specifies the application names corresponding to the CTCP numbers specified in the CTCP keyword. This causes VTAM to automatically generate a logon request to the specified application on behalf of the associated physical circuit LU when the LU is activated by VTAM. There is one unique subvalue for each of the subvalues of the CTCP keyword. X.25 NPSI provides no default for this keyword.

End of General-Use Programming Interface

[**LSPRI**={**YES**}]
{**NO** }

For V3R3 only: Specifies whether link SESSION priority is given to peripheral lines (boundary virtual circuits working under LLC2 or LLC3) on this MCH. LSPRI=YES allows outbound PIU flow prioritization between the LUs from a peripheral node. LSPRI=NO is the default option defining the X.25 NPSI resource as a NEO resource for which priority is not supported.

[**LUNAME**=(*luname0,luname1,...lunamem*)]

General-Use Programming Interface

Specifies the names of the logical units associated with this MCH. There is one unique subvalue for each of the subvalues of the CTCP keyword. See "Resource Naming Conventions" on page 95 for X.25 NPSI default naming resources.

End of General-Use Programming Interface

[**MACB**=(*labelx,labelr*)]

Specifies the labels of control blocks (UACBs). Control block labels are usually created by X.25 NPSI during generation. Code MACB to prevent label duplication with other resource names in the same generation. If you do not code this keyword, X.25 NPSI will create the UACB labels in the following formats:

```
X25AxxxX
X25AxxxR
```

where xxx is equal to the ADDRESS keyword.

[**MBITCHN**={**YES** }]
{**NO** }

For V3R3 only: Specifies whether RU chaining is supported on outbound and inbound flow for non-SNA connections. When MBITCHN=YES is specified, RU chaining is supported. The default value is NO.

[**MODETAB**=(*table0,table1,...tablem*)]

Specifies the mode table (MODETAB) for the physical circuit LUs defined in this X25.MCH statement. There is one unique subvalue for each of the subvalues of the CTCP keyword. X.25 NPSI provides no default for this keyword.

[**NCPGRP**={*label*}]
{**NEW** }

Specifies the label of the NCP GROUP statement that includes the physical circuit in the NCP. If you do not specify this value, the name is created by X.25 NPSI generation. The default for this keyword is dependent on the network.

If you omit this keyword, the built-in label is:

pNETnm

If you specify NEW, a new NCP GROUP statement is created and named using the automatic naming convention. If you specify *label*, a new NCP GROUP statement is created that has the specified name.

Note: X.25 NPSI automatically generates one NCP GROUP statement for the first MCH and another NCP GROUP statement for subsequent MCHs. The first MCH is in a group by itself; the second and subsequent MCHs will be part of the second GROUP unless this keyword is coded.

If you want to have all the MCHs of a given generation in the same NCP GROUP, you must code the same name for NCPGRP on all X25.MCH statements.

See "Resource Naming Conventions" on page 95 for X.25 NPSI default naming resources.

[**NDRETRY**={*count*}]
{1 }

Specifies the number of times that the Np/Tp sequence will be executed. Valid values range from 1−255; the default is 1. See the description of the TPTIMER keyword for more information.

[**NETID**=*name*,ANY]

For V3R2 and later releases: Specifies the association of a switched subarea support group (DIAL=YES and PUTYPE=4) to a network. This keyword is copied in the GROUP statements generated by X.25 NPSI for SVCSC lines. It is used with SNI.

name corresponds to either NETID on the BUILD definition statement (native network), or NETID on the NETWORK definition statement (non-native network).

If you code NETID=(*name*,ANY), the values specified for NETID on the virtual circuit PU statements related to this MCH are not required to be the same.

[**NPRETRY**={*count*}]
{7 }

Specifies the total number of transmissions of an I or U frame in a Tp time-out recovery. Valid values range from 3−255; the default is 7. See the description of the TPTIMER keyword for more information.

```
[PAD={INTEG }]
     {TRANSP}
     {NO     }
```

Specifies whether the terminals supported by PAD can be attached through virtual circuits associated with this physical circuit. If PAD support is provided, this keyword also specifies the type of support as follows:

INTEG Specifies that X.25 NPSI provides integrated PAD support.

For V3R2 and previous releases: This value cannot be specified if GATE = DEDICAT is specified.

For V3R3 only: This value can be specified even if GATE = DEDICAT is specified. In this case, SHUTD = NOINVCLR is mandatory.

General-Use Programming Interface

TRANSP Specifies that X.25 NPSI provides transparent PAD support.

End of General-Use Programming Interface

NO Specifies that X.25 NPSI does not provide PAD support. If NO is coded, LLC5 cannot be coded in the LLCLIST keyword, the LLC5 keyword cannot be coded in the X25.MCH statement, and LLC = LLC5 keyword cannot be coded in an X25.VC or X25.LINE statement for a PVC associated with this physical circuit.

```
[PADBRKCD=(cc1dd1,cc2dd2,...)]
          {0084,0085}
```

General-Use Programming Interface

For V3R3 only: Specifies the cause and diagnostic codes returned by the PAD when the BREAK key is entered and when PAD parameters 0702 or 0708 are specified. The valid range is specified by any 4 hexadecimal digits for both subvalues. Each subvalue is optional within the sublist. PADBRKCD is valid only if PAD = INTEG is coded on the X.25 MCH statement. The default value id is 0084,0085.

Note: When the network does not support the diagnostic code in the RESET packet, using options 2 and 8 of PAD parameter 7 are not recommended.

End of General-Use Programming Interface

```
[PADINDX={index}]
         {0    }
```

For V3R3 only: Specifies the index to the PADPARM keyword, which is specified on the X25.PAD statement. You must specify *index* on the X.25 PAD statement for this statement to be valid. Valid values for PADINDX range from 1 to 99. The default is 0. PADINDX is valid only if PAD = INTEG.

Note: For migration purposes, do not code the default value 0, which refers to the default PAD parameter-string.

[PKTMODL={128}]
{8 }

Specifies the modulo used by packet protocol. Valid values are 8 or 128; the default value is 8. You must specify a modulo greater than all the values specified in the VWINDOW keywords of the X25.VCCPT statements related to this MCH.

[PUNAME=*puname*]

Specifies the name of the physical unit associated with this MCH.

[PWPROT={YES}]
{NO }

Specifies whether password protection will be performed on the virtual circuits related to this MCH using integrated PAD. YES is valid only if PAD=INTEG is defined on this physical circuit. The default is NO.

[ROLE={PRI}]
{NEG}

For V3R3 only: Specifies the data link control role that the station assumes on an SVC at contact time, when the remote partner is an SNA type 2.1 node. ROLE is only valid if you code LLC3 on the LLCLIST keyword. You can code ROLE as primary (PRI), which means that the station controls the session, or as negotiable (NEG), which means the station assumes either the primary or secondary role.

[SDRTCNT=*count*]

For V3R2 and later releases: Specifies the number of retries made when the SHM reconnection cannot be established. The valid range is from 1−255; the default value is 0 (no retries).

[SDRTIME=*time*]

For V3R2 and later releases: Specifies the number of seconds between two retries of SHM reconnection. The valid range is from 1—255; the default value is 10 seconds.

[SHM={YES}]
{NO }

For V3R2 and later releases: Specifies whether SHM is used on the SVCSC lines dependent on this MCH. When SHM=NO is coded, no lines will use SHM. When SHM=YES is coded, SVCSC connections on this MCH may use SHM.

[SHUTD={INVCLR }]
{NOINVCLR}

Specifies whether a shutdown request, sent to the LU that represents an integrated PAD virtual circuit, causes any action (INVCLR) or not (NOINVCLR). This action, for SVCs, is the sending of an Invitation to Clear PAD message, or for PVCs, the sending of a Reset packet. This keyword is valid only when PAD=INTEG is coded. The default is INVCLR (Invitation to Clear).

[SPAN=*name***]**

Specifies that the NetView program operator's access to the virtual circuit line is restricted. This specification is copied to the LINE, PU, and LU statements generated by the X25.MCH statement.

[SPEED={rate}]
{9600}

Specifies the data rate for the physical circuit in bits per second (bps). The default value is 9600. The range is from 1200—128K.

When DIRECT=YES is coded on the X25.MCH statement, only the following values are valid:

- For an IBM 3720

  1200, 2400, 4800, 9600, 19 200

- For an IBM 3745 (all models):

  1200, 2400, 4800, 9600, 19 200, 38 400, 55 855, 245 760

See *NCP, SSP, and EP Resource Definition Guide* for further details when DIRECT is used.

Note: The SPEED and T1TIMER keywords are used to cause piggybacking of acknowledgments at the link level.

[SPNQLLC={YES}]
{NO }

Specifies whether this MCH is connected to a network that supports an SDLC PAD that does not provide the standard QLLC interface. The effect of this keyword is to set X'42000000' in the CUD field rather than X'C3' for QLLC outgoing calls. SPNQLLC also accepts X'62' as the first byte of the CUD for incoming calls rather than X'C3'. The address portion of the Q commands will be set to X'EF' rather than X'FF'. The default value is NO.

[STATION={DCE}]
{DTE}

Specifies whether the MCH is to operate as a DTE or a DCE. DTE is the default value and must be used for a normal connection to a network node (usually a DCE). Full DCE support is not provided by X.25 NPSI.

When STATION=DCE is coded, NDRETRY=1 should be coded so that:

- TPTIMER corresponds to CCITT T1.
- NPRETRY corresponds to N2.

[STATOPT=*text string***]**

For V3R3 only: The STATOPT keyword and its text string operand are copied as specified into a comment statement following the LINE statement generated by NDF.

[**SUBADDR**={**YES**}]
{**NO** }

Specifies whether subaddressing is used within the Incoming Call packets on this MCH to select LLC types. The SUBADDR keyword is valid only when GATE = GENERAL is coded. Subaddressing applies only to SVCs and is specified in the rightmost digit of the called DTE address within the Incoming Call packet.

[**SUBD**=(*n1,n2,n3,...nn*)]

General-Use Programming Interface

Specifies that fast connect is used on this physical circuit and that the CTCP is selected through subaddressing. When SUBD is coded, the CTCP keyword must be coded on the X25.MCH statement. Then, the following optional keywords can be coded:

- LUNAME
- LOGAPPL
- MODETAB
- VMODTAB

There is one unique subvalue for each of the subvalues of the CTCP keyword.

End of General-Use Programming Interface

[**SVCINN**=*n*]

For V3R2 and later releases: Specifies the number of simultaneously active switched subarea node connections. It is representative of the number of switched virtual circuits allocated to subarea node traffic. SVCINN specification must equal the number of X25.LINE statements defined with DSTNODE = INN and TYPE = S.

The default value is SVCINN = 0, specifying that no SVCSC is available.

[**T1TIMER**={**time**}]
{**0** }

Specifies the time, in seconds, that the DCE will wait for frame acknowledgment. Tenths of seconds can be entered. The default value of 0 does not allow for link-level piggybacking.

Note: This keyword corresponds to the T1 that is provided by the network vendor at subscription time. The T1TIMER keyword is used with the SPEED keyword to cause piggybacking of acknowledgments at the link level.

[**TAXUNIT**={**0** }]
{**32** }
{**64** }
{**128**}

Specifies the number of characters for a network tax unit.

For V3R2 and previous releases: The value is used by X.25 NPSI Fast Connect to build billing information reports and to send the reports to the CTCP. The default value is 64.

For V3R3 only: The default value is 0. If 0 is specified, all of the packets are counted, otherwise the taxation units are counted. In all cases, the statistics are shipped to the host in a RECFMS type 3 format at the end of the connection or at counter overflow.

Note: For V3R3, the use of billing units as statistical data affects panels NPDA-51F and NPDA-53F in NetView. In these panels, both the TRANSMISSION TOTAL and RECEIVE TOTAL can reflect billing units and not packet totals. The TAXUNIT keyword is now supported for all LLC types.

[**T4**=*timer*]

For V3R3 only: Specifies, in the data phase, the inactivity polling period in seconds. The valid range is from 10−255. The default value is 60. T4 is valid only if STATION=DTE.

[**TDTIMER**=*timer*]

Specifies the value of the X.25 NPSI internal delay timer between Nd transmissions. Valid values are 1, 2, and 3 seconds; the default value is 1 second. See the description of the TPTIMER keyword for more information.

[**TPTIMER**=*timer*]

Specifies the value of the X.25 T1 timer in seconds. The valid range is from 0.5—25.5 seconds in increments of 0.1 second; the default value is 1.0 second. The X.25 T1 timer represents the maximum delay during which the DTE expects the acknowledgment of a transmitted I or U frame with or without the poll bit set, or of a transmitted S frame with the poll bit set.

Note: Once flags are transmitted and monitored on the first transmit operation issued to the scanner, the Nd×(Td+(Np×Tp)) value must exceed the time needed by the PSDN to return the flags at contact time. This time can exceed 16 seconds.

```
[TRAN={ODD  }]
      {EVEN }
      {NO   }
      {MARK }
      {SPACE}
      {USER1}
      {USER2}
```

Specifies whether data incoming from a PAD-supported DTE or LLC0-supported DTE under DATE will be translated from ASCII to EBCDIC. In addition, it specifies whether data going to a PAD-supported DTE or to a LLC0-supported DTE under DATE will be translated from EBCDIC to ASCII.

ODD Specifies that odd parity is used for translation.

EVEN Specifies that even parity is used for translation.

NO Specifies that no translation is performed.

For V3R3 only: The following variables can also be specified:

MARK Specifies that bit 0 is always a 1, with no parity.

SPACE Specifies that bit 0 is always a 0, with no parity.

USER1 Specifies two 256 byte user-defined translation tables as defined by the X25.TRAN statement with the USER1 keyword. One table for inbound flow, and one table for outbound flow.

USER2 Specifies two 256 byte user-defined translation tables as defined by the X25.TRAN statement with the USER2 keyword. One table for inbound flow, and one table for outbound flow.

Notes:

1. This keyword is valid only if PAD = INTEG, PAD = TRANSP, or GATE = DEDICATED are coded. For more information, see *X.25 NPSI Diagnosis, Customization, and Tuning*.
2. Only data packets are translated.

[VCID={YES}]
{NO }

General-Use Programming Interface

Specifies the type of connection identifier (reference) that X.25 NPSI sends in commands to GATE or DATE CTCPs.

If VCID = NO is specified, the reference is the *range* of the SNA resource (always the same at each connection of a given SNA resource).

If VCID = YES is specified, the reference is the LCN of the X.25 SVC associated with the SNA resource (probably different at each connection).

VCID is authorized only if GATE is coded. The default value is NO.

End of General-Use Programming Interface

[VMODTAB=(*v0,v1,v2,...vm*)**]**

Specifies the mode table (MODETAB) for the virtual circuit LUs defined in the X25.FCG or X25.VC statements corresponding to this X25.MCH statement. There is one unique subvalue for each of the subvalues of the CTCP keyword. X.25 NPSI generates no default for this keyword.

[XMONLNK={YES}]
{NO }

For V3R2 and later releases: Specifies whether the MCH will be automatically activated after the initial loading or after ANS. This allows NCP/X.25 NPSI to be activated using a subarea node PVC.

XMONLNK = YES must be coded when this MCH contains a subarea node PVC that can be used to activate NCP/X.25 NPSI. When ownership is lost over a channel, an X.25 PVC, or an SDLC line, XMONLNK = YES must be coded if a subarea node SVC of this MCH is to convey ownership of the NCP after ANS.

You should specify XMONLNK=YES if the MCH contains a subarea PVC or SVC. This allows ownership recovery to occur over one of the subarea node PVCs or SVCs at ANS. It also allows the MCH to stay up when a VARY NET,INACT,F command for the NCP is issued enabling subarea node traffic to continue over subarea node virtual circuits of this MCH.

This keyword replaces the X25.MNLNK statement. See *NCP, SSP, and EP Resource Definition Reference* for more details on XMONLNK.

[X21INACT={time}]

For V3R3 only: Specifies time in seconds after which an X.21 connection is cleared if no VC activity is detected on an MCH. This keyword is valid only if X21SW=YES has been specified. Time is specified in seconds and the valid range is from 1 to 255. The default is 30 seconds.

```
[X21NTWK={NO  }]
         {OLD }
         {1984}
```

Specifies whether this MCH is connected to an X.25 network offering an X.21 interface. Coding X21NTWK=OLD or X21NTWK=1984 indicates to X.25 NPSI that it is an X.21 connection. The default is NO. This keyword is mandatory when X21SW=YES is specified.

The X21NTWK keyword must be coded for a 3745. For a 3720, this keyword is not required, even if the X.25 network offers an X.21 interface.

[X21RTYCT={number}]

For V3R3 only: Specifies the number of retries that will be performed by the scanner when an X.21 connection is in progress. The keyword is valid only if X21SW=YES has been specified. Valid values range from 0 to 254 and the default is 3.

[X21RTYTO={time}]

For V3R3 only: Specifies the number of seconds for the time-out interval that the scanner waits between retries when an X.21 connection is in progress. Valid values range from 0 to 1632, with increments of 0.1 seconds. The default value is 3 seconds. The keyword is valid only if X21SW=YES has been specified.

```
[X21SW={NO  }]
       {YES }
```

Specifies that the physical line is an X.21 switched line. The default is NO. When X21SW=YES is specified, X21NTWK is mandatory. When X21SW=YES is specified, the following restrictions apply to X25.MCH keywords:

- GATE=GENERAL
- LLCLIST=LLC4
- CONNECT=NO
- DIRECT=NO
- SPEED=xxxx

Note: When you specify X21SW=YES on an MCH, you can only define switched vitrual circuits on that MCH.

X25.NET Statement

USAGE: Use this statement to specify and start the description of a PSDN. One X25.NET statement is required for each PSDN. You can specify a maximum of nine X25.NET statements during a generation.

POSITION: This is the first statement in X.25 NPSI's definition list. Additional X25.NET statements can be used to define additional networks.

FORMAT AND KEYWORDS: The format of the X25.NET statement is:

symbol	X25.NET	keywords

Keywords

```
DM={YES}
   {NO }

[,CAUSE={CCITT}]
        {IBM00}
        {IBM80}

[,CPHINDX={index}]
          {1    }

[,CRAFTRC={YES}]   (For V3R2 only)
          {NO }

[,INACTO={time}]   (For V3R3 only)

[,NETTYPE={1}]
          {3}
          {4}   (For V3R3 only)

[,NSTDFAC={Nsfac1,Nsfac2,Nsfac2,Nsfac3,...,Nsfacn}]
          {NONE                                   }

[,OUHINDX={index}]
          {1    }

[,RESETINO={ccdd,ccdd,ccdd,.....}]   (For V3R3 only)
           {YES                 }
           {NO                  }

[,RFAC={fac1,fac2,.....}]   (For V3R2 and later releases)
       {NONE            }

[,R20={count}]
      {1    }

[,R22={count}]
      {1    }

[,R23={count}]
      {1    }

[,T20={timer}]
      {180  }

[,T21={timer}]
      {200  }
```

Keywords

```
[,T22={timer}]
     {180  }
[,T23={timer}]
     {180  }
[,T26={timer}]   (For V3R3 only)
     {180  }
```

symbol

Specifies an optional name for this X25.NET statement.

DM={YES}
{NO }

Specifies whether the LAPB DM command is received or sent by the PSDN. This command, included in the CCITT Recommendation, is not supported by all PSDNs.

[CAUSE={CCITT}]
{IBM00}
{IBM80}

Determines the type of cause and diagnostic byte that X25.NPSI sends to the network in Clear, Reset, and Restart Request packets. The cause and diagnostic code specified in the CAUSE keyword references one of three cause and diagnostic tables. See *X.25 NPSI Diagnosis, Customization, and Tuning* for table specifications.

CCITT Is cause 00 with CCITT 84 diagnostics.
IBM00 Is cause 00 with SNA diagnostics (for IBM migration).
IBM80 Is cause 80 with SNA diagnostics (same diagnostics as IBM00).

See "Compliance with ISO Standards and CCITT 84 (V3R2 Enhancements)" on page 23 for more information.

[CPHINDX={*index*}]
{1 }

Specifies the greatest index value coded in the INDEX keyword of an X25.VCCPT statement within this network. Valid values range from 1—99; the default is 1.

[CRAFTRC={YES}]
{NO }

For V3R2 only: Specifies whether a switched connection is maintained after a Reset packet is received or sent. If CRAFTRC=NO, the SVC is not cleared after the Reset Confirmation packet is received or sent, and the virtual circuit is not made inoperable. If CRAFTRC=YES, the SVC is cleared and the virtual circuit is made inoperable after the receiving or sending of a Reset Confirmation packet. The default value is YES.

This keyword is not taken into account for PVCs. The virtual circuit PU is always made inoperable after sending or receiving a Reset packet.

Note: Because packet sequencing is reset when a reset exchange occurs, X.25 NPSI cannot guarantee data integrity when CRAFTRC=NO is coded.

[INACTO={time}]

For V3R3 only: Specifies the amount of seconds an SVC will wait before the line is cleared due to inactivity. The default is 0. If the default is specified, there is no monitoring on all the SVCs associated with this X25.NET statement. If a value from 1 to 59 seconds is specified, NDF issues a message and the generation is aborted.

Valid values range from 60 – 5400.

[NETTYPE={1}]
{3}
{4}

Specifies the network type. Possible values are 1, 3, and 4; the default is 1.

For NETTYPE = 1 or NETTYPE = 4, when X.25 NPSI receives a RESET 01 or 07, it stops sending physical services commands to the remote DTE until it receives a RESET 00, 09, or 0F. For NETTYPE = 3, when X.25 NPSI receives a RESET 07, it continues sending physical services commands to the remote DTE, because a network defined as type 3 (DDX-P) does not compensate a RESET 07 by a RESET 09.

For V3R3 only: When NETTYPE = 4 is specified, X.25 NPSI does not allow duplicate facilities, and does not accept CLEAR/RESET/RESTART packets that do not carry both cause and diagnostic bytes. If CTCP is used, see Appendix A, "Virtual Circuits with a CTCP."

[NSTDFAC={*Nsfac1,Nsfac2,Nsfac3,Nsfac3,...,Nsfacn*}]
{**NONE** }

Specifies the nonstandard facilities accepted by X.25 NPSI. A table of nonstandard user facilities is built at system generation. Nonstandard facilities must be in accordance with X.25 facility format. A nonstandard facility can be duplicated in a call packet. Therefore, the nonstandard facility must be coded as *many times* as it might be duplicated. The default value is NONE.

X.25 NPSI accepts the following standard facilities without special coding:

01	High-priority class of traffic, fast select, or reverse charging
02	Throughput class negotiation
03	Closed user group—basic
09	Closed user group with outgoing access—basic
41	Bilateral closed user group selection
42	Packet size negotiation
43	Window size negotiation
47	Closed user group—extended
48	Closed user group with outgoing access—extended
C3	Call redirection notification.

X.25 NPSI considers all other facility fields to be nonstandard. Nonstandard facilities are rejected by a Clear packet containing either a X'E6' or X'41' Diagnostic code, unless coded in the NSTDFAC keyword.

Both standard and nonstandard facilities are coded in hexadecimal. You must use two hexadecimal digits to code a facility in the NSTDFAC keyword. If several facilities are to cause call rejection, they must be enclosed in parentheses. For example, you can code:

```
NSTDFAC=(05,1F,FF,FE,18)
```

This causes the calls that include these nonstandard facilities to be accepted.

```
[OUHINDX={index}]
        {1    }
```

Specifies the greatest index value coded in the INDEX keyword of an X25.OUFT statement within this network. Valid values range from 1—99; the default is 1.

```
[RESETINO={ccdd,ccdd,ccdd,...}]
          {YES               }
          {NO                }
```

For V3R3 only: Specifies the action that is taken when receiving or sending a Reset packet. RESETINO applies to PVCs and SVCs; YES is the default.

Use (*ccdd,ccdd,ccdd,...*) to specify a list of cause and diagnostic codes that can be present in Reset packets, but that do not cause X.25 NPSI to make the PU representing the virtual circuit inoperative.

ccdd represents four hexadecimal digits and can be coded as *ccXX* or *XXdd*.

When you code *ccXX* or *XXdd*, X.25 NPSI does not make the PU representing the virtual circuit inoperative for all the Reset packets beginning with cause *cc* or ending with diagnostic *dd*. If you specify more than one cause and one diagnostic, the codes must be contained within parentheses.

When RESETINO = (*ccdd,ccdd,ccdd,...*) up to 46 subvalues are allowed.

If RESETINO = YES and a Reset packet is sent or received, X25.NPSI makes the PU representing the virtual circuit inoperative.

If RESETINO = NO and a Reset packet is sent or received, X.25 NPSI avoids making the PU representing the virtual circuit inoperative.

Note: When RESETINO = NO is coded, X.25 NPSI cannot guarantee data integrity when a reset exchange occurs, because packet sequencing is reset. In addition, this coding may prevent any further system activity on that line, until the problem is resolved.

```
[RFAC={fac1,fac2,...}]
      {NONE         }
```

For V3R2 and later releases: Specifies the facilities to be rejected. When an Incoming Call or Call Connected arrives carrying a facility coded in the RFAC keyword, that call is cleared. Nine optional facilities are available and each can be rejected. The default is NONE (no facility is rejected). If several facilities are to cause call rejection, they must be enclosed in parentheses. Use the RFAC keyword, where fac is the mnemonic code of the facility to be rejected.

The facilities that can cause a call to be cleared due to rejected facilities are:

FASTSEL	Fast select
REVCHG	Reverse charging
THRUPUTCL	Throughput class negotiation
CALLREDIR	Call redirection
CUGB	Closed user group with basic format
CUGOAB	Closed user group with outgoing access (basic)
CUGE	Closed user group with extended format
CUGOAE	Closed user group with outgoing access (extension)
BLCUG	Bilateral closed user group.

[**R20**={*count*}]
{<u>**1**</u> }

Specifies the maximum number of Restart Request retransmissions. The default value is 1. The valid values range from 0–255.

[**R22**={*count*}]
{<u>**1**</u> }

Specifies the maximum number of Reset Request retransmissions. The default value is 1. The valid values range from 0–255.

[**R23**={*count*}]
{<u>**1**</u> }

Specifies the maximum number of Clear Request retransmissions. The default value is 1. The valid values range from 0–255.

[**T20**={*timer*}]
{<u>**180**</u> }

Specifies a value for the Restart Request timer. The default value is 180 seconds. The valid values range from 1–255.

[**T21**={*timer*}]
{<u>**200**</u> }

Specifies a value for the Call Request response timer. The default value is 200 seconds. The valid values range from 1–255.

[**T22**={*timer*}]
{<u>**180**</u> }

Specifies a value for the Reset Request response timer. The default value is 180 seconds. The valid values range from 1–255.

[**T23**={*timer*}]
{<u>**180**</u> }

Specifies a value for the Clear Request response timer. The default value is 180 seconds. The valid values range from 1–255.

[**T26**={*timer*}]
{<u>**180**</u> }

For V3R3 only: Specifies a value for the Interrupt Confirmation timer. The default value is 180. The valid values range from 10–225.

X25.OUFT Statement

USAGE: Use this statement to specify the user facilities and call user data that will be copied into the Call Request packet for an outgoing call.

One X25.OUFT statement is required for each entry in the optional user facilities table. The number of entries in the table is specified by the OUHINDX keyword of the X25.NET statement. Consecutive entries need not be used.

POSITION: This statement must be placed between the X25.NET and the X25.MCH statements to which it applies.

FORMAT AND KEYWORDS: The format of the X25.OUFT statement is:

symbol	X25.OUFT	keywords

You can code as many as 99 X25.OUFT statements for each PSDN. At least one X25.OUFT statement is required for each PSDN using SVCs. An X25.OUFT statement is not required for a PSDN using only PVCs.

Keywords

```
INDEX=index
[,OPTFACL=hexvalue]
[,USRFILD=hexvalue]
[,USRFIL2=hexvalue]
```

INDEX=*index*

Specifies the entry in the optional user facilities table. Valid values range from 01–99.

[**OPTFACL**=*hexvalue*]

Specifies the hexadecimal configuration to be copied into the optional facility field of a Call Request packet. The *hexvalue* must contain an even number of digits less than or equal to 218. Use the optional facility fields for flow control negotiation. See Appendix A, “Defining X.25 PSDN Facilities,” for a description of flow control negotiation.

[**USRFILD**=*hexvalue*]

Specifies the correct bit configuration to be copied after the virtual circuit type in the CUD field of the Call Request packet. Set the *hexvalue* to an even number of digits less than or equal to 254. X.25 NPSI sets the virtual circuit type to one of the following values:

X'C0ddddd0'	Virtual circuit type 0
X'C2'	Virtual circuit type 2
X'C3'	Virtual circuit type 3 peripheral node
X'E3'	Virtual circuit type 3 subarea node
X'pp000000'	Virtual circuit type 5.

where:

pp	Is equal to 01, 41, 51, or 81. If L=7 is coded (user-defined CUD0), pp is user-defined and bytes 1, 2, and 3, of the CUD are not filled with 000000.
ddddd	Is the remote DTE IDNUM. (It is not added in the CUD if L=.).

[**USRFIL2**=*hexvalue*]

Specifies the correct bit configuration to be copied to the last part of the CUD field of the Call Request packet. Set the *hexvalue* with an even number of digits less than or equal to 254.

Note: The sum of the lengths of the values specified in USRFILD and USRFIL2 must not exceed 256 digits. The maximum length of the CUD field in a call packet for fast select is 256 digits. A normal Call Request packet has a CUD field less than 32 digits (16 bytes).

For logical channels used exclusively by type 4 virtual circuits or physical circuits under the control of a DATE CTCP, X25.OUFT statements are not used. However, it is necessary to reference an X25.OUFT statement in the associated X25.LINE or X25.VC statements. If there is no other requirement for X25.OUFT statements, a dummy entry for these virtual circuits can be created as follows:

```
X25.OUFT INDEX=1
```

The following is an example of an X25.OUFT statement:

```
X25.OUFT
INDEX=1,
OPTFACL=0302430707,
USRFILD=123456789ABC,
USRFIL2=4455
```

Assuming this is a type 2 virtual circuit; the logical channel number is 4, the packet modulo is 8, and the corresponding Call Request packet is:

```
X'10040B0912345678900503024307070C2123456789ABC4455'
```

where:

1	Is the GFID.
0	Is the logical channel group number.
04	Is the logical channel number.
0B	Is the call request.
09	Is the address length.
123456789	Is the DTE address.
0	Is the padding to create an even number of digits.

05	Is the facility length.
0302430707	Is the facility field.
C2	Is the LLC2.
123456789ABC4455	Is the CUD field.

See "PATH Definition Statement" on page 165 for more details.

X25.PAD Statement (For V3R3 Only)

USAGE: Use this statement to specify one or more strings of PAD parameters. These parameters are selected by an index coded on the X.25 PAD statement.

POSITION: This statement is optional. If specified, this statement must be coded before the first X25.NET statement of the X.25 NPSI generation.

FORMAT AND KEYWORDS: The format for the X25.PAD statement is:

symbol X25.PAD keywords

Keywords

```
INDEX=value

PADPARM={value}
        {NULL }
```

symbol

Specifies an optional name for this X.25 PAD statement.

INDEX={value}

Specifies the entry of the PAD table that is initialized by this X25.PAD statement and referred to by the PADINDX keyword on the X25.MCH statement. The valid range is from 1−99; there is no default value.

PADPARM={value}
{NULL }

Specifies the PAD parameters. Use the *value* to represent a string of up to 104 hexadecimal digits (string length of even parity), or code NULL for no PAD parameters. There is no default value.

X25.PU Statement

USAGE: Use this statement to define the physical unit associated with either an SNA DTE connected to a corresponding virtual circuit or a non-SNA DTE connected to a corresponding virtual circuit.

POSITION: You must code one X25.PU statement instruction for each X25.LINE statement.

FORMAT AND KEYWORDS: The format of the X25.PU statement is:

```
symbol     X25.PU     keywords
```

X25.PU keywords are the same as the NCP PU keywords. The X.25 PU keywords and NCP PU keywords are valid under the X25.PU statement. However, only the X25.PU keywords are described in this section. Appendix B, "Installation Examples for X.25 NPSI," contains sample X25.PU statements for several virtual circuit types. For more information on these statement keywords, see *NCP, SSP, and EP Resource Definition Reference*.

Keywords

```
[PUTYPE=type]
[,MAXDATA=size]
[,MAXOUT=number]
[,NPACOLL=NO]
[,PUDR=NO]
[,XID={YES}]   (For V3R2 and later releases)
      {NO }
```

symbol

Specifies an optional resource name for the physical unit. The default name is built as follows:

pPxxxggg

See "Resource Naming Conventions" on page 95 for X.25 NPSI default naming resources.

[**PUTYPE**=*type*]

Specifies the physical unit type associated with the remote DTE. Specify 1 for LLC0, LLC4, and LLC5.

[**MAXDATA**=*size*]

Specifies the maximum bytes in a PIU. Because segmenting is not supported for virtual circuit types 0, 4, and 5, MAXDATA must exceed the largest PIU size for these virtual circuit types. This keyword does not need to be coded for SNA type 2.1, because its value is determined during XID 3 negotiation. See *NCP, SSP, and EP Resource Definition Reference* for calculation and more information about MAXDATA.

[STATOPT=*test string*]

For V3R3 only: The STATOPT keyword and its text string operand are copied as specified into a comment statement following the PU statement generated by NDF.

[MAXOUT=*number*]

Code MAXOUT=6 to queue data arriving before start data traffic (SDT) in X.25 NPSI for LLC0 and LLC5.

When the value of MAXOUT is not equal to six, the first data packet received is sent to the SSCP as a logon message.

Note: The MAXOUT keyword applies to permanent virtual circuits only.

[NPACOLL=NO]

Specifies whether data transmitted and received by this physical unit is eligible for collection by the NetView performance monitor (NPM). However, X.25 NPSI does not support NPM, so the value is forced to NO.

[PUDR=NO]

Specifies whether dynamic reconfiguration is supported on this PU. However, X.25 NPSI does not support dynamic reconfiguration, so the value is forced to NO.

```
[XID={YES}]
     {NO }
```

For V3R2 and later releases: Specifies whether an XID exchange will occur with the remote DTE PVC. X.25 NPSI forces a NO for LLC types 0, 2, 4, and 5, because the remote device is unable to support an XID exchange on a PVC. For LLC3, you should specify YES or NO. For SNA type 2.1 nodes, YES must be coded.

See *NCP, SSP, and EP Resource Definition Reference* for more information.

For V3R2 only: If the specification is omitted, NCP defaults to YES.

For V3R3 only: If the specification is omitted, NCP defaults to NO.

X25.TRAN Statement (For V3R3 Only)

USAGE: Use this statement to specify user coded translation tables. This translation table option applies to integrated and transparent PAD and to PCNE under DATE.

The X25.TRAN statement is referenced with the USER1 and USER2 values of the TRAN keyword on the X25.MCH statement. Two tables can be specified. If the TRAN keyword on the associated X25.MCH statement specifies USER1, the table identified by TRAN = USER1 is used for the translation of data. If the TRAN keyword of the associated X25.MCH statement specifies USER2, the table identified by TRAN = USER2 is used for the translation of data.

POSITION: This statement is optional. If specified, this statement must be coded before the first X25.NET statement of X.25 NPSI generation. Only two X25.TRAN statements can be coded in one X.25 NPSI generation.

FORMAT AND KEYWORDS: The format for the X25.TRAN statement is:

symbol	X25.TRAN	keywords

Keywords

```
USER=value

DCIN0=value,
DCIN1=value,
DCIN2=value,
   .
   .
   .
DCINF=value,

DCOT0=value,
DCOT1=value,
DCOT2=value,
   .
   .
   .
DCOTF=value,
```

symbol

Specifies an optional name for this X25.TRAN statement.

USER={*value,*}

Specifies the user translate tables. Two user translate tables can be generated for X.25 NPSI generation. The valid range is 1 − 2. There is no default value for this keyword.

DCINx={*value,*}

Specifies the user translate tables definition for inbound flow (256 bytes). The character x in the keyword name represents a hexadecimal digit from 0 − F. Sixteen keywords are required to complete the definition of a user table. Each keyword value is a 32-digit hexadecimal string and there is no default value.

DCOTx={*value*,}

Specifies the user translate tables definition for outbound flow (256 bytes). The character x in the keyword name represents a hexadecimal digit from 0 – F. Sixteen keywords are required to complete the definition of a user table. Each keyword value is a 32-digit hexadecimal string and there is no default value.

X25.VC Statement

USAGE: Use this statement to describe one or more virtual circuits with the same characteristics.

POSITION: The X25.VC statement follows the X25.MCH and X25.LCG statements, and precedes the X25.FCG statement when a fast connect MCH is defined.

FORMAT AND KEYWORDS: The format of the X25.VC statement is:

symbol	X25.VC	keywords

VTAM Users: The VTAM keywords that can be coded on this definition statement appear after the keyword list. These keywords only provide information to the VTAM initialization process and are not required in the generation definition used as input to NCP generation. See the appropriate VTAM installation book for these keyword descriptions and for information on the VTAM initialization process.

Keywords

```
LCN=(number1,number2),

TYPE={SWITCHED|S  },
     {PERMANENT|P },

VCCINDX=index

[,ANS={CONTINUE|CONT}]
      {STOP         }

[,CALL={IN    }]
       {OUT   }
       {INOUT}

[,COMMITO={1}]
          {2}
          {4}
          {8}

[,HEXNAME={YES}]   (For V3R2 and later releases)
          {NO }

[,ID={bbbfffff}]   (For V3R3 only)

[,IDNUMT={ffff}]   IDNUMT must be an even number (For V3R3 only)

[,ISTATUS={ACTIVE  }]
          {INACTIVE}

[,LLC={LLC0}]
      {LLC4}
      {LLC5}

[,MAXDATA={number}]

[,MAXOUT=number]

[,NCPGRP={symbol}]
         {NEW    }

[,OSITYPE={number}]
          {0     }
```

Keywords

```
[,OUFINDX=index]
[,PRFLINE=x]   (For V3R2 and later releases)
[,PRFLU=z]   (For V3R2 and later releases)
[,PRFPU=y]   (For V3R2 and later releases)
[,RETVCCT={count}]
          {3    }
[,RETVCTO={timeout}]
          {30     }
[,SPAN=name]
[,STATOPT=text string]  (For V3R3 only)
[,SUFFIX=w]   (For V3R2 and later releases)
```

VTAM Keywords

```
[,DISCNT=...]
[,DLOGMOD=...]
[,ENCR=...]
[,FEATUR2=...]
[,LOGAPPL=...]
[,LOGTAB=...]
[,MODETAB=...]
[,OWNER=...]
[,SSCPFM=...]
[,TERM=...]
[,USSTAB=...]
[,VPACING=...]   (For V3R2 and later releases)
```

symbol

Specifies an optional label for this X25.VC statement.

LCN=(*number1*,*number2*)

Specifies that the virtual circuits defined by this X25.VC statement have sequential logical channel numbers, beginning with *number1* and ending with *number2*. These two numbers are in decimal notation. Valid values range from 0−255; however, some PSDNs do not use the value 0 on logical group 0. Specify only one value (LCN=*number1*) when you define only one logical channel at a time.

TYPE={SWITCHED|S }
{PERMANENT|P}

Specifies the type of virtual circuits being defined. You can abbreviate SWITCHED with an S and PERMANENT with a P. If the MCH is dedicated to Fast Connect, code TYPE=S. This keyword is required and has no default.

VCCINDX=*index*

Specifies the entry in the virtual circuit connection parameter table (VCCPT) that contains operational characteristics of the defined PVCs.

For SVCs, this keyword specifies:

- Incoming call—the entry in the VCCPT that contains the operational characteristics of the defined virtual circuits.
- Outgoing call (Call Request)—the default value of the entry in the VCCPT that contains the operational characteristics of the defined virtual circuits. The default value is used when the "XX" field of the DIALNO keyword of the VTAM PATH statement equals 00.

These values can be overridden during flow control negotiation.

The specified table entry must be defined in an X25.VCCPT statement. Valid values range from 1—99.

Packet and window sizes defined in the corresponding VCCPT entry must correspond to the PSDN-assigned values.

[ANS={CONTINUE|CONT}]
{STOP }

Specifies whether the PU connected to this virtual circuit continues or stops if NCP enters ANS. This is only true if ANS=CONT is coded on the X25.MCH statement. The value is passed to the NCP PU statement. X.25 NPSI supports session continuation on virtual circuits for SNA devices.

The ANS keyword is only meaningful for PVC. For SVC, the ANS keyword must be coded in the PU (switched) definition statement of the VTAM Switched Major Node. See the *VTAM Installation and Resource Definition* guide for more information.

For V3R2 and later releases: Session continuation with virtual circuits supporting non-SNA connections is also supported. See *NCP, SSP, EP Resource Definition Guide* for the meaning and details of the ANS keyword. No default is defined by X.25 NPSI for this keyword, the NCP default value is used.

[CALL={IN }]
{OUT }
{INOUT}

Specifies the way an SVC is established. You can use this keyword only if TYPE=S is coded.

Use CALL=IN if the virtual circuits you are defining are established at the request of a remote DTE rather than at the request of X.25 NPSI. Do not specify CALL=IN on any virtual circuit definition following an X25.MCH statement that specifies a value greater than 0 for the SVCINN keyword.

CALL=INOUT means that virtual circuits can be established in either way.

Use CALL=OUT if the virtual circuits you are defining are established at the request of the local host access method through X.25 NPSI.

For a DATE physical circuit, you must code the CALL keyword to match your PSDN subscription.

For a GATE physical circuit, you must code CALL=IN or CALL=INOUT. However, if you want to reserve a certain number of virtual circuits for non-LLC4 call-outs, code CALL=OUT for the number of virtual circuits to be reserved.

```
[COMMITO={1}]
         {2}
         {4}
         {8}
```

Specifies the value in seconds of the commit time-out for idle virtual circuits. When this timer elapses, buffers committed to these virtual circuits are decommitted. The default value is 4 seconds.

```
[HEXNAME={YES}]
         {NO }
```

For V3R2 and later releases: Specifies whether the suffix of the LINE name, PU name, and LU name builds in hexadecimal (YES) or decimal (NO). The default value is YES. Specifying NO requires the coding of PRFLINE, PRFPU, PRFLU, and SUFFIX.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to specify the related statement operands.

```
[ID={bbbfffff}]
```

For V3R3 only: Specifies the ID parameter used to support the NCP anonymous caller function where bbb is the IDBLK value and fffff is the first IDNUM value on the X.25 VC GROUP. X.25 NPSI generates values for each subsequent SVC in increments of 2. If ID is not specified, this value is taken from the IDBLK/IDNUM of the remote SNA DTE.

Note: The ID keyword can only be applied to LLC2 and LLC3 without SVCSC, and to LLC0 without subaddressing or DATE. These LLC types are mutually exclusive on a unique MCH.

```
[IDNUMT={ffff}]
```

For V3R3 only: Specifies a user-defined IDNUM value for the first of a X.25 VC group of Non-SNA SVCs. If you do not specify this value, X.25 NPSI internally generates a value. For each subsequent SVC, X.25 NPSI generates IDNUM values in increments of 2. If you do not specify IDNUMT for any SVC, X.25 NPSI generates an IDNUM default value in the *reverse* order from the way the SVC was initially defined. The IDNUMT keyword must be an even number.

```
[ISTATUS={ACTIVE  }]
         {INACTIVE}
```

Specifies whether the lines, physical units, and logical units are activated following a VTAM first start or cold restart. X.25 NPSI provides no default. This keyword and parameter are reported on the generated NCP LINE statements.

```
[LLC={LLC0}]
     {LLC4}
     {LLC5}
```

Specifies the PVC type defined by this statement. This LLC keyword is mandatory for PVCs and should be coded as follows:

- Code LLC0 if the virtual circuit connects to a non-SNA DTE and does not require GATE or PAD support (type 0 virtual circuit).

- Code LLC4 if the virtual circuit requires GATE support (type 4 virtual circuit).
- Code LLC5 if the virtual circuit connects to a terminal that requires PAD support (type 5 virtual circuit). The type of PAD support (integrated or transparent) is specified on the PAD keyword of the X25.MCH statement.

[**MAXDATA**={*number*}]

Specifies the maximum number of bytes in an SNA segment. Because SNA segmenting is not supported for non-SNA LLCs, you need to specify a MAXDATA value greater than the maximum PIU size. See *NCP, SSP, and EP Resource Definition Reference* for calculation and more information.

[**MAXOUT**=*number*]

MAXOUT=6 is specified to queue data arriving before start data traffic (SDT) in X.25 NPSI for LLC0 and LLC5. At SDT, this data is passed to the application. When the value of MAXOUT is not equal to six, the first data packet received is sent to the SSCP as a logon message.

```
[NCPGRP={label}]
        {NEW  }
```

Specifies the symbol of the NCP GROUP statement that defines the virtual circuits. If you do not specify this value, the name is generated by NDF. Code this keyword to modify the group name to which the SNA resources generated by the X25.VC belong.

If you specify *label*, a new NCP GROUP is created using this label as the GROUP statement name.

If you specify NEW, a new NCP group is automatically created at X.25 NPSI generation.

X.25 NPSI creates, by default, one group of PVCs, one group of SVCs, and one group of SVCSCs for each X25.MCH statement. If you omit the NCPGRP keyword, the virtual circuits belong to the most recently created group name. The default name is generated as follows:

```
p25Pxxxy for PVCs
p25Sxxxy for SVCs
```

See "Resource Naming Conventions" on page 95 for X.25 NPSI default naming resources.

Note: This keyword can no longer be used to make a call-out on a virtual circuit belonging to a given set of virtual circuits within an MCH. When the virtual circuits are within an MCH, X.25 NPSI allocates the virtual circuits for call-out starting from the largest virtual circuit number that is available for call-out. There is no need to have more than one group associated with PVCs, one group associated with SVCs, and one group associated with SVCSC for each X25.MCH definition.

[**OSITYPE**={*number*}]
{<u>**0**</u> }

General-Use Programming Interface

Specifies in decimal the GATE CTCP with which these virtual circuits must communicate. This parameter applies to PVCs only, and must be used when the MCH is capable of communicating with several GATE CTCPs. If the MCH is not capable of communicating with more than one GATE CTCP, this keyword must be omitted. Valid values range from 0 – 27. The default value is 0.

End of General-Use Programming Interface

[**OUFINDX**=*index*]

Specifies the default OUFT index value used to build the facility field and the end of the CUD field in a Call Request packet. The specified index must be defined in a previous X25.OUFT statement.

[**PRFLINE**=*x*]

For V3R2 and later releases: Specifies a user-defined prefix for the name of the NCP LINE statements generated for this X25.VC statement. This keyword can be a character string of 1 – 7 characters.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to specify the related statement keywords.

[**PRFLU**=*z*]

For V3R2 and later releases: Specifies a user-defined prefix for the name of the NCP LU statements generated for this X25.VC statement. This keyword can be a character string of 1 – 7 characters.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to specify the related statement keywords.

[**PRFPU**=*y*]

For V3R2 and later releases: Specifies a user-defined prefix for the name of the NCP PU statements generated for this X25.VC statement. This keyword can be a character string of 1 – 7 characters.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to specify the related statement keywords.

[**RETVCCT**={*count*}]
{<u>**3**</u> }

Specifies the number of retransmissions of the physical services command on virtual circuits connected to an SNA subarea or peripheral node. Valid values range from 0 – 255; the default value is 3.

[**RETVCTO**={*timeout*}]
{<u>**30**</u> }

Specifies the timer used between retransmissions of a physical services command on virtual circuits connected to an SNA subarea or peripheral node. Valid values range from 0 – 255 seconds; the default value is 30 seconds.

[SPAN=*name*]

Specifies that the NetView program operator's access to the SNA resources generated by the X25.VC statement is restricted. This specification is copied to the LINE, PU, and LU statements generated by the X25.VC statement.

[STATOPT=*text string*]

For V3R3 only: The STATOPT keyword and its text string operand are copied as specified into a comment statement following the statements representing the SNA resources generated by the X25.VC statement.

[SUFFIX=*w*]

For V3R2 and later releases: Specifies a number that is the lower limit for each set of names built. There is no default. This parameter must be specified together with PRFLINE, PRFPU, and PRFLU if user-defined names are generated. The length of the name is equal to the length of PRFLINE, or PRFPU, or PRFLU, added to the length of the SUFFIX parameter. Values range from 0 – X'FFF' when HEXNAME = YES, and from 0 – 4095 when HEXNAME = NO.

PRFLINE, PRFPU, PRFLU, and SUFFIX must be coded together.

See "Resource Naming Conventions" on page 95 for a description of the options available for the automatic creation of resource names in X.25 NPSI, and how to specify the related statement keywords.

X25.VCCPT Statement

USAGE: Use this statement to describe the connection parameters for one or more virtual circuits. At least one X25.VCCPT statement is required; however, up to 99 statements can be coded. One statement is required for each entry on the virtual circuit connection parameter table. Entries need not be consecutive. Table length is specified by the CPHINDX keyword

POSITION: This statement is positioned after the X25.NET statement and before the X25.MCH statement. Each virtual circuit must use an entry in the virtual circuit connection parameter table.

FORMAT AND KEYWORDS: The format of the X25.VCCPT statement is:

```
symbol    X25.VCCPT    keywords
```

For virtual circuits used exclusively by LLC type 4 or those under the control of a DATE CTCP, the MAXPKTL and VWINDOW keywords of the X25.VCCPT statements are not used, because these parameters are defined by the CTCP. However, the INSLOW keyword is used in the X25.VCCPT statement referenced by associated virtual circuits.

Keywords

```
INDEX=index,

MAXPKTL=size

[,INSLOW={(percent1,percent2)}]
         {(50,12)             }

[,VWINDOW={value}]
          {2    }
```

INDEX=*index*

Specifies the entry of the VCCPT that is initialized by the X25.VCCPT statement. For example, INDEX=3 initializes the third entry in the VCCPT. Valid values range from 1—99.

MAXPKTL=*size*

Specifies (in bytes) the maximum length of the packets to be sent or received over the virtual circuits. This length is the maximum length of data in a packet, excluding the length of the packet header. Valid values range from 32—4096 (according to the network subscription). There is no default value. For a subarea node virtual circuit, the MAXPKTL value must be at least 128.

For incoming packets, make sure that the accumulated PIU length does not exceed the maximum data length defined in the NCP HOST statement. See *NCP, SSP, and EP Resource Definition Guide* for more information on the HOST statement.

For outgoing packets, X.25 NPSI will split the PIU data into packets using the M bit, except for type 2 virtual circuits. For type 2 virtual circuits, X.25 NPSI splits the PIU data using segment indication. The maximum packet length equals the packet length defined for the remote DTE.

```
[INSLOW={(percent1,percent2)}]
       {(50,12)             }
```

Specifies the percentage of free buffers that can be reached before the virtual circuits using this number enter an unsafe or danger situation. Unsafe and danger thresholds are mechanisms used by X.25 NPSI to avoid NCP slowdown. *percent1* and *percent2* values are specified in relation to the values in the SLODOWN keyword of the NCP BUILD statement.

percent1	Defines the UNSAFE threshold.
percent2	Defines the DANGER threshold.

Valid values are 0, 6, 12, 25, 50, and 100. When this keyword is coded, both values must be specified, and *percent1* must be greater than *percent2*. Default values of 50 for *percent1*, and 12 for *percent2*, mean that the UNSAFE limit is 50 percent higher while the DANGER limit is 12 percent higher than the NCP SLODOWN value.

Note: This keyword is not taken into account for subarea node virtual circuits. See *X.25 NPSI Diagnosis, Customization, and Tuning* for more information.

```
[VWINDOW={value}]
         {2    }
```

Specifies the value of the transmit or receive window used by the packet protocol for the virtual circuits that use the entry. This value must be less than the packet modulo value defined in the X25.MCH statement. Valid values range from 1—127; the default is 2.

Note: GATE and DATE do not use the VCCPT to define the packet size and the packet window. Packet size and packet window are defined by the CTCP. Because other keywords are used, at least one X25.VCCPT statement must be coded for compatibility.

Chapter 5. Coding NCP and VTAM Parameters for X.25 NPSI

Chapter 5. Coding NCP and VTAM Parameters for X.25 NPSI

This chapter explains the following considerations that are specific to X.25 NPSI:

- NCP
- VTAM
- SVCSC
- Session continuation
- Virtual route pacing for subarea-to-subarea communication.

NCP Considerations

When you code NCP statements to work with X.25 NPSI, consider the following:

- NCP statements changed for X.25 NPSI
- NCP statements created by X.25 NPSI generation.

NCP Statements Changed for X.25 NPSI

This section provides information about NCP statements that must be coded differently for X.25 NPSI.

OPTIONS Definition Statement

You must code the OPTIONS definition statement as the first statement in your NCP generation statement list. The two required keywords are USERGEN and NEWDEFN.

The USERGEN keyword indicates the name of the NDF load module that contains X.25 NPSI generation modules. Code it as:

```
USERGEN=X25NPSI
```

If you omit USERGEN, X.25 NPSI statements will not be processed. Any X.25 NPSI statements found during the NCP generation will be flagged as errors.

You must code NEWDEFN=YES on the OPTIONS statement so that NDF creates a new generation definition for input to VTAM. This new definition consists of the NCP generation definition and keywords passed from the generation load modules specified on USERGEN.

Externally, the X.25 NPSI statements appear in the definitions passed to VTAM; however, VTAM ignores these statements because of the *X25.* prefix. VTAM can process these statements after they are generated into a new definition file containing definitions created from the statements with the *X25.* prefix.

You should code NEWDEFN=(YES,ECHO,SUPP). The ECHO value causes the statements in the new definition file to be in a format that is similar to the original file. The SUPP value eliminates the comment, `GENERATED BY X.25 NPSI`, that prefixes the statements generated by NDF in the new definition file.

LUDRPOOL Definition Statement

The LUDRPOOL definition statement must be specified in the NCP when switched virtual circuits are used. The statement keywords NUMTYP1, NUMTYP2, and NUMILU must be coded. These keywords specify the number of sets of logical unit control blocks to be available for dynamic allocation to switched connections.

NUMTYP1 and NUMTYP2 specify the sets of logical control blocks required when the logical unit is associated with a PU type 1 and a PU type 2, respectively. NUMILU specifies the sets of logical unit control blocks for independent LUs for sessions involving SNA type 2.1. The sessions supported in the value coded for NUMILU can exist between SNA type 2.1 nodes and other SNA type 2.1 nodes.

NCP Statements Created by X.25 NPSI Generation

The NCP LINE, PU, and LU definition statements are generated for the X25.MCH, X25.VC, and the X25.FCG statements. Examples are provided to help you decide which types of circuits best fit your site's requirements.

PU Definition Statement

The following examples show the PU definitions normally generated by X.25 NPSI for physical circuits, PVCs, and SVCs, respectively:

- Table 10 illustrates the PU statement generated for a physical circuit.
- Table 11 on page 163 illustrates the PU statement generated for a PVC.
- Table 12 on page 163 illustrates the PU statement generated for an SVC.

Table 10. PU Statement for a Physical Circuit

Name	Operation	Keywords
name	PU	ADDR=01, ANS=...., MAXDATA=261, PUTYPE=1

name X.25 NPSI assigns a physical unit name during the generation process or takes one from the PUNAME keyword of the X25.MCH statement.

ADDR=01 Specifies the hexadecimal representation of the 8-bit address of the physical unit represented by this PU statement. The address code is 01.

ANS=...., Copied from the X25.MCH statement.

MAXDATA=261 Specifies the maximum length of a PIU sent to a type 1 PU.

PUTYPE=1 Specifies the type of physical unit of the SDLC station represented by this PU statement instruction. The PU type is 1.

When a PVC is defined by an X25.VC statement, the PU generated will be for type 0, 4, or 5 virtual circuits.

Table 11. PU Statement for a Permanent Virtual Circuit

Name	Operation	Keywords
name	PU	ADDR=01,
		PACING=1,
		PUTYPE=1

You can code MAXDATA and VPACING in the X25.VC statement in your X.25 NPSI generation statements.

For type 2 or 3 virtual circuits use the X25.PU statement.

When an SVC is defined by an X25.VC statement, the PU generated will be:

Table 12. PU Statement for a Switched Virtual Circuit

Name	Operation	Keywords
name	PU	PUTYPE=(1,2)

X.25 NPSI does not support the SRT keyword of the PU statement. Default values for the SRT thresholds are 32768 for counters contained in 2 bytes, and 128 for counters contained in 1 byte. See *X.25 NPSI Diagnosis, Customization, and Tuning* for the format of these counters within RECFMS.

LU Definition Statement

Several LU statements are generated for the physical circuit if you code GATE=GENERAL and if virtual circuits of the MCH need to communicate with several CTCPs. You can specify up to 28 CTCPs.

The following examples show the LU definitions normally generated by X.25 NPSI.

- Table 13 illustrates the first LU statement generated for a physical circuit with GATE=NO.
- Table 14 on page 164 illustrates how subsequent LU statements are generated for a physical circuit.

Table 13. First LU Statement for a Physical Circuit

Name	Operation	Keywords
name	LU	LOCADDR=0,
		ISTATUS=INACTIVE

LOCADDR=0 Specifies the local address of the logical unit in decimal notation without leading zeros. Code it as 0.

ISTATUS=INACTIVE Informs VTAM that this logical unit should not be activated after initial program load (IPL) if GATE=NO is coded in the X25.MCH statement.

Table 14. Subsequent LU Statement for a Physical Circuit

Name	Operation	Keywords
symbol	LU	LOCADDR=n,
		ISTATUS=ACTIVE

For type 0, 4, or 5 virtual circuits, NDF generates one LU statement for each virtual circuit defined with an X25.VC statement that is coded TYPE=PERMANENT. Table 15 illustrates the LU generated for a PVC.

Table 15. LU Statement for a Permanent Virtual Circuit

Name	Operation	Keywords
symbol	LU	LOCADDR=0

For type 2 and 3 virtual circuits that are connected to SNA peripheral nodes, use the X25.LU statement. However, you cannot specify the X25.LU statement for virtual circuits connected to the subarea node.

For logical units on SVCs, define the logical unit in a switched major node of the host access method.

VTAM Considerations for Switched Major Node

Use the following guidelines when coding the parameters required for defining an SNA switched major node.

PU Definition Statement

Code the following parameters on the PU definition statement:

- ADDR

  The ADDR keyword is always required. It has significance only for SNA peripheral connections. The ADDR keyword may be required by the peripheral node. For example, the 3174 does not use the Address field in qualified packets. It is not used for either SNA subarea connections or for non-SNA connections where X.25 NPSI simulates the presence of the link station represented by the PU statement. If the ADDR keyword is not used, any valid value can be specified. However, it is recommended that you specify ADDR=01. It is coded as a 2-digit hexadecimal address with a valid value of 01 or a range from X'01'—X'FE'.

- DISCNT

  Code DISCNT=YES if the SVC is to be cleared when the last LU-LU session, which involves the PU, terminates.

  DISCNT=YES must be coded for virtual circuits using GATE or DATE.

- MAXDATA

  For SNA connections, code the MAXDATA keyword according to the maximum PIU segment size, as defined by the documentation that describes the controller.

  For non-SNA connections, code the MAXDATA keyword with a value that is equal to or greater than the maximum PIU size that is to be sent. If you do not know the maximum PIU size for non-SNA virtual circuits, code 65535 for MAXDATA.

- MAXOUT

  Code MAXOUT=6 when using LLC type 0 and LLC type 5 to cause X.25 NPSI to queue all data received before SDT. At SDT, this data is passed to the application. When the value of MAXOUT is not equal to 6, the first data packet received is sent to the SSCP as a logon message.

- PUTYPE

  Code the PUTYPE keyword as required by the remote PU when connected using LLC type 2 and 3.

  Code PUTYPE=1 for LLC types 0, 4, or 5.

- IDBLK

  Code the IDBLK keyword as required by the remote PU when using LLC types 2 or 3.

  See Chapter 3, "Network Definition" for more programming details regarding the IDBLK keyword.

- IDNUM

  Code the IDNUM keyword as required by the remote PU when using LLC type 2 or 3.

  See Chapter 3, "Network Definition," for more programming details regarding the IDNUM keyword.

- CPNAME (SNA type 2.1)

  CPNAME specifies the control point (CP) name of an SNA type 2.1 peripheral node. CPNAME is valid only for type 2.1 nodes that have a CP name. In a switched environment, VTAM can locate the appropriate PU/LU pair by using either the normal IDNUM/IDBLK combination or through the use of the CPNAME keyword on the PU statement in a switched major node source statement member of VTAM.

PATH Definition Statement

The VTAM PATH statement defines a *path* for an incoming or outgoing call. The PATH statement is optional for incoming calls, but is required for outgoing calls.

For incoming calls, the PATH statement can be used to ensure that the call originates from an authorized destination. For outgoing calls, the PATH statement supplies the information required by VTAM (and NCP) to initiate the call. X.25 NPSI uses the DIALNO keyword of the PATH statement for outgoing calls only.

DIALNO must be coded in one of the following formats for interpretation by X.25 NPSI:

```
DIALNO=NNN...N[*MMM...M]LXXYY[*ZZZZZ]

DIALNO=NNN...N[*MMM...M]LXXYY*DDD[WWWWW] (3710 only)
```

DIALNO is used to establish an outgoing call connection for virtual circuit types 0, 2, 3, or 5 without DATE.

The maximum length of the DIALNO parameter is 32 characters, including asterisks.

- NNN...N

  Is the network address of the called DTE. Up to 15 characters can be used.

- MMM...M

  Is the network address of the calling DTE. Up to 15 characters can be used. This is an optional field; however, it is mandatory when the PSDN requires that the calling DTE address be specified.

- L

  Specifies a one-byte virtual circuit type code that defines the LLC type (qualified by the node type being accessed for LLC type 3), and the CUD field for LLC types 0 and 5 used by the connection being established. See Table 6 on page 81 for more information.

- XX

  Is the 2-byte VCCPT index that has valid values ranging from 00—99.

  XX=00 commands X.25 NPSI to use the values defined in the VCCPT entry that are coded in the VCCINDX keyword of the X25.VC or X25.LINE statement.

  XX=xx commands the packet procedure to use the values defined in the VCCPT entry with INDEX=xx. You must define this entry during X.25 NPSI generation.

- YY

  Is the 2-byte OUFT index that can have values ranging from 00—99.

  YY=00 commands X.25 NPSI to build the Call Request packet with the facility field and the user data that is specified using the OUFINDX keyword of the X25.VC or X25.LINE statement.

  YY=yy commands X.25 NPSI to build the Call Request packet with the facility field and the user data that is defined using the OUFT entry with INDEX=yy. You must define this entry during X.25 NPSI generation.

- ZZZZZ

  Is the 5-character identification number specified in the IDNUM keyword for the PU statement. This field must be preceded by an asterisk and is valid and required only when you specify a type 0 or 5 virtual circuit.

  If you use this field to specify a default IDNUM, enter the following special characters for the hexadecimal digits A—F.

  - : for A
  - . for B
  - % for C
  - _ for D
  - ; for E
  - ? for F

- DDD

  Is the 3-digit decimal upstream address (USA) of the terminal addressed by the outgoing call. Valid DDD values are 000—255.

  This field is used only by the 3710 network controller and applies only to virtual circuit type 3 (L=3). The 3710 network controller, which has an internal table that converts the USA into the actual terminal address, uses this field to determine the specific terminal that the call addresses.

- WWWWW

  Is the 5-digit decimal identifier number of the physical unit used to map the terminal addressed by the outgoing call. This field only applies to the 3710 network controller and is used to return the IDNUM to the host when the host requests the PU XID. The IDNUM keyword of the PU statement in the SMN must equal this value. The identifier block is 044 and is automatically generated by the 3710.

  Note: WWWWW does not apply to the 3710 when it is attached to a real type 2 physical unit. In this instance, it should be omitted because the physical unit provides the type 2 XID. The WWWWW digits are replaced by five 0 digits in the CUD part of the call packet. The CUD length taken by the 3710 is constant.

A coding example of the DIALNO parameter for a virtual circuit using LLC type 3 for a 3710 is:

```
DIALNO=17500023530202*00425184
```

In this example, the network address of the called DTE is 175000235, the VCCPT and OUTFT entries are 2, and the called cluster is a 3710 network controller with an upstream address of 004 and an IDNUM of 25184. If the OUFT entry for INDEX=2 has OPTFACL=420707 and USRFILD=1234, and the virtual circuit number is 005, the corresponding Call Request packet is built as follows:

```
X'10050B09175000235003420707C301000080042518400000001234'
```

where:

1	Is the general format identifier.
0	Is the logical channel group number.
05	Is the logical channel number.
0B	Is the packet type identifier (Call Request).
0	Is the length of calling DTE address.
9	Is the length of called DTE address.
175000235	Is the called DTE address.
0	Is the padding for even number of bytes.
03	Is the facility length.
420707	Is the facility.
C3010000	Is the virtual circuit type 3.
8	Is the length of USA and IDNUM.
004	Is the USA.
251840000000	Is the IDNUM to be returned by the 3710, plus 7 reserved digits.
1234	Is the end of CUD.

The called and calling DTE addresses are concatenated by filling 1 digit per halfbyte. If the total number of digits is odd, then the concatenated addresses are padded on the right with a 0. No padding is done between the called DTE address and the calling DTE address.

LU Definition Statement

For type 0, 4, or 5 virtual circuits, you must code PACING=1 (the default value) and LOCADDR=0. If you are using a TWX terminal, you might, depending on the application, have to code TERM=TWX in the LU statement to obtain the correct formatting.

The default IDNUM scheme is identical for virtual circuits whether they are defined as GATE, PAD, or PCNE using subaddressing; therefore, you cannot tell which SNA virtual circuit type corresponds to a PU or LU definition. Do not specify parameters in your PU and LU definitions that will prevent virtual circuit types using an SMN entry from working. For example, USSTAB is often used for PAD definitions, but USSTAB prevents a GATE virtual circuit from working. If USSTAB is required for PAD support or subaddressed PCNE virtual circuits, do not use GATE on the same physical circuit.

SNA Type 2.1 Node (V3R2 and Later Releases)

An SNA type 2.1 node supports connectivity between independent LUs without the need for SSCP involvement. An LU type 6.2 operating in this type of SNA node supports concurrent parallel sessions, as well as multiple concurrent sessions with other LUs.

In a switched environment, VTAM can locate the appropriate PU definition in an SMN using either the normal IDNUM/IDBLK combination or the CPNAME on the PU statement in a switched major node source statement member of VTAM. When using casual connection, CPNAME is the CONTROL POINT name for a peripheral Type 2.1 node, and is the adjacent VTAM name for a VTAM/NCP/X.25 NPSI configuration.

SVCSC Considerations (V3R2 and Later Releases)

This section lists the keywords that must be coded on various statements in the SMNs for the SVCSC function.

PU Statement for SVCSC

The following are the keywords that must be coded on the PU statement in the SMN for the SVCSC function.

SUBAREA Specifies the subarea number that must match the subarea number obtained from the XID data returned by the contacted subarea node link station.

TGN Specifies the transmission group number (TGN) that must match the TGN obtained from the XID data returned by the contacted subarea node link station when ANY is not specified. If ANY is specified, the TGN used to define the routes serviced by this connection is the number returned from the contacted subarea node link station.

The TGN included in the XID sent to the contacted subarea node link station is the TGN coded in the PU statement used for the outgoing call.

IDNUM Specifies the identification number (IDNUM) that must match the IDNUM obtained from the XID data returned by the contacted subarea node link station. The IDNUM included in the XID that is sent to the contacted subarea node link station is the IDNUM that is coded in the PU statement used for the outgoing call.

The IDNUM acts as a correlation number for two PU statement definitions in the contacting subarea nodes. With X.25 NPSI, there can be only one link with the same TGN between two subarea nodes. Therefore, IDNUM is used for SDLC links, leased or switched, where there can be multiple links in the transmission group between two subarea nodes.

PUTYPE Specifies the type of the contacted node. PUTYPE=4 must be specified for a contacted NCP node or PUTYPE=5 for a contacted host node (ES/9370 with a TSC) with X.25 support provided by VTAM.

NETID Specifies the network identifier of the network to which the contacted node belongs. This field must also match the NETID obtained from the XID data returned by the contacted subarea node link station.

Notes:

1. IDBLK is not used and does not need to be specified on the PU statement. It takes the value X'FFF'.
2. If the connection is to remain active when there is a failure of the owning SSCP, ANS=CONT or CONTINUE must be specified. The link station can then be activated by a backup SSCP or the original SSCP, and still remain active. The supporting link and the SMN containing the link station (PU) specifications must be activated first.

PATH Statement Definition for SVCSC

When using SVCSC, with or without the SHM function, special considerations are required for the PATH statement. The PU statement can be defined as CALL=IN, CALL=OUT, or CALL=INOUT using the CALL keyword to prevent call-ins or call-outs for security reasons.

A key parameter of the PATH statement is specified in the GRPNM keyword. It is used to correlate the SMN entry with the X.25 NPSI generation for incoming calls as well as call requests. X.25 NPSI generates a GROUP of SVCSC LINE/PUs for each MCH by default. You can choose to create several GROUPs of SVCSC for each MCH by coding the NCPGRP keyword in the X25.LINE statements. This will complicate the coding of the SMN, because several PATH statements will be required for each PU in the cases of incoming and outgoing calls.

Call-Out

To perform a call-out using SVCSC, consider the following:

- The GRPNM keyword must be coded to locate the correct NCP GROUP of the X25.MCH statement where the call will be made.
- If the SNA resource is restricted to call-out only, the PATH statement should be coded as CALL=OUT.
- If SHM is used for this resource, the SHM, SHMTIM, and GRPNM keywords must be coded.

- If the PATH statement is coded with SHM=YES, the corresponding X25.MCH statement must be coded the same to permit SHM implementation. If the coding does not match, VTAM does not perform the call-out.
- In the DIALNO parameter, L specifies the virtual circuit type used by the current connection and it must be coded as L=1. The XX and YY parameters must be coded to designate the VCCPT and OUFT entries.

  The DIALNO keyword is required when SHM=YES is coded on the PATH statement.

Call-In

To perform a call-in using SVCSC, consider the following:

- The PATH statement, if required, is selected as a function of the GRPNM that specifies the NCP LINE over which the call came in. PATH statements are required if SHM, security checking, or CALL=IN is specified for this PU.
- If the SNA resource is restricted to call-in only, the PATH statement should be coded as CALL=IN.
- GRPNM must be coded if CALL, VERIFY, or SHM are coded.

  If the call-in can come in through one or more virtual circuit lines associated with NCP GROUP statements, all the GROUP names must be coded in the PATH statements that follow the called PU statement. One PATH statement must be coded for each GROUP of SVCSC over which an incoming call can be made.
- If the SHM function is to be used, the DIALNO, SHM, and SHMTIM keywords must be coded.

  The SHMTIM keyword value does not have to be equal on both sides in the PATH statements. X.25 NPSI uses the largest value coded for the disconnection. The SHMTIM keyword value is expressed in seconds, and the range is from 0—5400 seconds. The default value is 30 seconds. The SHM disconnection is initiated from the primary side only (the primary side having the highest subarea number). Reconnection can be triggered from either side.

  The GRPNM keyword must also be coded if SHM is used. VTAM verifies that the call came on a GROUP is coded SHM. If SHM=NO is coded, no SHM occurs during the call. To have SHM, SHM=YES must be coded in the following four statements:

  - PATH of the calling out side
  - GROUP of the NCP calling out side
  - GROUP of the NCP called side
  - PATH of the called side.

  This requirement is valid even when the virtual circuit is incoming to the local DTE to be able to construct the Call Request at SHM reconnection.
- If VTAM is to perform security checking for the SNA resource, the following must be coded:

  - VERIFY=IN must be coded.
  - GRPNM must be coded to check if the correct remote DTE identifier is specified in the PATH statement designated by the GRPNM through which the call-in came.
  - One or more DTE addresses must be placed on the VERID keyword. The VERID keyword is valid on call-in requests only.

Call-Inout

When a PATH statement supports both call-in and call-out and SVCSC is used, the following must be coded:

- The CALL keyword should be coded as CALL=INOUT. The default is CALL=INOUT.
- The GRPNM keyword must be coded to be able to select an NCP group of lines for making the call-out, and for use in SHM definition and security checking for incoming calls.
- If SHM is used, the DIALNO, SHM, and SHMTIM keywords must be coded.
- If VTAM is to perform security checking for the SNA resource, the following must be coded:
  - VERIFY=IN must be coded.
  - One or more DTE addresses must be placed on the VERID keyword.
  - GRPNM must be coded to check if the correct remote DTE identifier is specified in the PATH statement designated by the GRPNM through which the call-in came.

Correlation of PATH Statements

Several PATH statements can be specified for a given SVCSC PU statement. If several are specified, there must be some consistency between them. A PATH statement must be defined for each NCP GROUP used if one of the PATH statements has the following keywords coded:

- CALL=

  If the CALL keyword is coded in any of the PATH statements, the call is accepted or performed only if the specification on the PATH designated by the GRPNM corresponds to the attempted operation.

- VERIFY=

  If VERIFY is coded in any of the PATH statements, and if VERIFY=IN or VERIFY=INOUT is coded in the PATH designated by the GRPNM, the call is accepted only if the VERID contains the caller's address.

  See Appendix B, "Installation Examples for X.25 NPSI," for coding examples.

See the following chapters in *X.25 NPSI Diagnosis, Customization, and Tuning*:

- "Error Determination and Recovery" for more details on the SVCSC function
- "Problem Resolution Examples" if a problem occurs
- "X.25 NPSI Flow Sequences" for data flows.

Session Continuation (V3R2 and Later Releases)

Session continuation allows LU-LU sessions to remain active when the owning SSCP is lost. When the resource that served to establish ownership of the NCP fails, the NCP enters ANS. The NCP is then no longer owned. Ownership cannot be established on NCP initiative; therefore, the initiative must come from an eventual owner, for example an SSCP.

By coding ANS=CONT at system generation (for PVCs) or in the SMN (for SVCs), a connection is provided with session continuation.

Line, PU, and LU ownership can be taken over by another SSCP at ANS time, and given back to the original SSCP without disruption of the LU-LU sessions, if the partners remain reachable. This applies to SNA PVCs and SVCs and to non-SNA PVCs and SVCs.

ANS=CONT must be coded on the X25.MCH statement to allow CONT to work on the dependent virtual circuits. When ANS occurs, the NCP does not discontact the PU coded with ANS=CONT. The NCP allows the LINE and PU to remain active so that the LU-LU sessions belonging to the PU are not disturbed. Thus, when the owning SSCP is lost, but the application and remote DTE are not, the data exchange can continue without any disruption.

Note: Session continuation is supported for SNA DTEs (PVC and SVC) in V3R1. In V3R2, session continuation is also supported for non-SNA remote DTEs (PVC and SVC).

Virtual Route Pacing for Subarea-to-Subarea Communication

Virtual route pacing window size (VRPWS) must be considered when subarea node virtual circuits are used. For example, the VRPWS value must be larger than the default values to avoid frequent:

- Isolated virtual routed pacing responses. These responses use as much X.25 NPSI processing time as a normal data packet. Too many of these can increase central control unit (CCU) utilization.
- Entering and exiting virtual route hold. This activity degrades response time on the virtual route. If the CCU is fully loaded, the execution of some background tasks can be delayed because X.25 NPSI subarea node tasks have a higher priority.

The INSLOW keywords of the X25.VCCPT statement are not taken into account for subarea node virtual circuits. Instead, global flow control between subarea nodes controls buffer levels by way of the virtual route pacing mechanism. Therefore, the VRPWS must be adjusted as a function of both the buffer pool size and the SLODOWN threshold.

See *NCP, SSP, and EP Diagnosis* under the heading "Network Flow Control Problems" for assistance in calculating the appropriate virtual route window size.

Chapter 6. Controlling X.25 NPSI Resources

Chapter 6. Controlling X.25 NPSI Resources

This chapter describes the method of controlling the following resources for X.25 NPSI:

- SNA resources
- Non-SNA resources.

SNA Resources

This section describes the operation of permanent virtual circuits (PVCs) and switched virtual circuits (SVCs). It also includes the required keywords, definitions, and activation and deactivation sequences, to permit safe and effective management of these resources.

Permanent Virtual Circuits

PVCs are defined to the network as SNA dedicated resources. SNA resources, which operate on PVCs, are defined to VTAM and NCP in the same way they are defined to non-X.25 dedicated resources.

Activation

PVC activation for SNA resources starts when the MCH is activated. Once this occurs, the normal SNA activation sequence flows as though X.25 NPSI does not exist. Normal SNA flow includes ACTLINK, ACTPU, and ACTLU commands. SDLC commands are mapped to qualified logical link control (QLLC) packets for LLC type 3, and to physical services headers (PSH) for LLC type 2.

To activate an SNA resource on a PVC, complete each activation step in the following order. To successfully complete the connection, this sequence must be followed carefully.

1. Activate the physical circuit line.

   Activate the physical circuit line that is used by the virtual circuit to connect to the PSDN. The SNA activation sequence procedure requires that you activate the line first.

   Physical circuit activation causes the voltage level in the data terminal ready (DTR) to raise. In response, the modem raises the data set ready (DSR) level, enabling the physical line to transmit and receive data.

2. Activate the physical circuit PU.

   Activate the physical circuit PU to initiate the link access procedure balanced (LAPB) process. This activation causes the acknowledgments to flow and the physical circuit to reinitialize. An ACTPU command is transmitted to the MCH PU, completing this part of the activation sequence.

3. Activate the PVC line.

   Activate the PVC (defined in the X25.LINE statement or the X25.VC statement) before or after MCH activation. No traffic occurs on the real line for this command. Though no traffic is actually transmitted in response to this command, you must adhere to the NCP hierarchy and activation sequence.

4. Activate the PVC PU.

   Activate the physical unit associated with the PVC. The SNA request that activates the PVC also initiates the contact procedure. As a result, X.25 NPSI transmits a PSCONT, QXID, or QSM command to the remote DTE. A positive acknowledgment permits the contact procedure to be completed by a CONTACTED message returned to the initiator. An ACTPU command is transmitted to the PVC PU to complete the sequence.

5. Activate the PVC LUs.

   The last part of this sequence is the activation of the LUs associated with the PVC. This sequence consists of an ACTLU command that is transmitted to the PVC LU. If the LU is successfully activated, a positive response is returned.

Deactivation

VTAM and NCP definitions for SNA resources that operate on PVCs are similar to definitions related to normal NCP resources, and do not depend on whether you are using X.25 NPSI. Like the activation sequence, the deactivation sequence closely resembles the SDLC resource sequence.

If the physical circuit is deactivated or has never been activated, the PVC will be unavailable for communication. If any of the PVC components (physical circuit, logical units, or physical units) are inactive, the subsequent components in the activation sequence will be unavailable. For example, if a physical circuit's physical unit is inactive, the PVC physical unit and logical unit cannot be activated.

The best method of deactivating the PVC is to reverse the order of the activation sequence. Reversing the order guarantees that all resources are returned to the correct state, and ensures that the network is synchronized and available for future communication. However, a PU can be deactivated if a RESET command is received from or sent to the network.

If for some reason a resource hangs in PENDING status, the network operator should issue a V NET,INACT,F command for the line related to the hung resource. In this case, every resource dependent on that line is deactivated.

Connectability Status

When the PVC is available for communication, all resources associated with the SNA PVC indicate a status of ACTIVE. Check for the ACTIVE status to ensure that the PVC is ready for communication. The PVC is defined to NCP and VTAM as a dedicated SNA resource. As a result, the VTAM and NCP status for a PVC resource is displayed in the same way as any other dedicated SNA resource.

Switched Virtual Circuits

SVCs are defined to VTAM and NCP as SNA switched resources. As a result, VTAM requires the creation of a switched major node (SMN) for SVCs.

Activation

To activate an SNA resource on an SVC, complete each activation step in the following order. To successfully complete the connection, this sequence must be followed carefully.

1. Activate the physical circuit line.
2. Activate the physical circuit PU.

3. Activate the SVC line.

   This can be done before MCH activation.

4. Activate the switched major node.

   Activation of an SVC PU in an SMN results in the PU being ready to send or accept calls. The SMN physical unit completes the activation sequence with a connectable (CONCT) status.

   Call-out is triggered by the application through the use of OPNDST OPTCD=ACQUIRE macro, or using an OPNDST OPTCD=ACCEPT combined with a SIMLOGON macro or VARY NET,LOGON= command.

There is no logical unit activation with an SVC until the call is completed. In addition, the physical unit is not active until the call is completed.

Besides the normal activation sequence, the following SNA requests are also needed to activate SVCs:

- CONNOUT or ACTCONNIN
- REQCONT
- Multiple SETCVs
- RNAA

The activation process differs for call-in and call-out. See *X.25 NPSI Diagnosis, Customization, and Tuning* for data flow diagrams.

Activating Calls that Use SVCSC (V3R2 and Later Releases)

For calls using SVCSC, the command V NET,DIAL,ID=puname of the SVCSC PU causes the call-out to be made. This PU in the SMN must have a PATH statement that contains the DIALNO keyword. The call can be made from either side when the calling PU has an associated PATH statement. There are no requirements on the called side for establishing the PU type 4 or 5 to PU type 4 or 5 session, besides activating the SMN.

If one of the NCPs fails during SHM disconnection but becomes active before reconnection, an initial call using V NET,DIAL must still be retransmitted. In this case, a normal SHM reconnection would fail and both sides would become inoperable. Before retransmitting the V NET,DIAL command, the side that remained active must be deactivated.

After ANS and takeover of an NCP, the SVCSCs that were active must be reactivated from the new SSCP as all other resources. For example, this can be done using the V NET,ACT,ID=ncpname,SCOPE=ALL command. This allows the SSCP taking over to update its internal tables. Issuing a V NET,DIAL command before the activation previously noted for an SVCSC resource would desynchronize SSCP and X.25 NPSI statuses.

Considerations

X.25 does not create a link between the X.25 NPSI resource and SNA resources until the call is established. This structure eliminates MCH lockups that can occur because of a loss of synchronization between the SNA and the X.25 resources.

X.25 NPSI uses the SNA resources of a physical circuit as a pool of available resources. After obtaining the first available resource, X.25 NPSI creates a correspondence between the two sets of resources.

Deactivation

The SVC deactivation sequence is a reversal of the activation sequence. SVC deactivation involves messages that flow between the PSDN, X.25 NPSI, NCP, and VTAM. Message traffic results from the higher SNA levels that pass information to synchronize end points.

If the deactivation is initiated by a local or a remote DTE, the sequence can vary. The following three deactivation methods are used for SVC:

- Operator
- CLSDST command from application
- Clear packet to or from the network.

The link between SNA and X.25 resources is broken at this point.

Deactivating Calls that Use SVCSC (V3R2 and Later Releases)

For calls using SVCSC, the command V NET,HANGUP,ID=puname of the SVCSC PU causes the call to be cleared. The call can be cleared from either side. Other possibilities, such as a CLEAR command from the network for usual error cases, can cause the call to be cleared. No SHM retries are executed then.

Connectability Status

To allow for connection to a switched facility, every component must be in the correct state. The PU and LU in the SMN must be in a connectable (CONCT) state. The MCH line, MCH PU, and virtual circuit line must indicate an ACTIVE status.

The CONCT state is entered when the resource is available for connection. In this state, the VTAM resource is pending an activation sequence. Then the connection request is passed to the access method for final resolution of network address and resource pairings. The access method locates the appropriate physical unit in the SMN definition, and then determines the physical unit and link pairing.

After the activation sequence starts, the resource status changes to ACTIVE. This continues until the SVC logical unit is active with an LU-LU session setup. At this stage, the entire communications path is active, and the application session is established.

Application Attachment

The application residing in the SNA host is attached to the SNA resource as if the PSDN did not exist. A normal BIND flows between the two logical units.

Determine the application considerations when using switched virtual circuits. For more information on the application requirements, see *X.25 NPSI Host Programming*.

Non-SNA Resources

Non-SNA resources operate similarly to SNA resources, except that:

- Non-SNA resources are defined and controlled by X.25 NPSI. X.25 NPSI takes the non-SNA resource and simulates it as an SNA resource to the host. Conversely, SNA requests sent from the host to non-SNA resources are handled by X.25 NPSI, rather than being sent directly to the non-SNA resources.
- Non-SNA resources, emulated as SNA resources by X.25 NPSI, are viewed as SNA LU type 1 devices. LU type 1 devices use an FID3 transmission header that

is 2 bytes long and contains no sequence number. Consequently, no outstanding PIUs are allowed in the network because all PIUs must be acknowledged. Each PIU sent to a non-SNA resource is paced.

Permanent Virtual Circuits

This section describes activation, deactivation, and connectability states for non-SNA PVCs.

Activation

PVC activation for non-SNA resources is similar to the activation sequence for SNA PVCs. The difference is that for non-SNA resources, X.25 NPSI, rather than the remote device, defines and controls the simulated SNA resources. A CONTACT command is sent to the PVC and a response is returned; however, no DTE data (such as PSCONT or QSM) is forwarded to the PSDN.

Deactivation

PVC deactivation for non-SNA resources is also similar to the PVC deactivation sequence for SNA resources. Again, the difference is that X.25 NPSI defines and controls the simulated SNA resources rather than the remote device. A DISCONTACT command is sent to the PVC and a response is returned; however, no DTE data (such as PSDISC or QDISC) is forwarded to the PSDN.

Connectability Status

VTAM displays the resource status as ACTIVE just as it does for an SNA PVC. However, this display only reflects the status as recorded by VTAM. SNA and non-SNA PVC resources appear the same to VTAM even though the non-SNA remote device might not be ready.

Switched Virtual Circuit

This section describes activation, deactivation, and connectability states for non-SNA SVCs.

Activation

SVC activation for both non-SNA and SNA resources is similar except that the SNA requests are not sent to the remote DTE. Instead, all SNA requests are processed by X.25 NPSI and the LU simulator. Synchronization between VTAM statuses and the remote DTE is ensured by the calling sequence.

Dial-In

The activation process for dial-in from a non-SNA resource is less complicated than for SNA resources, because only the Call Request and Call Accepted packets are transmitted across the network. Resource activation and session setup is performed between the NCP, X.25 NPSI, and VTAM.

Dial-Out

Dial-out to non-SNA resources follows the same process as that described for SNA resources. The difference is that fewer commands are processed across the network. Once the calling sequence is complete, PU and LU activation occurs as a series of command exchanges between the access method and the X.25 NPSI LU simulator.

Connectability Status

Connectability status for SVCs, whether they are non-SNA resources or SNA resources, is the same.

Session Continuation (V3R2 and Later Releases)

For switched connections, the NCP allows a switched line and PU to remain active when the owning SSCP fails. With the owning SSCP inoperable, an alternate SSCP can acquire ownership of the resource. When the original SSCP becomes operable, it can regain ownership. Thus, when the session partners can still be accessed, the active LU-LU sessions belonging to that PU are not disturbed.

By coding ANS=CONT for a PU in the VTAM switched major node, the NCP allows session continuation.

Application Attachment

To a host application, non-SNA resources appear to be defined as SNA resources. Actually, the host application is in session with the X.25 NPSI-simulated SNA resource. This resource is defined to the host application program as an SNA LU type 1 device.

X.25 NPSI takes the information transmitted to the simulated LU, prepares it for the PSDN, and transmits it. Therefore, the burden of support is transferred from the host application program to X.25 NPSI; however, the application must support the LU type 1 session.

GATE Considerations

GATE processing requires that a session be established between the CTCP and the physical circuit LU before connection to the network resources requiring LLC type 4 can be completed. The MCH line, PU, and LU must be activated first; afterwards, the CTCP can establish a session with the MCH LU.

The following processes are unique to GATE:

- All data for GATE processing passes between the CTCP and the virtual circuit LU. Consequently, the CTCP must either process the request or forward it to the appropriate application program.
- GATE usage is determined on a virtual circuit-by-virtual circuit basis. Therefore, a single physical circuit can support LLC type 4 and other types of LLCs.
- The MCH LU does not have to be active or in session for calls that do not require LLC type 4. The MCH LU to CTCP session is required only for LLC type 4 virtual circuits.
- GATE call-out requires no PATH statement in the switched major node, because X.25 NPSI handles this call-out as a simulated call-in request.
- The CTCP must issue CLSDST to deactivate the virtual circuit, because X.25 NPSI does not generate an INOP RU at clear time.

Note: If the CTCP is canceled or abends, or if the CTCP access method control block (ACB) is deactivated, the resources controlling the virtual circuits connected to this CTCP must be deactivated and then reactivated to avoid difficulties. In effect, the LUs that are undergoing logon processing at the time the CTCP fails stay active and are not reusable until the resources are deactivated or reactivated. If deactivating and reactivating the resources fails, the line resources associated with the hung virtual circuits must be deactivated with the VARY INACT,F form of the deactivate command, followed by activation.

Fast Connect Considerations

If you plan to use fast connect, consider the following:

- Sessions between the CTCP and the virtual circuit LUs must be preestablished.
- NCP and VTAM operate as though they are communicating with nonswitched resources, while X.25 NPSI is controlling the SVCs. X.25 NPSI maps the SVCs to the nonswitched lines.
- Sessions remain active even though clear messages are exchanged. The CTCP must provide the ability to display the status of the SVC if it is required for operation.

Activate the virtual circuits and SNA resources before activating the MCH. This permits the sessions to be established prior to any call-in requests.

Figure 21 shows how resources are allocated to avoid assignment collisions. This assignment process only applies to fast connect.

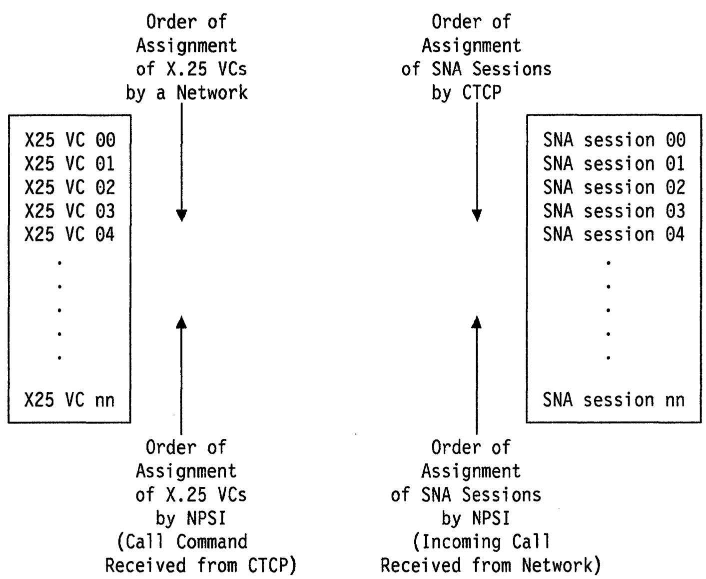

Figure 21. VC and SNA Resource Assignment Order (Fast Connect Only)

X.21 Switched Connection Considerations X.25 NPSI (V3R3 Only)

If you plan to use an X.21 switched connection, you should consider the following:

- An X.21 switched connection can be used with GATE only.
- An MCH must be dedicated to the X.21 switched connection.

  At link activation, X.25 NPSI uses the X21SW keyword on the X25.MCH statement to inform the scanner that the physical line is an X.21 switched line.
- Only one CTCP can be associated with each MCH. For example, the OS/Interconnection Communication Subsystem CTCP interfaces with the GATE function of X.25 NPSI.

- A maximum of 15 digits can be reserved for X.21 dialing.

  The X.21 dial digits, used to perform the X.21 outgoing call, are contained in the X.25 called DTE address as an X.25 NPSI call request packet built by CTCP and forwarded to GATE in a CALL REQUEST command. These dial digits represent the destination of the call, such as the number of the ISDN central exchange.

- X.21 incoming calls are accepted only when X.25 NPSI is in session with the CTCP (CTCP to MCH LU session).

  When establishing a control session between CTCP and MCH LU, X.25 NPSI sets the physical interface in Monitor Incoming Call state so that X.21 incoming calls can be received on the X.21 switched line.

- At least one virtual circuit must be set in answer mode before any calls can be received.
- X.25 NPSI does not support X.21 calling or called line identification.
- X.25 NPSI does not support X.21 Short Hold Mode or X.21 Multiple Port Sharing.

DATE Considerations

If DATE is used, the order and method of activation for virtual circuits is slightly modified. In general, DATE (and the associated CTCP) is used only for call setup and termination. During the application session, DATE is entirely out of the data flow. Unlike GATE, DATE is used for all virtual circuits on a physical circuit.

Activation

To activate a virtual circuit for DATE, follow each of these steps in the correct order. To successfully complete the connection, follow this sequence carefully.

1. Activate the physical circuit.

   Activate the physical circuit used by the virtual circuit that connects to the PSDN. Remember that the SNA activation sequence requires you to activate the physical line first.

   Physical circuit activation causes the voltage level in the data terminal ready (DTR) to raise. In response, the modem raises the data set ready (DSR) level, enabling the physical line to transmit and receive data. You must reactivate the MCH line after CTCP deactivation or failure, because the MCH line is then inactive.

2. Activate the physical circuit PU.

   During this step, nothing is sent to the network. The ACTPU is immediately completed.

3. Activate the MCH LU.

   The LU is automatically activated because ISTATUS=ACTIVE is generated for the DATE MCH LU.

4. Verify that the CTCP has established a type 1 session with the MCH LU.
5. Verify that the CTCP has sent the RESTART command to initiate the link access procedure balanced (LAPB) process. After the CTCP starts the line setup, it can monitor the link.

Note: If the CTCP is canceled or abends, or if the CTCP ACB is deactivated, the switched major node controlling the virtual circuits connected to this CTCP must be deactivated and then reactivated to avoid hung resources.

PVC Setup: DATE has very little effect on PVC activation. DATE is only involved when the Reset, Interrupt, and qualified packets are exchanged between the CTCP and X.25 NPSI. In this situation, DATE takes the appropriate packet information and passes it on to the CTCP.

SVC Setup: DATE has an effect on SVC activation. For example, the CTCP must determine when a user application program is ready to be called or is waiting to call out. Virtual circuit type, packet size, and window size must all be defined to the CTCP before it can pass that information on to X.25 NPSI.

For call-in, DATE processes the Call Request packet and forwards it to the CTCP. The CTCP then sends a CALL ACCEPTED command to X.25 NPSI that determines LLC type, window size, and packet size. Request Contact (REQCONT) is provided at this time.

For call-out, an operator command or an application-initiated message must be sent to the CTCP. Call-in is simulated to VTAM even though the CTCP can perform call-out. Therefore, the PATH statement is not needed in DATE's switched major node.

X.25 NPSI can build a logon for LLC types 0 and 5, if requested by the CTCP. For more details on DATE CTCP, see *X.25 NPSI Host Programming*.

Deactivation

DATE session deactivation can occur in the following ways:

- X.25 NPSI receives a Clear Indication packet from the PSDN. Upon receipt of this packet, X.25 NPSI sends a CLEAR command to the CTCP. The CTCP sends a CLEAR CONFIRMATION command to X.25 NPSI, which in turn forwards the command to the network and generates an INOP to the virtual circuit for the host. This causes the application's LOSTERM exit to be invoked, permitting the session to be cleared when the CLSDST command is executed.
- The application issues a CLSDST command. Upon receipt of the resulting ABCONN request, X.25 NPSI sends an information report to the CTCP that sends a CLEAR command back to X.25 NPSI. Afterwards, X.25 NPSI forwards a Clear packet to the PSDN. Upon receipt of the Clear Confirmation packet from the PSDN, deactivation is complete.
- The CTCP can be deactivated normally by operator intervention, or abnormally by an abend. Once the CTCP is reactivated, the MCH link must also be reactivated and the session to the MCH LU re-established.
- The application requests the CTCP to clear the session by having the CTCP send a CLEAR command to X.25 NPSI. DATE translates this command into a Clear Request packet and forwards this information to the PSDN. A Clear Confirmation packet is returned to X.25 NPSI, triggering an INOP to the host. This causes the application's LOSTERM exit to be invoked. Session termination occurs when the CLSDST command is executed.
- The CTCP fails for some reason and the MCH line is made inoperable. As a result, all dependent virtual circuits are cleared (SVCs) or reset (PVCs) either by the network, after a time-out of approximately two minutes, or by X.25 NPSI when the CTCP is restarted.

X.25 and SNA Resource Assignment Process

Figure 22 shows the direction in which the resources are allocated and lists which program allocates each type of resource. Assignments are made in this order to avoid assignment collisions.

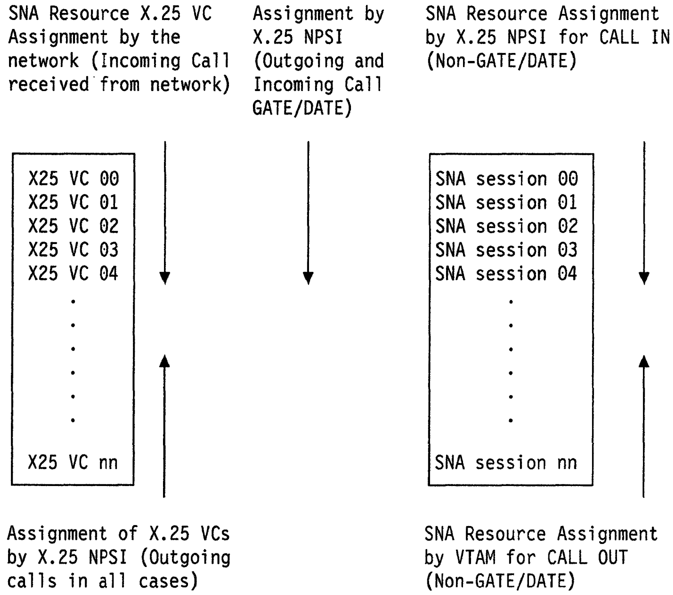

Figure 22. X.25 Virtual Circuit and SNA Resource Assignment

Appendix A. Defining X.25 PSDN Facilities

Appendix A. Defining X.25 PSDN Facilities

This appendix describes how X.25 NPSI supports various optional user facilities defined in Recommendation X.25. It describes the differences between virtual circuits with and without CTCPs, and describes the following optional facilities:

- Flow control parameter negotiation
- Closed user group
- Fast select
- High-priority class of traffic
- One-way logical channel
- Reverse charging
- Throughput class negotiation.

Optional Facilities Using X.25 NPSI Statements

The following section describes:

- Virtual circuits without a CTCP
- Virtual circuits with a CTCP.

Virtual Circuits without a CTCP

For virtual circuits without a CTCP, X.25 NPSI selects the flow control parameter values according to the following hierarchy:

- In the facility fields of the Incoming Call or Call Connected packets
- In the X25.VCCPT statement.

  Note: Facilities defined in the X25.OUFT statement are not taken into account by X.25 NPSI. However, you must code the VCCPT facility entries to match the OUFT facility entries. In the PATH macro, xx and yy indexes must point to compatible entries.

Virtual Circuits with a CTCP

For virtual circuits with a CTCP, the CTCP defines the flow control parameter values to X.25 NPSI in the CALL REQUEST or CALL ACCEPTED command. The values specified in the commands from the CTCP *should* correspond to either the values specified in the facility fields of the corresponding packet or the values that the network will use by default.

X.25 NPSI passes these facilities to the CTCP or to the PSDN without any processing. Negotiation occurs directly between the CTCP and the PSDN. If the facilities are not accepted by the CTCP or the PSDN, the call must be cleared by the CTCP or the PSDN.

X.25 NPSI does not check whether the packet and window sizes are the same in both directions. X.25 NPSI is transparent to all these negotiations.

If the packet size and window size passed to the CTCP in the CALL CONNECTED command are different from the sizes specified to X.25 NPSI in the CALL REQUEST, the CTCP must clear the call.

For V3R3 only: In GATE and DATE, if you code INTFAC=YES on the X25.MCH statement, the flow control parameters included in the facilities of the CALL CONNECTED packet are taken into account by X.25 NPSI. The following three facilities are analyzed:

- Packet length negotiation
- Window size negotiation
- High-priority class of traffic.

Duplicate facilities are authorized (the last one is taken), regardless of the value coded for NETTYPE. It is the CTCP's responsibility to detect duplicate facilities. If duplicated facilities are detected, the connection should be cleared if NETTYPE=4.

Flow Control Parameter Negotiation

X.25 NPSI supports flow control parameter negotiation. This optional facility allows packet and window size negotiation on a per call basis. When the calling DTE subscribes to flow control parameter negotiation, the DTE can request specific packet and window sizes for each direction of traffic flow. If a size is not specified, the default value is used.

Coding Requirements

To code flow control parameter negotiation, use:

- Packet length

  Facility code field = X'42'
  Facility field parameter = '0x0y'

  where:

  x Is the packet size for transmission from the called DTE.
  y Is the packet size for transmission from the calling DTE.

PACKET SIZE CODE	PACKET LENGTH
4	16
5	32
6	64
7	128
8	256
9	512
A	1024
B	2048
C	4096

- Window size

  Facility code field = X'43'
  Facility field parameter = 'wwzz'

  where:

  ww Is the window size for transmission from the called DTE.
  zz Is the window size for transmission from the calling DTE.

An example of a facility field is:

420909430404

where:

42 Is the flow control packet size negotiation facility.
0909 Is the packet size.
43 Is the flow control window size negotiation facility.
0404 Is the window size for each direction.

This specification results in a packet size of 512 and a window size of 4 for each direction of traffic.

Operation

For V3R2 and previous releases:

X.25 NPSI checks the facility values in all the Incoming Call and Call Connected packets, and will accept the call only if *all* of the following five conditions are met:

1. x must be defined between X'4' and X'C'.
2. x must equal y.
3. Negotiated packet size must be less than the maximum frame length.
4. ww must equal zz.
5. ww must be less than or equal to 7 for modulo 8, or less than or equal to 127 for modulo 128.

For V3R3 only:

X.25 NPSI checks the facility values in all the Incoming Call and Call Connected packets, and will accept the call only if *all* of the following three conditions are met:

1. x must be defined between X'4' and X'C'.
2. Negotiated packet size must be less than the maximum frame length.
3. ww must be less than or equal to 7 for modulo 8, or less than or equal to 127 for modulo 128.

In GATE and DATE, depending on the generation option and if high-priority class of traffic is requested in the facilities of the Call Connected packet, this is taken into account by X.25 NPSI. The three conditions described previously must be met. If one of the conditions is not met, or if an error is found, the Call Connected packet is sent to the CTCP to clear the connection.

Closed User Group

This option restricts a set of DTEs from access to another DTE set. DTEs belonging to one CUG can communicate with each other, but are denied communication with DTEs outside their group.

Coding Requirements

To code CUG in the Call Request packet use:

Facility code field = X'03'

Closed user group (CUG) number as defined to the PSDN.

The index to the closed user group is in the form of 2-decimal digits. Each digit is binary coded. Bit 5 is the low-order bit of the first digit and bit 1 is the low-order bit of the second digit.

Note: Indexes to the same closed user group at different DTE to DCE interfaces, can differ.

The following example shows a request for closed user group 14:

```
0314
```

Operation

X.25 NPSI accepts the call; however, it performs no analysis.

X.25 NPSI performs no analysis on the content of the facility field, and accepts the call as long as none of the CUG keywords are specified in the RFAC keyword of the X25.NET statement of the corresponding network.

Fast Select

The fast select option allows data to be transferred to or from the CTCP in a Call Request, Incoming Call, Call Accepted, Call Connected, Clear Request, or Clear Indication packet on an SVC within the CALL USER DATA and CLEAR USER DATA fields.

Coding Requirements

To code the fast select option, use:

Facility code field = X'01'

Facility parameter field = X'80' (no restriction on response)

Facility parameter field = X'C0' (restriction on response); Call Accepted packets cannot be used.

The following example shows the facility field requesting fast select:

```
01C0
```

Operation

Communication between DTEs occurs through the use of:

- Incoming Call or Call Request packet
- Call Accepted or Call Connected packet
- Clear Request or Clear Indication packet.

This contrasts to the normal mode of using Information packets as a communication method. The control packet's user data field is restricted in size to 128 bytes. This facility is only supported through DATE or GATE.

Fast select is an optional facility that can be rejected through the RFAC keyword in the X25.NET statement.

High-Priority Class of Traffic

The high-priority class of traffic facility allows data to be transferred between the DTE and the DCE on an SVC with high-priority. This option restricts the requests and responses to 128 bytes in length with no support for the M bit.

Coding Requirements

To code the high-priority class of traffic facility, use:

Facility code field = X'01'

Facility parameter field = X'00' (high-priority class of traffic not requested)

Facility parameter field = X'02' (high-priority class of traffic requested).

The following example shows the facility field requesting high-priority class of traffic:

```
0102
```

Operation

High-priority class of traffic is supported for outgoing and incoming calls. Packets must be 128 bytes long. For incoming calls, X.25 NPSI checks for high-priority service requests in the facility fields and internally updates the maximum packet size during the call. For outgoing calls, X.25 NPSI supports this facility by using the OPTFACL keyword of the X25.OUFT statement associated with a VCCPT entry containing a MAXPKTL parameter of 128.

One-Way Logical Channel

The one-way logical channel facility limits the use of a logical channel to either incoming or outgoing calls.

Incoming Coding Requirements

The logical channel number of an incoming one-way logical channel must be *greater* than the greatest value for a permanent virtual circuit and *less* than the smallest value for a two-way virtual circuit. Thus, if LCNs 1—5 are used for PVCs and you want five logical channels for one-way incoming calls, these LCNs must start at a value greater than 5, but a lesser value than 4095.

Outgoing Coding Requirements

The logical channel number of an outgoing one-way logical channel must be *greater* than the greatest value for a two-way virtual circuit but *less* than 4095. Thus, if LCNs 1—5 are used for two-way virtual circuits and you want five logical channels for one-way outgoing calls, you must assign LCNs greater than 5, but less than 4095, to these logical channels.

Restricted virtual circuits are defined through the use of the CALL keyword of the X25.LINE or X25.VC statement. The CALL keyword, which defines how an SVC is to be established, has the following options:

- CALL=IN (one-way in)
- CALL=OUT (one-way out).

Reverse Charging

The reverse charging facility causes the PSDN to charge the called DTE rather than the calling DTE. If this facility is not specified, the calling DTE is assessed all connection charges.

Coding Requirements

To code reverse charging in the Call Request packet, use:

Facility code field = X'01'

Facility parameter field = X'00' (reverse charging not requested)

Facility parameter field = X'01' (reverse charging requested).

The following example shows the facility field requesting reverse charging:

```
0101
```

Operation

X.25 NPSI accepts the presence of the reverse charging facility field in an Incoming Call packet without analysis of the content unless REVCHG is specified with the RFAC keyword of the X25.NET statement. If REVCHG is specified, the call is cleared. Reverse charging can be requested by X.25 NPSI in an outgoing call using the OUFT index in the PATH statement. Otherwise, reverse charging acceptance can be controlled through the use of DATE and GATE CTCPs.

Throughput Class Negotiation

The throughput class of a virtual call defines the effective rate in which data can be transferred. Both packet size and window size affect this rate, but other factors such as the line speed also contribute.

Throughput class can only be negotiated *downward*. Downward negotiation reduces the effective data exchange rate and the associated transmission cost. This resulting data exchange rate effectively reduces the priority of a virtual circuit, which in turn reduces the use of the connecting physical circuit.

The PSDN forces the smallest throughput class value for each flow if there is a conflict between the throughput classes for transmission and the default for reception. This case applies only to switched virtual circuits.

Coding Requirements

To code the throughput class negotiation facility use:

Facility code field = X'02'

Facility parameter field = bits 0–3

Facility parameter field = bits 4–7.

The throughput class for transmission from the calling DTE is indicated in bits 4, 5, 6, and 7. The throughput class for transmission from the called DTE is indicated in bits 0, 1, 2, and 3. Bits 3 and 7 are the low-order bits of each throughput class indicator.

The following example shows the facility field requesting throughput class negotiation with 2400 bits per second for both the called and calling DTEs:

```
0277
```

Operation

X.25 NPSI accepts the presence of the throughput class negotiation facility field in an Incoming Call packet without analysis of the content unless THRUPUTCL is specified with the RFAC keyword of the X25.NET statement. If THRUPUTCL is specified, the call is cleared.

Optional Facilities Table

CCITT defines optional user facilities. If DATE or GATE is used, X.25 NPSI allows all facilities to be supported by the CTCP. However, if DATE or GATE is *not* used, X.25 NPSI supports the following facilities. Table 16 and Table 17 show X.25 NPSI support of CCITT facilities.

Table 16 (Page 1 of 2). X.25 NPSI Support

Optional User Facility	GATE/DATE	Other Option
Bilateral CUG Related Facilities	S	S (out+GR)
Call Redirection Notification	S (by DCE)	S (by DCE)
Called Address Extension	S	S (out)
Called Line Address Modified Notification	S	N/S
Called Redirection Notification	S (by DCE)	S (by DCE)
Calling Address Extension	S	S (out)
Charging Information	S	N/S
Closed User Group (CUG)	S	S (out+GR)
CUG Selection	S	S (out+GR)
CUG with Incoming Access	S	S (out+GR)
CUG with Outgoing Access	S	S (out+GR)
CUG with Outgoing Access Selection	S	S (out+GR)
D Bit Modification	N/S	N/S
Default Throughput Class Assignment	S	S
End-to-End Transit Delay Negotiation	S	S (out)
Extended Packet Sequence Numbering	S	S
Fast Select	S	N/S
Fast Select Acceptance	S	N/S
Flow Control Parameter Negotiation	S	S
Hunt Group	S (by DCE)	S (by DCE)
Incoming Calls Barred	S (by DCE)	S (by DCE)
Incoming Calls Barred within CUG	S	S (out)
Local Charging Prevention	S (by DCE)	S (by DCE)
Minimum Throughput Class Negotiation	S	S (out)
Network User Identification	S	S (out)
Nonstandard Default Packet Sizes	S	S
Nonstandard Default Window Sizes	S	S
One-way Logical Channel Incoming	S	S
One-way Logical Channel Outgoing	S	S
Online Facility Registration	N/S	N/S
Outgoing Calls Barred	S (by DCE)	S (by DCE)
Outgoing Calls Barred within CUG	S	S (out)
Packet Retransmission	N/S	N/S

Table 16 (Page 2 of 2). X.25 NPSI Support

Optional User Facility	GATE/DATE	Other Option
Reverse Charging	S	S (out)
Reverse Charging Acceptance	S	S
RPOA Selection	S	S (out)
Throughput Class Negotiation	S	S
Transit Delay Selection and Indication	S	S (out)

Legend:

S Supported by DTE, or usage on a per-call basis depends on operational requirements.

N/S Not supported.

By DCE The DTE is not involved in the processing of this facility.

Out X.25 NPSI can set some facilities in the outgoing Call Request packets without processing or checking these facilities when they are received in an Incoming Call or Call Connected packet.

GR Incoming call is rejected if the facility is included in the call-in, is not associated with the facility parameter, and is specified to be rejected in the RFAC keyword of the X25.NET statement.

Table 17. Support for Implementation Requirements

Implementation Requirement	Support
Call User Data Field	S
Concurrent sharing with SNA	S (subaddressing, CUD)
Extended Addressing	S (with GATE/DATE only)
Extended Facilities and Length	S
Fast Select	S (with GATE/DATE only)
Interrupt Packet Control	S
Reset Packet Control	S
Use of D bit	S
Use of M bit	S (no mapping on SNA chaining)

Legend:

S Supported

Appendix B. Installation Examples for X.25 NPSI

Appendix B. Installation Examples for X.25 NPSI

This appendix contains examples of the coding you need to install X.25 NPSI in the NCP. Use this appendix when planning your installation process, but remember all network configurations differ.

The appendix is divided into three parts:

- Example A for Version 3 Release 1
- Example B for Version 3 Release 2
- Example C for Version 3 Release 3.

Each part contains an example of coding that is specific to that version.

Version 3 Release 1 (Example A)

This example consists of four sections:

- NCP and X.25 NPSI generation input including JCL

  This section contains examples of X.25 NPSI features, such as different types of MCHs and virtual circuits.

- LKEDT step

  This section contains an example illustrating how the LKEDT step makes for easier maintenance of X.25 NPSI if relinking of modules is all that is required.

- NCP input produced by NDF (X.25 NPSI)

  This section contains examples of NCP statements produced by the X.25 NPSI part of generation for input to VTAM. Also, examples are included of the default X.25 NPSI naming conventions and of the order of the statements generated for SVCs.

- Main switched major node

  This example illustrates some of the IDNUM usages that go with the X.25 NPSI generation.

Note: This is not meant to be a production example.

NCP and X.25 NPSI Generation Input Including JCL

```
//S1 EXEC PGM=IEHPROGM
//* CLEAN UP PREALLOCATED PDS USED TO SAVE CONTROL BLOCK OBJECT CODE
//SYSPRINT DD SYSOUT=A
//DD1 DD VOL=SER=NCPX25,UNIT=3380,DISP=SHR
//SYSIN DD *
   SCRATCH DSNAME=X25.NCPV31.SA314G,VOL=3380=NCPX25,MEMBER=ICNTABL1
   SCRATCH DSNAME=X25.NCPV31.SA314G,VOL=3380=NCPX25,MEMBER=ICNTABL2
   SCRATCH DSNAME=X25.NCPV31.SA314G,VOL=3380=NCPX25,MEMBER=SA314LE
/*
//S2 EXEC PGM=IEBCOPY,ADDRSPC=REAL,REGION=128K
//* COMPRESS THE PREALLOCATED PDS
//SYSPRINT DD SYSOUT=A
//DISK    DD DISP=SHR,DSN=X25.NCPV31.SA314G
//SYSUT3  DD UNIT=SYSDA,SPACE=(CYL,(10,1),,CONTIG)
//SYSUT4  DD UNIT=SYSDA,SPACE=(CYL,(10,1),,CONTIG)
//SYSIN   DD *
 COPY OUTDD=DISK,INDD=DISK
/*
//STEP1   EXEC  PGM=ICNRTNDF,REGION=6000K,PARM='LINECNT=45'
//STEPLIB DD DSN=NCP.NCPV51.SSPLIB,DISP=SHR
//        DD DSN=SYS1.NPSILNK,DISP=SHR
//GENDECK DD *
**********************************************************************
*                                                                    *
*          EXAMPLE OF GENERATION OF NPSI WITHIN NCP                  *
*                                                                    *
* - MCH0 (SL0)        PVC 0 FOR PSH                                  *
*                     SVC1,2,3,4  FOR PCNE,PSH,PADX,BNNQLLC          *
*                     1/IN   2,3/INOUT    4/OUT                      *
*                                                                    *
* - MCH1 (SL1)        PVC 0 FOR PCNE                                 *
*                     PVC 1 FOR INN  (WE ARE SECONDARY)              *
*                     PVC 2 FOR INN  (WE ARE PRIMARY)                *
*                     PVC 3 FOR BNN QLLC                             *
*                     SVC 100 FOR GATE SUBADDRESSING(ANY LLC SELECTED)
*                                                                    *
* - MCH2 (SL2)        PVC 0 FOR PCNE                                 *
*                     SVC 1,2  FOR PCNE,PSH,PADI,BNNQLLC,GATE        *
*                     1/2 INOUT      NULL CUD0 WILL SELECT PAD       *
*                                                                    *
* - MCH3 (SL3)        SVC 1,2  FOR PCNE,PSH,PADX,BNNQLLC (DATE)      *
*                                                                    *
*                                                                    *
* - MCH4 (SL4)        SVC 1,2,3,4,5,6,7 FOR FAST CONNECT             *
*                       CONNECT=SUBD: CTCP SELECTED VIA SUBADDRESSING*
*                                                                    *
**********************************************************************
*
**
***   STAGE 1 INPUT
**
         OPTIONS USERGEN=X25NPSI,      *INDICATE NEO NAME             X
               NEWDEFN=YES             *INCLUDE NPSI STMTS IN VTAMLST
BAKLOCAL PCCU  DUMPDS=DUMPX25,SUBAREA=1
*
BAKBUILD BUILD NPA=YES,                                               X
               VERSION=V5R1,        * NCP VERSION                     X
               LOADLIB=LNCP10,                                        X
```

```
                TYPGEN=NCP,                                                X
                MODEL=3720,                                                X
                NETID=LGEMVS5,        * HOST ID                            X
                MAXSUBA=15,                                                X
                SUBAREA=4,                                                 X
                BFRS=124,             * BEST FOR NPSI PERFORMANCE          X
                CA=TYPE5,                                                  X
                LTRACE=4,             * ALLOWS LINE TRACE ON TWO MCH'S     X
                OLT=YES,                                                   X
                DR3270=NO,                                                 X
                BRANCH=8000,                                               X
                TRACE=(YES,100),      * 100 ENTRIES IN ADDRESS TRACE TBL X
                NEWNAME=SA314G,                                            X
                X25.PREFIX=S,         * ALL NAMES START WITH S             X
                X25.IDNUMH=02,        * X25.IDNUMH MUST MATCH WITH SWITCHX
                TYPSYS=OS,            * MAJOR NODE IDS.(2FIRST DIGITS)     X
                X25.SNAP=YES,         * OPTIONAL DIAGNOSIS SNAP INCLUDED X
                X25.MCHCNT=5,         * NUMBER OF PHYSICAL LINKS           X
                X25.MAXPIU=64K
BAKSYSC SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,                X
                RIMM,NAKLIM,SESSION,SSPAUSE,XMTLMT)
BAKHOST HOST  INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=1,           X
                DELAY=0.1,STATMOD=YES,TIMEOUT=30
PATH41   PATH   DESTSA=(1),ER0=(1,1),ER1=(1,1),ER2=(1,1) TO HOST
PATH42   PATH   DESTSA=(5,2,3),ER0=(5,2),ER1=(5,3),ER2=(3,4)
         LUDRPOOL NUMTYP1=10,         * FOR NON SNA CALLS                  X
                 NUMTYP2=10           * FOR QLLC OR PSH CALLS
******************************************************
         EJECT                        * AT LEAST ONE SDLC LINE
SDLC6    GROUP LNCTL=SDLC,            * MUST BE DEFINED                    X
                TYPE=NCP,                                                  X
                DIAL=YES,                                                  X
                REPLYTO=20
**************************************
SL6      LINE  ADDRESS=6,             * SDLC LINE FOR NIA FRONTAL          X
                CLOCKNG=EXT,          *                                    X
                NEWSYNC=NO,                                                X
                DUPLEX=HALF,                                               X
                NRZI=NO,                                                   X
                CALL=INOUT,                                                X
                RETRIES=(7,0,0)
SP6       PU   ISTATUS=INACTIVE,                                           X
                PUTYPE=2
******************************************************
         EJECT
SDLC5    GROUP LNCTL=SDLC,                                                 X
                TYPE=NCP,                                                  X
                DIAL=NO,                                                   X
                REPLYTO=3,                                                 X
                DISCNT=NO,                                                 X
                ISTATUS=INACTIVE
**************************************
SL5      LINE  ADDRESS=5,             * LEASED SDLC MULTIPOINT LINE        X
                CLOCKNG=EXT,                                               X
                NEWSYNC=NO,                                                X
                DUPLEX=HALF,                                               X
                NRZI=NO,NPACOLL=YES,                                       X
                RETRIES=(3)
              SERVICE ORDER=(SP5)
SP5       PU   ADDR=C2,               * ADDRESS 3274                       X
```

```
                  MAXDATA=261,                                                X
                  MAXOUT=3,                                                   X
                  PUTYPE=2,NPACOLL=YES,                                       X
                  VPACING=2,                                                  X
                  PACING=1
SU5      LU       LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,NPACOLL=YES
         EJECT
**********************************************************
GRNPA    GROUP LNCTL=SDLC,          * FOR NPM RECORDING                       X
               TYPE=NCP,                                                      X
               DIAL=NO,                                                       X
               DISCNT=NO,                                                     X
               VIRTUAL=YES,                                                   X
               NPARSC=YES,                                                    X
               ISTATUS=INACTIVE
LNNPA    LINE  LINEFVT=NPAVFVT
PUNPA    PU    PUTYPE=2,PUFVT=NPAPFVT
LUNPA    LU    MAXCOLL=7,LUFVT=(NPALFVT,NPALFVT),                             X
               VPACING=0,LOCADDR=1
**************************************
         EJECT
***** X25 NPSI INPUT
*     ALLOW 3 VCCPT AND OUFT ENTRIES
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES
*
         X25.VCCPT INDEX=1,                                                   X
               MAXPKTL=128,                                                   X
               VWINDOW=1,           * PACKET LEVEL WINDOW                     X
               INSLOW=(100,50)      * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=2,                                                   X
               MAXPKTL=128,                                                   X
               VWINDOW=2,                                                     X
               INSLOW=(100,50)      * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=3,                                                   X
               MAXPKTL=128,                                                   X
               VWINDOW=3,                                                     X
               INSLOW=(100,50)      * TO PREVENT SLOWDOWN
*
         X25.OUFT  INDEX=1
*
         X25.OUFT  INDEX=2,         * PKT SIZE=128,VWINDOW=2                  X
               OPTFACL=420707430202
*
         X25.OUFT  INDEX=3,         * PKT SIZE=128,VWINDOW=3, AND             X
               OPTFACL=034301024207074303O3, * REVERSECHARGING REQUEST X
               USRFILD=1234567890
***********************************************************************
*
               EJECT
***********************************************************************
* FIRST  MCH  SL0: NO DATE/GATE BUT TRANSPARENT PAD
***********************************************************************
         X25.MCH ADDRESS=0,            *CONTROLLER LINE ADDR                  X
               ANS=CONT,                                                      X
               LCGDEF=(0,4),           *MAX LCN IS 4 ON LCGN 0                X
               FRMLGTH=131,                                                   X
               MWINDOW=2,              *LAP WINDOW                            X
               STATION=DTE,                                                   X
```

```
                TPTIMER=3,              *LAPB RECOVERY PARAMETERS      X
                TDTIMER=1,              *                              X
                NPRETRY=7,              *                              X
                NDRETRY=1,              *                              X
                LLCLIST=(LLC0,LLC2,LLC3,LLC5),                         X
                LCN0=USED,                                             X
                SPAN=X2501,             *FOR NETVIEW                   X
                DBIT=NO,                *NO DBIT SUPPORT ON THIS MCH   X
                PAD=TRANSP,TRAN=EVEN,   *ALLOW TRANSPARENT PAD         X
                ITRACE=YES,             * LAP INTERNAL TRACE ACTIVE    X
                SPEED=9600,             *REAL MCH SPEED                X
                T1TIMER=1               *REAL T1 OF THE DCE
*
         X25.LCG LCGN=0
*
*** X25 LINE FOR PSH (PVC) LINE NAME=SL0000 PU=SP0000 LU=SU0000
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC2,TYPE=P,SPAN=X2501
*
         X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,                X
               PACING=2,ISTATUS=INACTIVE
         X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
* 4 SVC'S: 1 IN, 2 IN/OUT, 1 OUT
*
         X25.VC LCN=1,VCCINDX=2,TYPE=S,CALL=IN,OUFINDX=2,SPAN=X2501
         X25.VC LCN=(2,3),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=3,       X
               SPAN=X2501
         X25.VC LCN=4,VCCINDX=3,TYPE=S,CALL=OUT,OUFINDX=1,SPAN=X2501
*
**********************************************************************
* SECOND  MCH  SL1: GATE WITH SUBADDRESSING
**********************************************************************
         X25.MCH ADDRESS=1,                                            X
               ANS=CONT,                *MAX LCN IS 3 ON LCGN 0        X
               LCGDEF=((0,3),(1,0)),    *MAX LCN IS 0 ON LCGN 1        X
               FRMLGTH=131,                                            X
               MWINDOW=3,         LAP WINDOW                           X
               STATION=DTE,                                            X
               TPTIMER=2,               *LAPB RECOVERY PARAMETERS      X
               TDTIMER=3,                                              X
               NPRETRY=3,                                              X
               NDRETRY=3,                                              X
               LCN0=USED,                                              X
               PAD=INTEG,TRAN=EVEN,     *ALLOW INTEGRATED PAD ON MCH   X
               GATE=GENERAL,SUBADDR=YES,                               X
               LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5),                     X
               LLC0=(0,2),LLC2=8,LLC3=9,  *SUBADDRESSING DIGITS USED TOX
               LLC4=(1,4,3,7),LLC5=(6,5), *SELECT THE 5 LLC'S          X
               SPAN=X2501,              *USE DEFAULT T1TIMER= 1SEC     X
               DBIT=NO                  *USE DEFAULT SPEED=9600BPS
*
*
         X25.LCG LCGN=0                 *FIRST LOGICAL CHANNEL GROUP
*
* PVC FOR PCNE: LINK NAME=SL1000  PU=SP1000   LU=SU1000
*
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,SPAN=X2501,            *
               MAXDATA=2000          *SEGMENTING NOT SUPPORTED FOR PCNE
*
```

```
*******  X25 LINE FOR INN ***THIS SIDE IS SECONDARY****
*
SL1001   X25.LINE   LCN=1,                                          X
               VCCINDX=3,                                           X
               MONLINK=YES,                                         X
               DSTNODE=INN,          *MANDATORY FOR INN             X
               LLC=LLC3,                                            X
               SPAN=X2501,                                          X
               TYPE=P
SP1001   X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,   X
               SPAN=X2501,
*
*******  X25 LINE FOR INN ****THIS SIDE IS PRIMARY****
*
SL1002   X25.LINE   LCN=2,                                          X
               VCCINDX=3,                                           X
               MONLINK=YES,                                         X
               DSTNODE=INN,          *MANDATORY FOR INN             X
               LLC=LLC3,                                            X
               SPAN=X2501,                                          X
               TYPE=P
SP1002   X25.PU PUTYPE=4,TGN=4,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,   X
               SPAN=2501,
*
*******  X25 LINE FOR BNN  QLLC  ******************
*
SL1003   X25.LINE   LCN=3,                                          X
               VCCINDX=3,                                           X
               LLC=LLC3,            *DSTNODE=BNN DEFAULTED          X
               SPAN=X2501,                                          X
               TYPE=P
SP1003   X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,             X
               PACING=1,SPAN=X2501,ISTATUS=INACTIVE
SU1003   X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
**  VC USING SUBADDRESSING TO SELECT THE LLC TYPE *********
*
         X25.LCG LCGN=1              *SECOND LOGICAL CHANNEL GROUP
**
         X25.VC  LCN=0,              *SVC FOR SUBADDRESSING         X
               VCCINDX=3,                                           X
               OUFINDX=1,                                           X
               CALL=IN,              *USED FOR CALLIN ONLY          X
               SPAN=X2501,                                          X
               TYPE=SWITCHED
***********************************************************************
*   THIRD MCH  SL2 : GATE WITH USER DEFINED RELATION BETWEEN
*                    FIRST CUD BYTE AND CTCP/LLC
***********************************************************************
         X25.MCH ADDRESS=2,                                         X
               ANS=CONT,                                            X
               LCGDEF=(0,2),                                        X
               FRMLGTH=131,                                         X
               MWINDOW=3,        LAP WINDOW                         X
               STATION=DTE,                                         X
               TPTIMER=3.1,                                         X
               TDTIMER=2,                                           X
               NPRETRY=7,                                           X
               NDRETRY=1,                                           X
               LCN0=USED,                                           X
```

```
              PAD=INTEG,TRAN=EVEN,                                 X
              GATE=GENERAL,                                        X
              SPAN=X2501,                                          X
              LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5),                  X
              CUD0=(00,02,21,22,NULL,03,B0,C1,C5,CC,FF),           X
              CTCP=(00,80,01,02,85,85,85,80,85,80,85)
*********
*
*    3 CTCP'S FOR GATE.CUD0 SELECTIONS: CTCP0=00,CTCP1=21,CTCP2=22
*             PCNE WILL BE SELECTED BY CUD0=02,C1,CC
*             PAD  WILL BE SELECTED BY CUD0=NULL,03,B0,C5,FF
*
*    FOR CALLOUT IF L=7(PAD) THE CALL OUT PKT WILL HAVE A NULL CUD
*    FOR CALLOUT IF L=.(PCNE) THE CALL OUT PKT WILL HAVE 02 IN CUD0
*********
         X25.LCG  LCGN=0
*
***      PVC FOR PCNE  *****************
*
SL3000   X25.VC LCN=0,                                             X
              VCCINDX=2,                                           X
              LLC=LLC0,                                            X
              MAXDATA=2000,        * SEGMENTING NOT SUPPORTED      X
              TYPE=P
*
**       2 SVC'S        *********************
*
         X25.VC  LCN=(1,2),                                        X
              VCCINDX=3,                                           X
              OUFINDX=1,                                           X
              CALL=INOUT,                                          X
              TYPE=SWITCHED
***********************************************************************
*  FOURTH  MCH  SL3: DATE MCH
***********************************************************************
*
          X25.MCH ADDRESS=3,                                       X
              ANS=CONT,                                            X
              GATE=DEDICAT,                                        X
              LCGDEF=(0,2),           *MAX LCN IS 2 ON LCGN 0      X
              FRMLGTH=131,                                         X
              MWINDOW=7,        LAP WINDOW                         X
              STATION=DTE,                                         X
              TPTIMER=3,                                           X
              TDTIMER=1,                                           X
              NPRETRY=7,                                           X
              NDRETRY=1,                                           X
              LLCLIST=(LLC0,LLC2,LLC3,LLC5),                       X
              LCN0=NOTUSED,                                        X
              DBIT=NO,                                             X
              SPEED=9600,                                          X
              T1TIMER=1,                                           X
              PAD=TRANSP,TRAN=EVEN    *PADI NOT ALLOWED ON DATE MCH
*
            X25.LCG LCGN=0
***
*
            X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2
               EJECT
*
```

```
**********************************************************************
*   FIFTH  MCH XL11: 7 VC'S FOR FAST CONNECT WITH 2 CTCP'S
**********************************************************************
*
***
XL11      X25.MCH ADDRESS=4,PUNAME=XP11,LUNAME=(XU11,XU12),           X
               ANS=CONT,                                              X
               LCGDEF=(0,7),                                          X
               FRMLGTH=131,                                           X
               MWINDOW=7,        LAP WINDOW                           X
               STATION=DTE,                                           X
               TPTIMER=3,                                             X
               TDTIMER=1,                                             X
               SPAN=X2501,                                            X
               NPRETRY=7,                                             X
               NDRETRY=3,                                             X
               GATE=GENERAL,         * NEEDED FOR FASTCONNECT         X
               LLCLIST=LLC4,                                          X
               LCN0=NOTUSED,                                          X
               ITRACE=YES,                                            X
               LOGAPPL=(GBGTPLS,GBGTPLT), *CTCP'S PLU NAMES           X
               CONNECT=SUBD,         * 2 CTCP'S SELECTABLE VIA THE    X
               SUBD=(0,9,1),         * LAST SUBADDRESSING DIGIT       X
               CTCP=(0,1,1)          *0 FOR CTCP 0, 9 AND 1 FOR CTCP 1
*
          X25.LCG LCGN=0             * DEFINE THE NETWORK'S VC'S
*
          X25.VC LCN=(1,7),VCCINDX=3,TYPE=S,CALL=INOUT
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP0
*
       X25.FCG QTY=(5),CTCPNO=(0),SPAN=X2501,MAXDATA=2500,            X
               PRFLINE=XL12,PRFPU=XP12,PRFLU=XU12,SUFFIX=1
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP1
*
       X25.FCG QTY=(5),CTCPNO=(1),SPAN=X2501,MAXDATA=2500,            X
               PRFLINE=XL22,PRFPU=XP22,PRFLU=XU22,SUFFIX=1
*
****************************************************************
         X25.END
****************************************************************
****************************************************************
         GENEND
         END
****************************************************************
//DBWORKFL  DD UNIT=SYSDA,SPACE=(TRK,10)
//SYSPRINT DD SYSOUT=A
//PRINTER DD SYSOUT=A
//TBL1SRCE DD DSN=&&SRCE1,DISP=(,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(10,10)),DCB=BLKSIZE=3200
//TBL1LIST DD SYSOUT=Z
//*TBL1OBJ  DD DUMMY   TABLE 1 OBJECT FILE
//TBL1OBJ DD DSN=X25.NCPV31.SA314G(ICNTABL1),DISP=OLD,
//  VOL=SER=NCPX25,UNIT=3380
//TBL2SRCE DD DSN=&&SRCE2,DISP=(,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(10,10)),DCB=BLKSIZE=3200
//TBL2LIST DD SYSOUT=Z
//*TBL2OBJ  DD DUMMY   TABLE 2 OBJECT FILE
//TBL2OBJ  DD  DSN=X25.NCPV31.SA314G(ICNTABL2),DISP=OLD,
```

```
//  VOL=SER=NCPX25,UNIT=3380
//NEWDEFN DD DISP=SHR,DSN=SYS1.VTAMLST(SA314G)
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,10)),DISP=(,DELETE)
//SYSLIB DD DSN=NCP.NCPV51.MAC3725,DISP=SHR
//        DD DSN=X25.NCPV31.MAC3725X,DISP=SHR
//LNKSTMT DD DSN=X25.NCPV31.SA314G(SA314LE),DISP=OLD
/*
```

LKEDT Step

```
//LKEDT  EXEC PGM=IEWL,REGION=400K,
// PARM='LIST,NCAL,NOXREF,SIZE=(374K,48K),MAP'
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(1,1)),DISP=(,DELETE)
//SYSLIN DD DSN=X25.NCPV31.SA314G(SA314LE),DISP=OLD
//SYSPUNCH DD DSN=X25.NCPV31.SA314G,DISP=OLD,UNIT=3380,VOL=SER=NCPX25
//SYSPRINT DD SYSOUT=A
//SYSLMOD DD DSN=CTI.NCPV31.NCPLOAD,DISP=SHR
//OBJ3725  DD DSN=NCP.NCPV51.OBJ3725,DISP=SHR
//OBJ3725X DD DSN=NCP.NCPV31.OBJ3725X,DISP=SHR
/*
```

NCP Input Produced by NDF (X.25 NPSI)

```
         OPTIONS USERGEN=X25NPSI,NEWDEFN=YES
BAKLOCAL PCCU DUMPDS=DUMPX25,SUBAREA=1
*
BAKBUILD BUILD NPA=YES,VERSION=V5R1,LOADLIB=LNCP10,TYPGEN=NCP,MODEL=372*
               0,NETID=LGEMVS5,MAXSUBA=15,SUBAREA=4,BFRS=124,CA=TYPE5,L*
               TRACE=4,OLT=YES,DR3270=NO,BRANCH=8000,TRACE=(YES,100),NE*
               WNAME=SA514G,X25.PREFIX=S,X25.IDNUMH=02,TYPSYS=OS,X25.SN*
               AP=YES,X25.MCHCNT=5,X25.MAXPIU=64K
BAKSYSC  SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,RIMM,NAKLIM*
               ,SESSION,SSPAUSE,XMTLMT)
BAKHOST  HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=1,DELAY=0*
               .1,STATMOD=YES,TIMEOUT=30
PATH41   PATH DESTSA=(1),ER0=(1,1),ER1=(1,1),ER2=(1,1)
PATH42   PATH DESTSA=(5,2,3),ER0=(5,2),ER1=(5,3),ER2=(3,4)
         LUDRPOOL NUMTYP1=10
*****************************************************
SDLC6    GROUP LNCTL=SDLC,TYPE=NCP,DIAL=YES,REPLYTO=20
*************************************
SL6      LINE ADDRESS=6,CLOCKNG=EXT,NEWSYNC=NO,DUPLEX=HALF,NRZI=NO,CALL*
               =INOUT,RETRIES=(7,0,0)
SP6      PU ISTATUS=INACTIVE,PUTYPE=2
*****************************************************
SDLC5    GROUP LNCTL=SDLC,TYPE=NCP,DIAL=NO,REPLYTO=3,DISCNT=NO,ISTATUS=*
               INACTIVE
*************************************
SL5      LINE ADDRESS=5,CLOCKNG=EXT,NEWSYNC=NO,DUPLEX=HALF,NRZI=NO,NPAC*
               OLL=YES,RETRIES=(3)
         SERVICE ORDER=(SP5)
SP5      PU ADDR=C2,MAXDATA=261,MAXOUT=3,PUTYPE=2,NPACOLL=YES,VPACING=2*
               ,PACING=1
SU5      LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,NPACOLL=YES
************************************************************
GRNPA    GROUP LNCTL=SDLC,TYPE=NCP,DIAL=NO,DISCNT=NO,VIRTUAL=YES,NPARSC*
               =YES,ISTATUS=INACTIVE
LNNPA    LINE LINEFVT=NPAVFVT
PUNPA    PU PUTYPE=2,PUFVT=NPAPFVT
LUNPA    LU MAXCOLL=7,LUFVT=(NPALFVT,NPALFVT),VPACING=0,LOCADDR=1
*************************************
***** X25 NPSI INPUT
*    ALLOW 3 VCCPT AND OUFT ENTRIES
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES
*
         X25.VCCPT INDEX=1,MAXPKTL=128,VWINDOW=1,INSLOW=(100,50)
*
         X25.VCCPT INDEX=2,MAXPKTL=128,VWINDOW=2,INSLOW=(100,50)
*
         X25.VCCPT INDEX=3,MAXPKTL=128,VWINDOW=3,INSLOW=(100,50)
*
         X25.OUFT INDEX=1
*
         X25.OUFT INDEX=2,OPTFACL=420707430202
*
         X25.OUFT INDEX=3,OPTFACL=0343010242070743030303,USRFILD=12345678*
               90
**********************************************************************
*
**********************************************************************
```

```
* FIRST  MCH  SL0: NO DATE/GATE BUT TRANSPARENT PAD
***********************************************************************
         X25.MCH ADDRESS=0,ANS=CONT,LCGDEF=(0,4),FRMLGTH=131,MWINDOW=2,*
               STATION=DTE,TPTIMER=3,TDTIMER=1,NPRETRY=7,NDRETRY=1,LLCL*
               IST=(LLC0,LLC2,LLC3,LLC5),LCN0=USED,SPAN=X2501,DBIT=NO,P*
               AD=TRANSP,TRAN=EVEN,ITRACE=YES,SPEED=9600,T1TIMER=1
*
         X25.LCG LCGN=0
*
*** X25 LINE FOR PSH (PVC) LINE NAME=SL0000 PU=SP0000 LU=SU0000
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC2,TYPE=P,SPAN=X2501
*
         X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,PACING=2,ISTATUS*
               =INACTIVE
         X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
* 4 SVC'S: 1 IN, 2 IN/OUT, 1 OUT
*
         X25.VC LCN=1,VCCINDX=2,TYPE=S,CALL=IN,OUFINDX=2,SPAN=X2501
         X25.VC LCN=(2,3),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=3,SPAN=X2*
               501
         X25.VC LCN=4,VCCINDX=3,TYPE=S,CALL=IN,OUFINDX=1,SPAN=X2501
*
***********************************************************************
* SECOND  MCH  SL1: GATE WITH SUBADDRESSING
***********************************************************************
         X25.MCH ADDRESS=1,ANS=CONT,LCGDEF=((0,3),(1,0)),FRMLGTH=131,MW*
               INDOW=3,STATION=DTE,TPTIMER=2,TDTIMER=3,NPRETRY=3,NDRETR*
               Y=3,LCN0=USED,PAD=INTEG,TRAN=EVEN,GATE=GENERAL,SUBADDR=Y*
               ES,LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5),LLC0=(0,2),LLC2=8,*
               LLC3=9,LLC4=(1,4,3,7),LLC5=(6,5),SPAN=X2501,DBIT=NO
*
*
         X25.LCG LCGN=0
*
* PVC FOR PCNE: LINK NAME=SL1000  PU=SP1000   LU=SU1000
*
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,SPAN=X2501,MAXDATA=2000
*
*******  X25 LINE FOR INN ***THIS SIDE IS SECONDARY****
*
SL1001   X25.LINE LCN=1,VCCINDX=3,MONLINK=YES,DSTNODE=INN,LLC=LLC3,SPAN*
               =X2501,TYPE=P
SP1001   X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,SPAN=2*
               501
*
*******  X25 LINE FOR INN ****THIS SIDE IS PRIMARY****
*
SL1002   X25.LINE LCN=2,VCCINDX=3,MONLINK=YES,DSTNODE=INN,LLC=LLC3,SPAN*
               =X2501,TYPE=P
SP1002   X25.PU PUTYPE=4,TGN=4,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,SPAN=2*
               501
*
*******  X25 LINE FOR BNN  QLLC  ******************
*
SL1003   X25.LINE LCN=3,VCCINDX=3,LLC=LLC3,SPAN=X2501,TYPE=P
SP1003   X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,PACING=1,SPAN=X2*
               501,ISTATUS=INACTIVE
SU1003   X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
```

```
*
**  VC USING SUBADDRESSING TO SELECT THE LLC TYPE *********
*
         X25.LCG LCGN=1
**
         X25.VC LCN=0,VCCINDX=3,OUFINDX=1,CALL=IN,SPAN=X2501,TYPE=SWITC*
               HED
**********************************************************************
*   THIRD MCH  SL2 : GATE WITH USER DEFINED RELATION BETWEEN
*                    FIRST CUD BYTE AND CTCP/LLC
**********************************************************************
         X25.MCH ADDRESS=2,ANS=CONT,LCGDEF=(0,2),FRMLGTH=131,MWINDOW=3,*
               STATION=DTE,TPTIMER=3.1,TDTIMER=2,NPRETRY=7,NDRETRY=1,LC*
               N0=USED,PAD=INTEG,TRAN=EVEN,GATE=GENERAL,SPAN=X2501,LLCL*
               IST=(LLC0,LLC2,LLC3,LLC4,LLC5),CUD0=(00,02,21,22,NULL,03*
               ,B0,C1,C5,CC,FF),CTCP=(00,80,01,02,85,85,85,80,85,80,85)
*********
*
*    3 CTCP'S FOR GATE.CUD0 SELECTIONS: CTCP0=00,CTCP1=21,CTCP2=22
*              PCNE WILL BE SELECTED BY CUD0=02,C1,CC
*              PAD  WILL BE SELECTED BY CUD0=NULL,03,B0,C5,FF
*
*    FOR CALLOUT IF L=7(PAD) THE CALL OUT PKT WILL HAVE A NULL CUD
*    FOR CALLOUT IF L=.(PCNE) THE CALL OUT PKT WILL HAVE 02 IN CUD0
*********
         X25.LCG LCGN=0
*
***     PVC FOR PCNE  *****************
*
SL3000   X25.VC LCN=0,VCCINDX=2,LLC=LLC0,MAXDATA=2000,TYPE=P
*
**       2 SVC'S        ********************
*
         X25.VC LCN=(1,2),VCCINDX=3,OUFINDX=1,CALL=INOUT,TYPE=SWITCHED
**********************************************************************
*  FOURTH  MCH  SL3: DATE MCH
**********************************************************************
*
         X25.MCH ADDRESS=3,ANS=CONT,GATE=DEDICAT,LCGDEF=(0,2),FRMLGTH=1*
               31,MWINDOW=7,STATION=DTE,TPTIMER=3,TDTIMER=1,NPRETRY=7,N*
               DRETRY=1,LLCLIST=(LLC0,LLC2,LLC3,LLC5),LCN0=NOTUSED,DBIT*
               =NO,SPEED=9600,T1TIMER=1,PAD=TRANSP,TRAN=EVEN
*
         X25.LCG LCGN=0
***
*
         X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2
*
**********************************************************************
*   FIFTH  MCH XL11: 7 VC'S FOR FAST CONNECT WITH 2 CTCP'S
**********************************************************************
*
***
XL11     X25.MCH ADDRESS=4,PUNAME=XP11,LUNAME=(XU11,XU12),ANS=CONT,LCGD*
               EF=(0,7),FRMLGTH=131,MWINDOW=7,STATION=DTE,TPTIMER=3,TDT*
               IMER=1,SPAN=X2501,NPRETRY=7,NDRETRY=3,GATE=GENERAL,LLCLI*
               ST=LLC4,LCN0=NOTUSED,ITRACE=YES,LOGAPPL=(GBGTPLS,GBGTPLT*
               ),CONNECT=SUBD,SUBD=(0,9,1),CTCP=(0,1,1)
*
```

```
         X25.LCG LCGN=0
*
         X25.VC LCN=(1,7),VCCINDX=3,TYPE=S,CALL=INOUT
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP0
*
         X25.FCG QTY=(5),CTCPNO=(0),SPAN=X2501,MAXDATA=2500,PRFLINE=XL1*
               2,PRFPU=XP12,PRFLU=XU12,SUFFIX=1
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP1
*
         X25.FCG QTY=(5),CTCPNO=(1),SPAN=X2501,MAXDATA=2500,PRFLINE=XL2*
               2,PRFPU=XP22,PRFLU=XU22,SUFFIX=1
*
*****************************************************************
         X25.END
* GENERATED BY X25NPSI
S25P0A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LNCTL=SDLC,TIME*
               R=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,USERID=(5668981*
               ,BALPBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAV*
               XK)
* GENERATED BY X25NPSI
SL0000   LINE SPAN=X2501,IPL=NO,UACB=XA0000
* GENERATED BY X25NPSI
XC0000   SERVICE
* GENERATED BY X25NPSI
SP0000   PU ADDR=01,MAXDATA=265,PACING=2,ISTATUS=INACTIVE,VPACING=2,PUT*
               YPE=2,PUDR=NO
* GENERATED BY X25NPSI
SU0000   LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,LUDR=NO
* GENERATED BY X25NPSI
S25P1A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LNCTL=SDLC,TIME*
               R=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,USERID=(5668981*
               ,BALPBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAV*
               XK)
* GENERATED BY X25NPSI
SL1000   LINE IPL=NO,SPAN=X2501,UACB=XA1000
* GENERATED BY X25NPSI
XC1000   SERVICE
* GENERATED BY X25NPSI
SP1000   PU ADDR=01,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,MAXDATA=2000,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
SU1000   LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
SL1001   LINE SPAN=X2501,IPL=NO,MONLINK=YES,UACB=XA1001
* GENERATED BY X25NPSI
XC1001   SERVICE
* GENERATED BY X25NPSI
SP1001   PU ANS=CONT,TGN=2,ISTATUS=INACTIVE,SPAN=2501,PUTYPE=4,PUDR=NO
* GENERATED BY X25NPSI
SL1002   LINE SPAN=X2501,IPL=NO,MONLINK=YES,UACB=XA1002
* GENERATED BY X25NPSI
XC1002   SERVICE
* GENERATED BY X25NPSI
SP1002   PU ANS=CONT,TGN=4,ISTATUS=INACTIVE,SPAN=2501,PUTYPE=4,PUDR=NO
* GENERATED BY X25NPSI
SL1003   LINE SPAN=X2501,IPL=NO,UACB=XA1003
```

```
* GENERATED BY X25NPSI
XC1003   SERVICE
* GENERATED BY X25NPSI
SP1003   PU ADDR=01,MAXDATA=265,PACING=1,ISTATUS=INACTIVE,SPAN=X2501,VP*
               ACING=2,PUTYPE=2,PUDR=NO
* GENERATED BY X25NPSI
SU1003   LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,LUDR=NO
* GENERATED BY X25NPSI
S25P2A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LNCTL=SDLC,TIME*
               R=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,USERID=(5668981*
               ,BALPBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAV*
               XK)
* GENERATED BY X25NPSI
SL2000   LINE IPL=NO,UACB=XA2000
* GENERATED BY X25NPSI
XC2000   SERVICE
* GENERATED BY X25NPSI
SP2000   PU ADDR=01,PACING=1,PUDR=NO,PUTYPE=1,MAXDATA=2000,VPACING=(2,1*
               )
* GENERATED BY X25NPSI
SU2000   LU LOCADDR=0,LUDR=NO
* GENERATED BY X25NPSI
S25PG40B GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LNCTL=SDLC,TIME*
               R=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,USERID=(5668981*
               ,BALFBDT,NORECMS),LOGAPPL=GBGTPLS,XIO=(BALNAVXL,BALNAVXS*
               ,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
XL120001 LINE IPL=NO,SPAN=X2501,UACB=XAG40000
* GENERATED BY X25NPSI
XCG40000 SERVICE
* GENERATED BY X25NPSI
XP120001 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU120001 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL120002 LINE IPL=NO,SPAN=X2501,UACB=XAG40001
* GENERATED BY X25NPSI
XCG40001 SERVICE
* GENERATED BY X25NPSI
XP120002 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU120002 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL120003 LINE IPL=NO,SPAN=X2501,UACB=XAG40002
* GENERATED BY X25NPSI
XCG40002 SERVICE
* GENERATED BY X25NPSI
XP120003 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU120003 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL120004 LINE IPL=NO,SPAN=X2501,UACB=XAG40003
* GENERATED BY X25NPSI
XCG40003 SERVICE
```

```
* GENERATED BY X25NPSI
XP120004 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU120004 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL120005 LINE IPL=NO,SPAN=X2501,UACB=XAG40004
* GENERATED BY X25NPSI
XCG40004 SERVICE
* GENERATED BY X25NPSI
XP120005 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU120005 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
S25PG41C GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LNCTL=SDLC,TIME*
               R=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,USERID=(5668981*
               ,BALFBDT,NORECMS),LOGAPPL=GBGTPLT,XIO=(BALNAVXL,BALNAVXS*
               ,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
XL220001 LINE IPL=NO,SPAN=X2501,UACB=XAG41000
* GENERATED BY X25NPSI
XCG41000 SERVICE
* GENERATED BY X25NPSI
XP220001 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU220001 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL220002 LINE IPL=NO,SPAN=X2501,UACB=XAG41001
* GENERATED BY X25NPSI
XCG41001 SERVICE
* GENERATED BY X25NPSI
XP220002 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU220002 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL220003 LINE IPL=NO,SPAN=X2501,UACB=XAG41002
* GENERATED BY X25NPSI
XCG41002 SERVICE
* GENERATED BY X25NPSI
XP220003 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU220003 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL220004 LINE IPL=NO,SPAN=X2501,UACB=XAG41003
* GENERATED BY X25NPSI
XCG41003 SERVICE
* GENERATED BY X25NPSI
XP220004 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU220004 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
XL220005 LINE IPL=NO,SPAN=X2501,UACB=XAG41004
* GENERATED BY X25NPSI
XCG41004 SERVICE
```

```
* GENERATED BY X25NPSI
XP220005 PU ADDR=01,MAXDATA=2500,PACING=1,PUDR=NO,PUTYPE=1,SPAN=X2501,V*
               PACING=(2,1)
* GENERATED BY X25NPSI
XU220005 LU LOCADDR=0,SPAN=X2501,LUDR=NO
* GENERATED BY X25NPSI
S25S3A   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
               ADD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LINEAUT=YES,LN*
               CTL=SDLC,TIMER=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,US*
               ERID=(5668981,BALSBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BA*
               LNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
SL3002   LINE CALL=IN,UACB=XA3002
* GENERATED BY X25NPSI
SP3002   PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
SL3001   LINE CALL=IN,UACB=XA3001
* GENERATED BY X25NPSI
SP3001   PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
S25S2B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
               ADD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LINEAUT=YES,LN*
               CTL=SDLC,TIMER=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,US*
               ERID=(5668981,BALSBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BA*
               LNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
SL2002   LINE CALL=INOUT,UACB=XA2002
* GENERATED BY X25NPSI
SP2002   PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
SL2001   LINE CALL=INOUT,UACB=XA2001
* GENERATED BY X25NPSI
SP2001   PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
S25S1B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
               ADD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LINEAUT=YES,LN*
               CTL=SDLC,TIMER=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,US*
               ERID=(5668981,BALSBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BA*
               LNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
SL1100   LINE CALL=IN,SPAN=X2501,UACB=XA1100
* GENERATED BY X25NPSI
SP1100   PU SPAN=X2501,PUTYPE=(1,2)
* GENERATED BY X25NPSI
S25S0B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
               ADD=NONE,COMPTAD=NO,COMPOWN=NO,COMPSWP=NO,LINEAUT=YES,LN*
               CTL=SDLC,TIMER=(BALNATER,,BALNATST,BALNATLS),TYPE=NCP,US*
               ERID=(5668981,BALSBDT,NORECMS),XIO=(BALNAVXL,BALNAVXS,BA*
               LNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
SL0004   LINE CALL=IN,SPAN=X2501,UACB=XA0004
* GENERATED BY X25NPSI
SP0004   PU SPAN=X2501,PUTYPE=(1,2)
* GENERATED BY X25NPSI
SL0003   LINE CALL=INOUT,SPAN=X2501,UACB=XA0003
* GENERATED BY X25NPSI
SP0003   PU SPAN=X2501,PUTYPE=(1,2)
* GENERATED BY X25NPSI
SL0002   LINE CALL=INOUT,SPAN=X2501,UACB=XA0002
* GENERATED BY X25NPSI
```

```
SP0002   PU SPAN=X2501,PUTYPE=(1,2)
* GENERATED BY X25NPSI
SL0001   LINE CALL=IN,SPAN=X2501,UACB=XA0001
* GENERATED BY X25NPSI
SP0001   PU SPAN=X2501,PUTYPE=(1,2)
* GENERATED BY X25NPSI
SNET11   GROUP DIAL=NO,BERPROC=BALNMBER,COMPACB=YES,COMPTAD=YES,COMPOWN*
               =YES,COMPSWP=YES,LEVEL2=BALNAML2,LEVEL3=BALNAML3,LEVEL5=*
               NCP,LNCTL=SDLC,TIMER=(BALLAP4,,BALLAP4,BALLAP4),TYPE=NCP*
               ,USERID=(5668981,BALMBDT,NORECMS,P),XIO=(BALNAMXL,BALNAM*
               XS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
SL0      LINE ADDRESS=(0,FULL),SPAN=X2501,UACB=(X25A0X,X25A0R)
* GENERATED BY X25NPSI
XC0      SERVICE
* GENERATED BY X25NPSI
SP0      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,PUTYPE=1
* GENERATED BY X25NPSI
SU0      LU LOCADDR=0,SPAN=X2501,ISTATUS=INACTIVE
* GENERATED BY X25NPSI
SNET12   GROUP DIAL=NO,BERPROC=BALNMBER,COMPACB=YES,COMPTAD=YES,COMPOWN*
               =YES,COMPSWP=YES,LEVEL2=BALNAML2,LEVEL3=BALNAML3,LEVEL5=*
               NCP,LNCTL=SDLC,TIMER=(BALLAP4,,BALLAP4,BALLAP4),TYPE=NCP*
               ,USERID=(5668981,BALNBDT,NORECMS,P),XIO=(BALNAMXL,BALNAM*
               XS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
SL1      LINE ADDRESS=(1,FULL),SPAN=X2501,UACB=(X25A1X,X25A1R)
* GENERATED BY X25NPSI
XC1      SERVICE
* GENERATED BY X25NPSI
SP1      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,PUTYPE=1
* GENERATED BY X25NPSI
SU1      LU LOCADDR=0,SPAN=X2501,ISTATUS=ACTIVE
* GENERATED BY X25NPSI
SL2      LINE ADDRESS=(2,FULL),SPAN=X2501,UACB=(X25A2X,X25A2R)
* GENERATED BY X25NPSI
XC2      SERVICE
* GENERATED BY X25NPSI
SP2      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,PUTYPE=1
* GENERATED BY X25NPSI
SU2      LU LOCADDR=0,SPAN=X2501,ISTATUS=ACTIVE
* GENERATED BY X25NPSI
SU2L1    LU LOCADDR=1,SPAN=X2501,ISTATUS=ACTIVE
* GENERATED BY X25NPSI
SU2L2    LU LOCADDR=2,SPAN=X2501,ISTATUS=ACTIVE
* GENERATED BY X25NPSI
SL3      LINE ADDRESS=(3,FULL),UACB=(X25A3X,X25A3R)
* GENERATED BY X25NPSI
XC3      SERVICE
* GENERATED BY X25NPSI
SP3      PU ADDR=01,ANS=CONT,MAXDATA=261,PUTYPE=1
* GENERATED BY X25NPSI
SU3      LU LOCADDR=0,ISTATUS=ACTIVE
* GENERATED BY X25NPSI
XL11     LINE ADDRESS=(4,FULL),SPAN=X2501,UACB=(X25A4X,X25A4R)
* GENERATED BY X25NPSI
XC4      SERVICE
* GENERATED BY X25NPSI
XP11     PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,PUTYPE=1
* GENERATED BY X25NPSI
```

```
XU11     LU LOCADDR=0,LOGAPPL=GBGTPLS,SPAN=X2501,ISTATUS=ACTIVE
* GENERATED BY X25NPSI
XU12     LU LOCADDR=1,LOGAPPL=GBGTPLT,SPAN=X2501,ISTATUS=ACTIVE
*****************************************************************
*****************************************************************
         GENEND INIT=BALINIMD,TMRTICK=BALTICK,UGLOBAL=BALNMGOP
```

Main Switched Major Node

```
************************************************************************
*
* SWITCHED MAJOR NODE TO BE USED IN CORRELATION WITH SA314G GENERATION
*
************************************************************************
**
SWS25    VBUILD MAXGRP=20,                                                *
               MAXNO=20,                                                  *
               TYPE=SWNET
**
**********************************************************
*    ENTRIES FOR PCNE TO PCNE COMMUNICATION              *
*                (BACK TO BACK)                          *
**********************************************************
*
PCNEPI   PU    ADDR=01,        PCNE TO PCNE INBOUND                       *
               IDBLK=003,                                                 *
               IDNUM=22223,    ZZZZZ OF OUT CALLER +1                     *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU           *
               MAXOUT=1,       TO LET LOGON MSG IN AFTER ACTLU            *
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED                   *
               PACING=1,       PACING=1 IS REQUIRED                       *
               VPACING=2,                                                 *
               PUTYPE=1,                                                  *
               SSCPFM=USSSCS
PCNELI   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
**
PCNEPO   PU    ADDR=01,        PCNE TO PCNE OUTBOUND                      *
               IDBLK=003,                                                 *
               IDNUM=22222,    EQUAL ZZZZZ                                *
               MAXPATH=6,                                                 *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU           *
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED                   *
               PACING=1,       PACING=1 IS REQUIRED                       *
               VPACING=2,                                                 *
               PUTYPE=1,                                                  *
               SSCPFM=USSSCS
PCNEP1   PATH  DIALNO=10604016500201*22222,   ZZZZZ=22222=IDNUM           *
               GRPNM=S25S0B,GID=2,PID=20      S25S0B=GROUP OF SWITCHED
*                              VC'S ON INVOLVED MCH IN GENERATION
PCNEP3   PATH  DIALNO=10604016400201*22222,                               *
               GRPNM=S25S0B,GID=2,PID=22
PCNELO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
**********************************************************
*                                                        *
* ENTRY FOR INCOMING AND OUTGOING CALLS FOR PADX ON MCH0 *
*                                                        *
**********************************************************
*
********
*
*     DEFAULT IDNUM VALUES FOR INCOMING CALLS ARE BUILT AS FOLLOW:
*             IDNUM=02012
*                   ..012  FOR 9TH SVC FROM LAST SVC (9*2)=12(HEX)
*                   02...  COME FROM X25.IDNUMH IN NPSI BUILD MACRO
*
```

```
*********
PADXPO   PU    ADDR=01,                                                *
               IDBLK=003,                                              *
               IDNUM=02012,    FOR 9TH SVC FROM LAST SVC (9*2)=12      *
               MAXPATH=6,                                              *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *
               PACING=1,       PACING=1 IS REQUIRED                    *
               VPACING=2,                                              *
               00000180
               PUTYPE=1,                                               *
               SSCPFM=USSSCS
PADP1    PATH  DIALNO=10605023650101*02012, ZZZZZ=02012=IDNUM          *
               GRPNM=S25S0B,GID=2,PID=50
PADXLO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
**********************************************************
*                                                        *
* ENTRY FOR INCOMING AND OUTGOING CALLS FOR BNN QLLC/PSH *
*                                                        *
**********************************************************
*
PSHPI    PU    ADDR=01,                                                *
               IDBLK=017,                                              *
               IDNUM=41264,    IDNUM OF REMOTE PU                      *
               MAXPATH=6,                                              *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *
               MAXDATA=265,    SEGMENTING SUPPORTED                    *
               PACING=3,                                               *
               VPACING=3,                                              *
               PUTYPE=2,                                               *
               SSCPFM=USSSCS               OUTGOING CALL FOR PSH
PSHP1    PATH  DIALNO=10604016420201,      L=2 FOR PSH                 *
               GRPNM=S25S0B,GID=2,PID=30   S25S0B=GROUP OF SWITCHED
*                              VC'S ON INVOLVED MCH IN GENERATION
PSHP2    PATH  DIALNO=10604016430201,      L=3 FOR BNN QLLC            *
               GRPNM=S25S0B,GID=2,PID=31
PSHLI    LU    LOCADDR=2,MODETAB=MODTD3
*
******************************************************************
*                                                                *
* ENTRY FOR SUBADDRESSING ON MCH1 FOR NON SNA VIRTUAL CIRCUITS   *
*                                                                *
******************************************************************
*
SAPI     PU    ADDR=01,        GATE INBOUND                            *
               IDBLK=003,                                              *
               IDNUM=0200A,    FOR 5TH SVC FROM LAST SVC (5*2)=A       *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED                *
               PACING=1,       PACING=1 IS REQUIRED                    *
               VPACING=2,                                              *
               PUTYPE=1,MAXOUT=6,  TO QUEUE DATA UNTIL SDT             *
               SSCPFM=USSSCS
SALI     LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
******************************************************************
*                                                                *
*   ENTRIES FOR GATE AND PADI                                    *
*   FOR GATE,CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED *
```

```
*                                                              *
****************************************************************
*
GATEPI   PU    ADDR=01,        PADI INCALL OR 1ST GATE VC USED        *
               IDBLK=003,                     (IN OR OUT CALL)        *
               IDNUM=02008,    FOR 4TH SVC FROM LAST SVC (4*2)=8      *
               MAXOUT=6,       TO QUEUE INBOUND MSG COMING BEFORE SDT *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED               *
               PACING=1,       PACING=1 IS REQUIRED                   *
               VPACING=2,                                             *
               PUTYPE=1,                                              *
               SSCPFM=USSSCS
PADILI   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
**
*
GATEPO   PU    ADDR=01,        2ND GATE VC USED(IN OR OUT CALL)       *
               IDBLK=003,                                             *
               IDNUM=02006,    FOR 3RD SVC FROM LAST SVC (3*2)=6      *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED               *
               PACING=1,       PACING=1 IS REQUIRED                   *
               VPACING=2,                                             *
               PUTYPE=1,                                              *
               SSCPFM=USSSCS
GATELO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
********************************************************
*                                                      *
* ENTRIES  FOR USER DEFINED CUD0 (CALLOUT)             *
*                                                      *
********************************************************
*
UDCUDP1  PU    ADDR=01,                TO BE USED FOR PCNE            *
               IDBLK=003,                                             *
               MAXPATH=4,                                             *
               IDNUM=55544,                                           *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED               *
               PACING=1,       PACING=1 IS REQUIRED                   *
               VPACING=2,                                             *
               PUTYPE=1,                                              *
               SSCPFM=USSSCS USSTAB=USSTABZ
UDCUDH1  PATH  DIALNO=106050236.0101*55544,  . MEANS USER DEFINED CUD0 *
               GRPNM=S25S2B,GID=2,PID=96
UDCUDU1  LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
UDCUDP2  PU    ADDR=01,                TO BE USED FOR PCNE            *
               IDBLK=003,                                             *
               MAXPATH=4,                                             *
               IDNUM=55555,                                           *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED               *
               PACING=1,       PACING=1 IS REQUIRED                   *
               VPACING=2,                                             *
               PUTYPE=1,                                              *
               SSCPFM=USSSCS USSTAB=USSTABZ
UDCUDH2  PATH  DIALNO=106050236:0101*55555,  : MEANS USER DEFINED CUD0 *
```

```
               GRPNM=S25S2B,GID=2,PID=97     AND ZZZZZ+1 IN CUD1,2,3.
UDCUDU2  LU    LOCADDR=0        0 IS REQUIRED FOR NON SNA X25 DEVICES
*
**********************************************************
*                                                        *
* ENTRIES FOR OUTGOING CALLS FOR PADI ON MCH2            *
*                                                        *
**********************************************************
*
*
PADIPO   PU    ADDR=01,                                                  *
               IDBLK=003,                                                *
               IDNUM=02005,     FOR 3RD SVC FROM LAST (3*2)-1            *
               MAXPATH=6,                                                *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=1024,    SEGMENTING NOT SUPPORTED                 *
               PACING=1,        PACING=1 IS REQUIRED                     *
               VPACING=2,                                                *
               PUTYPE=1,                                                 *
               SSCPFM=USSSCS
*    ZZZZZ REQUIRED FOR OUT CALLS
PADP2    PATH  DIALNO=10605023650201*02005,                              *
               GRPNM=S25S2B,GID=2,PID=60
PADILO   LU    LOCADDR=0        0 IS REQUIRED FOR NON SNA X25 DEVICES
*
******************************************************************
*                                                                *
* ENTRIES FOR DATE VC'S, TO BE USED FOR PCNE OR PADX             *
* FOR DATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED  *
******************************************************************
*
DATEPI   PU    ADDR=01,         1ST DATE VC USED (IN OR OUT CALL)        *
               IDBLK=003,                                                *
               IDNUM=02004,     FOR 2ND SVC FROM LAST SVC (2*2)=4        *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=1024,    SEGMENTING NOT SUPPORTED                 *
               PACING=1,        PACING=1 IS REQUIRED                     *
               VPACING=2,                                                *
               PUTYPE=1,                                                 *
               SSCPFM=USSSCS
DATELI   LU    LOCADDR=0
*
DATEPO   PU    ADDR=01,         2ND DATE VC USED (IN OR OUT CALL)        *
               IDBLK=003,                                                *
               IDNUM=02002,     FOR 1ST SVC FROM LAST SVC (1*2)=2        *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=1024,    SEGMENTING NOT SUPPORTED                 *
               PACING=1,        PACING=1 IS REQUIRED                     *
               VPACING=2,                                                *
               PUTYPE=1,                                                 *
               SSCPFM=USSSCS
DATELO   LU    LOCADDR=0
```

Version 3 Release 2 (Example B)

This example consists of six sections:

- NCP and X.25 NPSI generation input including JCL

  This section contains examples of X.25 NPSI features, such as different types of MCHs and virtual circuits.

- LKEDT step

  This section contains an example illustrating how the LKEDT step makes for easier maintenance of X.25 NPSI if relinking of modules is all that is required.

- NCP input produced by NDF (X.25 NPSI)

  This section contains examples of NCP statements produced by the X.25 NPSI part of generation for input to VTAM. Also, examples are included of the default X.25 NPSI naming conventions and of the order of the statements generated for SVCs.

- Main switched major node

  This example illustrates some of the IDNUM usages that go with the X.25 NPSI generation.

- Switched major node for SNA type 2.1 and SVCSC

  This section contains examples of SMN entries to be used for SNA type 2.1 and SVCSC.

- MODETAB for password protection and LU type 6.2

  This section contains examples of mode tables for password protection and LU type 6.2.

Note: This is not meant to be a production example.

NCP and X.25 NPSI Generation Input Including JCL

```
//S1 EXEC PGM=IEHPROGM
//* CLEAN UP PREALLOCATED PDS USED TO SAVE CONTROL BLOCK OBJECT CODE
//SYSPRINT DD SYSOUT=A
//DD1 DD VOL=SER=MVSWK1,UNIT=3350,DISP=SHR
//SYSIN DD *
   SCRATCH DSNAME=X25.NCPV32.SA324GN,VOL=3350=MVSWK1,MEMBER=ICNTABL1
   SCRATCH DSNAME=X25.NCPV32.SA324GN,VOL=3350=MVSWK1,MEMBER=ICNTABL2
   SCRATCH DSNAME=X25.NCPV32.SA324GN,VOL=3350=MVSWK1,MEMBER=SA324LE
/*
//S2 EXEC PGM=IEBCOPY,ADDRSPC=REAL,REGION=128K
//* COMPRESS THE PREALLOCATED PDS
//SYSPRINT DD SYSOUT=A
//DISK    DD DISP=SHR,DSN=X25.NCPV32.SA324GN
//SYSUT3  DD UNIT=SYSDA,SPACE=(CYL,(10,1),,CONTIG)
//SYSUT4  DD UNIT=SYSDA,SPACE=(CYL,(10,1),,CONTIG)
//SYSIN   DD *
 COPY OUTDD=DISK,INDD=DISK
/*
//STEP1   EXEC  PGM=ICNRTNDF,REGION=6000K,PARM='LINECNT=45'
//STEPLIB DD DSN=SYS1.SSPLIB,DISP=SHR
//        DD DSN=SYS1.NPSILNK,DISP=SHR
//GENDECK DD *
***********************************************************************
*                                                                     *
*        EXAMPLE OF GENERATION OF NPSI WITHIN NCP                     *
*                                                                     *
* - MCH7 (SL7)       PVC 0 FOR PAD FOR USE WITH TSO                   *
*                    SVC 1 TO 7 FOR PCNE,PSH,PADI,BNNQLLC,INNQLLC     *
*                    2 SVC RESERVED FOR INN SVC(WITH 2 INN STATIONS)*
* - MCH0 (SL0)       PVC 0 FOR PSH                                    *
*                    SVC1,2,3,4  FOR PCNE,PSH,PADX,BNNQLLC            *
*                    1/IN   2,3/INOUT    4/OUT                        *
*                                                                     *
* - MCH1 (SL1)       PVC 0 FOR PCNE                                   *
*                    PVC 1 FOR INN  (WE ARE SECONDARY)                *
*                    PVC 2 FOR INN  (WE ARE PRIMARY)                  *
*                    PVC 3 FOR BNN QLLC                               *
*                    PVC 4 FOR BNN QLLC PU T2.1                       *
*                    PVC 5 FOR BNN QLLC PU T2.1 & LU6.2               *
*                    SVC 100 FOR GATE SUBADDRESSING(ANY LLC SELECTED)
*                                                                     *
* - MCH2 (SL2)       PVC 0 FOR PCNE                                   *
*                    SVC 1,2  FOR PCNE,PSH,PADI,BNNQLLC,GATE          *
*                    1/2 INOUT      NULL CUD0 WILL SELECT PAD         *
*                                                                     *
* - MCH3 (SL3)       SVC 1,2  FOR PCNE,PSH,PADX,BNNQLLC (DATE)        *
*                                                                     *
*                                                                     *
* - MCH4 (SL4)       SVC 1,2,3,4,5,6,7 FOR FAST CONNECT               *
*                      CONNECT=SUBD: CTCP SELECTED VIA SUBADDRESSING*
*                                                                     *
***********************************************************************
*
**
***   STAGE 1 INPUT
**
         OPTIONS USERGEN=X25NPSI,      *INDICATE NEO NAME              X
```

```
                NEWDEFN=(YES,,SUPP)      *INCLUDE NPSI STMTS IN VTAMLST
BAKLOCAL PCCU   DUMPDS=DUMPX25,SUBAREA=1
OTHLOCAL PCCU   DUMPDS=DUMPX25,SUBAREA=16
REMVTAM  PCCU   DUMPDS=DUMPX25,SUBAREA=2
*
BAKBUILD BUILD NPA=YES,                                                 X
                VERSION=V5R2,         * NCP VERSION                     X
                LOADLIB=LNCP11,                                         X
                TYPGEN=NCP,                                             X
                MODEL=3745,                                             X
                USGTIER=3,            * NCP USGTIER                     X
                X25.USGTIER=3,        * NPSI USGTIER                    X
                NETID=NETID1,         * NETWORK ID                      X
                MAXSUBA=63,                                             X
                SUBAREA=4,                                              X
                BFRS=124,             * BEST FOR NPSI PERFORMANCE       X
                LTRACE=4,             * ALLOWS LINE TRACE ON TWO MCH'S  X
                OLT=YES,                                                X
                DR3270=NO,                                              X
                BRANCH=8000,                                            X
                TRACE=(YES,100),      * 100 ENTRIES IN ADDRESS TRACE TBL X
                NEWNAME=SA324GN,                                        XX
                X25.PREFIX=S,         * ALL NAMES START WITH S          X
                X25.IDNUMH=02,        * X25.IDNUMH MUST MATCH WITH SWITCHX
                TYPSYS=OS,            * MAJOR NODE IDS.(2FIRST DIGITS)  X
                X25.SNAP=YES,         * OPTIONAL DIAGNOSIS SNAP INCLUDED X
                X25.MCHCNT=6,         * NUMBER OF PHYSICAL LINKS        X
                X25.MAXPIU=64K
BAKSYSC SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,             X
                RIMM,NAKLIM,SESSION,SSPAUSE,XMTLMT)
BAKHOST HOST   INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=1,       X
                DELAY=0.1,TIMEOUT=30
OTHHOST HOST   INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,      X
                DELAY=0.1,TIMEOUT=30
REMHOST HOST   INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=2,       X
                DELAY=0.1,TIMEOUT=30
PATH14   PATH DESTSA=(1),ER0=(1,1),ER1=(1,1),ER2=(1,1) TO LOCAL
PATH116  PATH DESTSA=(16),ER0=(16,1),ER1=(16,1),ER2=(16,1) TO OTHLOCAL
PATH42   PATH DESTSA=(5,2,3),ER0=(5,2),ER1=(5,3),ER2=(3,4)
         LUDRPOOL NUMTYP1=10,         * FOR NON SNA CALLS               X
                NUMTYP2=10,           *FOR QLLC OR PSH CALLS            X
                NUMILU=2              *FOR LU6.2 SVC'S
*****************************************************
         EJECT                        * AT LEAST ONE SDLC LINE
SDLC6    GROUP LNCTL=SDLC,            * MUST BE DEFINED                 X
                TYPE=NCP,                                               X
                DIAL=YES,                                               X
                REPLYTO=20
*************************************
SL6      LINE  ADDRESS=6,             * SDLC LINE FOR NIA FRONTAL       X
                CLOCKNG=EXT,          *                                 X
                NEWSYNC=NO,                                             X
                DUPLEX=HALF,                                            X
                NRZI=NO,                                                X
                CALL=INOUT,                                             X
                RETRIES=(7,0,0)
SP6       PU   ISTATUS=INACTIVE,                                        X
                PUTYPE=2
*****************************************************
```

```
         EJECT
SDLC5    GROUP LNCTL=SDLC,                                              X
               TYPE=NCP,                                                X
               DIAL=NO,                                                 X
               REPLYTO=3,                                               X
               DISCNT=NO,                                               X
               ISTATUS=INACTIVE
*************************************
SL5      LINE  ADDRESS=5,            * LEASED SDLC MULTIPOINT LINE      X
               CLOCKNG=EXT,                                             X
               NEWSYNC=NO,                                              X
               DUPLEX=HALF,                                             X
               NRZI=NO,NPACOLL=YES,                                     X
               RETRIES=(3)
             SERVICE ORDER=(SP5)
SP5       PU   ADDR=C2,              * ADDRESS 3274                     X
               MAXDATA=261,                                             X
               MAXOUT=3,                                                X
               PUTYPE=2,NPACOLL=YES,                                    X
               VPACING=2,                                               X
               PACING=1
SU5      LU    LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,NPACOLL=YES
         EJECT
**********************************************************
GRNPA    GROUP LNCTL=SDLC,           * FOR NPM RECORDING                X
               TYPE=NCP,                                                X
               DIAL=NO,                                                 X
               DISCNT=NO,                                               X
               VIRTUAL=YES,                                             X
               NPARSC=YES,                                              X
               ISTATUS=INACTIVE
LNNPA    LINE  LINEFVT=NPAVFVT
PUNPA    PU    PUTYPE=2,PUFVT=NPAPFVT
LUNPA    LU    MAXCOLL=7,LUFVT=(NPALFVT,NPALFVT),                       X
               VPACING=0,LOCADDR=1
***********  *************************
         EJECT
***** X25 NPSI INPUT
*     ALLOW 3 VCCPT AND OUFT ENTRIES
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES
*
         X25.VCCPT INDEX=1,                                             X
               MAXPKTL=128,                                             X
               VWINDOW=1,            * PACKET LEVEL WINDOW              X
               INSLOW=(100,50)       * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=2,                                             X
               MAXPKTL=128,                                             X
               VWINDOW=2,                                               X
               INSLOW=(100,50)       * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=3,                                             X
               MAXPKTL=128,                                             X
               VWINDOW=3,                                               X
               INSLOW=(100,50)       * TO PREVENT SLOWDOWN
*
         X25.OUFT  INDEX=1
*
         X25.OUFT  INDEX=2,          * PKT SIZE=128,VWINDOW=2           X
```

```
             OPTFACL=420707430202
*
         X25.OUFT  INDEX=3,          * PKT SIZE=128,VWINDOW=3, AND       X
             OPTFACL=03430102420707430303, * REVERSECHARGING REQUEST X
             USRFILD=1234567890
**********************************************************************
*
             EJECT
**********************************************************************
*        MCH  SL7: NO DATE/GATE BUT SVC INN
**********************************************************************
         X25.MCH ADDRESS=7,             *CONTROLLER LINE ADDR            X
             ANS=CONT,                                                   X
             LCGDEF=(0,7),              *MAX LCN IS 7 ON LCGN 0          X
             FRMLGTH=131,                                                X
             MWINDOW=7,                 *LAP WINDOW                      X
             STATION=DTE,                                                X
             TPTIMER=3,                 *LAPB RECOVERY PARAMETERS        X
             TDTIMER=1,                 *                                X
             NPRETRY=7,                 *                                X
             NDRETRY=1,                 *                                X
             LLCLIST=(LLC0,LLC2,LLC3,LLC5),                              X
             LCN0=USED,                                                  X
             SPAN=X2501,                *FOR NETVIEW                     X
             DBIT=NO,                   *NO DBIT SUPPORT ON THIS MCH     X
             PAD=INTEG,TRAN=EVEN,       *ALLOW INTEGRATED  PAD           X
             PWPROT=YES,                *PASSWORD PROTECTION ON IPAD     X
             ITRACE=NO,                 * LAP INTERNAL TRACE INACTIVE    X
             SPEED=9600,                *REAL MCH SPEED                  X
             T1TIMER=1,                 *REAL T1 OF THE DCE              X
             SVCINN=2,                  *NB OF SIMULT.SVC INN CONNECTIONX
             SHM=YES,                   *SHORT HOLD MODE ON SVCSC'S      X
             SDRTCNT=3,                 *NB OF RETRIES                   X
             SDRTIME=10                 *TIMER BETWEEN CALL RETRIES
*
         X25.LCG LCGN=0                 LOGICAL CHANNEL GROUP
*
*
* PVC FOR INTEGRATED PAD FOR USE WITH TSO AND WITH PASSWORD PROTECTION
*
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC5,SPAN=X2501,              *
             MAXDATA=2000,          *SEGMENTING NOT SUPPORTED FOR PAD    *
             SSCPFM=USSNTO,         *LOGON ENDS WITH CRLF                X
             MODETAB=MODTWX,        *MODETAB FOR LU1 3767/TWX            X
             DLOGMOD=TWXCONT,       *FLIPFLOP OR CONTENTION PROT         X
             TERM=TWX,              *MUST BE DEFINED FOR TWX/3101        X
             USSTAB=USSTWX          *SPECIAL USSTAB FOR TWX/3101
*
*** 2 LINE'S FOR SUBAREA DIAL(2 SVC'S RESERVED FOR SVC INN)
*
         X25.LINE DSTNODE=INN,              *DEFINE A SWITCHED INN VC    X
             TYPE=S
         X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.LINE DSTNODE=INN,              *DEFINE A SWITCHED INN VC    X
             TYPE=S
         X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
*
* DEFINE 7 SVC TO BE SHARED BETWEEN INN SVC'S(MAX OF 2 AT A TIME)
```

```
* AND BNN SVC (MAX OF 5 AT A TIME)
*
         X25.VC LCN=(1,7),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1,       X
               SPAN=X2501
*
               EJECT
***********************************************************************
*        MCH  SL0: NO DATE/GATE BUT TRANSPARENT PAD
***********************************************************************
         X25.MCH ADDRESS=0,            *CONTROLLER LINE ADDR           X
               ANS=CONT,                                               X
               LCGDEF=(0,4),           *MAX LCN IS 4 ON LCGN 0         X
               FRMLGTH=131,                                            X
               MWINDOW=2,              *LAP WINDOW                     X
               STATION=DTE,            *FOR OWNERSHIP RECOVERY VIA     X
               XMONLNK=YES,            *INN SVC(INITIAL ACT IMPOSSIBLE)X
               TPTIMER=3,              *LAPB RECOVERY PARAMETERS       X
               TDTIMER=1,              *                               X
               NPRETRY=7,              *                               X
               NDRETRY=1,              *                               X
               LLCLIST=(LLC0,LLC2,LLC3,LLC5),                          X
               LCN0=USED,                                              X
               SPAN=X2501,             *FOR NETVIEW                    X
               DBIT=NO,                *NO DBIT SUPPORT ON THIS MCH    X
               PAD=TRANSP,TRAN=EVEN,   *ALLOW TRANSPARENT PAD          X
               ITRACE=YES,             * LAP INTERNAL TRACE ACTIVE     X
               SPEED=9600,             *REAL MCH SPEED                 X
               T1TIMER=1               *REAL T1 OF THE DCE
*
         X25.LCG LCGN=0
*
*** X25 LINE FOR PSH (PVC) LINE NAME=SL0000 PU=SP0000 LU=SU0000
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC2,TYPE=P,SPAN=X2501
*
         X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,                X
               PACING=2,ISTATUS=INACTIVE
         X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
* 4 SVC'S: 1 IN, 2 IN/OUT, 1 OUT
*
         X25.VC LCN=1,VCCINDX=2,TYPE=S,CALL=IN,OUFINDX=2,SPAN=X2501
         X25.VC LCN=(2,3),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=3,       X
               SPAN=X2501
         X25.VC LCN=4,VCCINDX=3,TYPE=S,CALL=OUT,OUFINDX=1,SPAN=X2501
*
***********************************************************************
*         MCH  SL1: GATE WITH SUBADDRESSING & PU T2.1
***********************************************************************
         X25.MCH ADDRESS=1,                                            X
               ANS=CONT,               *MAX LCN IS 5 ON LCGN 0         X
               LCGDEF=((0,5),(1,0)),   *MAX LCN IS 0 ON LCGN 1         X
               FRMLGTH=131,                                            X
               MWINDOW=3,        LAP WINDOW                            X
               STATION=DTE,                                            X
               XMONLNK=YES,            *FOR EVENTUAL ACT VIA INN PVC   X
               SHUTD=NOINVCLR,         *FOR IPAD CLSDST PASS           X
               TPTIMER=2,              *LAPB RECOVERY PARAMETERS       X
               TDTIMER=3,                                              X
               NPRETRY=3,                                              X
```

```
               NDRETRY=3,                                             X
               LCN0=USED,                                             X
               PAD=INTEG,TRAN=EVEN,    *ALLOW INTEGRATED PAD ON MCH   X
               GATE=GENERAL,SUBADDR=YES,                              X
               LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5),                    X
               LLC0=(0,2),LLC2=8,LLC3=9,  *SUBADDRESSING DIGITS USED TOX
               LLC4=(1,4,3,7),LLC5=(6,5), *SELECT THE 5 LLC'S         X
               SPAN=X2501,             *USE DEFAULT T1TIMER= 1SEC     X
               DBIT=NO                 *USE DEFAULT SPEED=9600BPS
*
*
         X25.LCG LCGN=0                *FIRST LOGICAL CHANNEL GROUP
*
* PVC FOR PCNE: LINK NAME=SL1000  PU=SP1000   LU=SU1000
*
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,SPAN=X2501,           *
               MAXDATA=2000         *SEGMENTING NOT SUPPORTED FOR PCNE
*
*******  X25 LINE FOR INN ***THIS SIDE IS SECONDARY****
*
SL1001   X25.LINE   LCN=1,                                            X
               VCCINDX=3,                                             X
               MONLINK=YES,                                           X
               DSTNODE=INN,            *MANDATORY FOR INN             X
               LLC=LLC3,                                              X
               SPAN=X2501,                                            X
               TYPE=P
SP1001   X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,     X
               SPAN=2501,
*
*******  X25 LINE FOR INN ****THIS SIDE IS PRIMARY****
*
SL1002   X25.LINE   LCN=2,                                            X
               VCCINDX=3,                                             X
               MONLINK=YES,                                           X
               DSTNODE=INN,            *MANDATORY FOR INN             X
               LLC=LLC3,                                              X
               SPAN=X2501,                                            X
               TYPE=P
SP1002   X25.PU PUTYPE=4,TGN=4,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,     X
               SPAN=2501,
*
*******  X25 LINE FOR BNN  QLLC  ******************
*
SL1003   X25.LINE   LCN=3,                                            X
               VCCINDX=3,                                             X
               LLC=LLC3,               *DSTNODE=BNN DEFAULTED         X
               SPAN=X2501,                                            X
               TYPE=P
SP1003   X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,               X
               PACING=1,SPAN=X2501,ISTATUS=INACTIVE
SU1003   X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
*              *** PVC 4 FOR PU2.1 ON BNN QLLC   ***
*              ***            WITH DEPENDENT LU'S ***
*
         X25.LINE   LCN=4,                                            X
               VCCINDX=3,                                             X
               LLC=LLC3,            * DSTNODE=BNN DEFAULTED           X
               SPAN=X2501,                                            X
```

```
         TYPE=P
*
      X25.PU PUTYPE=2,ADDR=01,VPACING=2,XID=YES,DATMODE=HALF,       X
         PACING=1,SPAN=X2501,ISTATUS=INACTIVE,ANS=CONT
*
      X25.LU LOCADDR=2
*
*****************
*
*
*        *** PVC 5 FOR PU2.1 ON BNN QLLC     ***
*        ***          WITH INDEPENDENT LU'S ***
*
      X25.LINE   LCN=5,                                             X
         VCCINDX=3,                                                 X
         LLC=LLC3,           * DSTNODE=BNN DEFAULTED                X
         SPAN=X2501,                                                X
         TYPE=P
*
      X25.PU PUTYPE=2,ADDR=01,VPACING=2,XID=YES,DATMODE=HALF,       X
         PACING=1,SPAN=X2501,ISTATUS=INACTIVE,ANS=CONT
*
      X25.LU LOCADDR=0,          * FOR INDEPENDENT LU'S             X
         MODETAB=LENMODE
*
*
**  VC USING SUBADDRESSING TO SELECT THE LLC TYPE *********
*
      X25.LCG LCGN=1                *SECOND LOGICAL CHANNEL GROUP
**
      X25.VC  LCN=0,                *SVC FOR SUBADDRESSING          X
         VCCINDX=3,                                                 X
         OUFINDX=1,                                                 X
         CALL=IN,                   *USED FOR CALLIN ONLY           X
         SPAN=X2501,                                                X
         TYPE=SWITCHED
**********************************************************************
*       MCH  SL2 : GATE WITH USER DEFINED RELATION BETWEEN
*                  FIRST CUD BYTE AND CTCP/LLC
**********************************************************************
      X25.MCH ADDRESS=2,                                            X
         ANS=CONT,                                                  X
         LCGDEF=(0,2),                                              X
         FRMLGTH=131,                                               X
         MWINDOW=3,        LAP WINDOW                               X
         STATION=DTE,                                               X
         TPTIMER=3.1,                                               X
         TDTIMER=2,                                                 X
         NPRETRY=7,                                                 X
         NDRETRY=1,                                                 X
         LCN0=USED,                                                 X
         PAD=INTEG,TRAN=EVEN,                                       X
         GATE=GENERAL,                                              X
         SPAN=X2501,                                                X
         LLCLIST=(LLC0,LLC2,LLC3,LLC4,LLC5),                        X
         CUD0=(00,02,21,22,NULL,03,B0,C1,C5,CC,FF),                 X
         CTCP=(00,80,01,02,85,85,85,80,85,80,85)
*********
*
*    3 CTCP'S FOR GATE.CUD0 SELECTIONS: CTCP0=00,CTCP1=21,CTCP2=22
```

```
*             PCNE WILL BE SELECTED BY CUD0=02,C1,CC
*             PAD  WILL BE SELECTED BY CUD0=NULL,03,B0,C5,FF
*
*    FOR CALLOUT IF L=7(PAD) THE CALL OUT PKT WILL HAVE A NULL CUD
*    FOR CALLOUT IF L=.(PCNE) THE CALL OUT PKT WILL HAVE 02 IN CUD0
*********
         X25.LCG  LCGN=0
*
***      PVC FOR PCNE  *****************
*
         X25.VC LCN=0,                                               X
               VCCINDX=2,                                            X
               LLC=LLC0,                                             X
               MAXDATA=2000,        * SEGMENTING NOT SUPPORTED       X
               TYPE=P
*
**       2 SVC'S        *********************
*
         X25.VC  LCN=(1,2),                                          X
               VCCINDX=3,                                            X
               OUFINDX=1,                                            X
               CALL=INOUT,                                           X
               TYPE=SWITCHED
*********************************************************************
*          MCH  SL3: DATE MCH
*********************************************************************
*
          X25.MCH ADDRESS=3,                                         X
               ANS=CONT,                                             X
               GATE=DEDICAT,                                         X
               LCGDEF=(0,2),           *MAX LCN IS 2 ON LCGN 0       X
               FRMLGTH=131,                                          X
               MWINDOW=7,        LAP WINDOW                          X
               STATION=DTE,                                          X
               TPTIMER=3,                                            X
               TDTIMER=1,                                            X
               NPRETRY=7,                                            X
               NDRETRY=1,                                            X
               LLCLIST=(LLC0,LLC2,LLC3,LLC5),                        X
               LCN0=NOTUSED,                                         X
               DBIT=NO,                                              X
               SPEED=9600,                                           X
               T1TIMER=1,                                            X
               PAD=TRANSP,TRAN=EVEN    *PADI NOT ALLOWED ON DATE MCH
*
            X25.LCG LCGN=0
***
*
            X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2
               EJECT
*
*********************************************************************
*          MCH XL11: 7 VC'S FOR FAST CONNECT WITH 2 CTCP'S
*********************************************************************
*
***
XL12      X25.MCH ADDRESS=4,PUNAME=XP12,LUNAME=(XU12,XU22),          X
               ANS=CONT,                                             X
               LCGDEF=(0,7),                                         X
               FRMLGTH=131,                                          X
```

```
                MWINDOW=7,        LAP WINDOW                        X
                STATION=DTE,                                        X
                TPTIMER=3,                                          X
                TDTIMER=1,                                          X
                SPAN=X2501,                                         X
                NPRETRY=7,                                          X
                NDRETRY=3,                                          X
                GATE=GENERAL,         * NEEDED FOR FASTCONNECT      X
                LLCLIST=LLC4,                                       X
                LCN0=NOTUSED,                                       X
                ITRACE=NO,            *TO REDUCE PATH LENGTH        X
                LOGAPPL=(GBGTPLS,GBGTPLT), *CTCP'S PLU NAMES        X
                CONNECT=SUBD,         * 2 CTCP'S SELECTABLE VIA THE X
                SUBD=(0,9,1),         * LAST SUBADDRESSING DIGIT    X
                CTCP=(0,1,1)          *0 FOR CTCP 0, 9 AND 1 FOR CTCP 1
*
             X25.LCG LCGN=0           * DEFINE THE NETWORK'S VC'S
*
             X25.VC LCN=(1,7),VCCINDX=3,TYPE=S,CALL=INOUT
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP0
*
         X25.FCG QTY=(5),CTCPNO=(0),SPAN=X2501,MAXDATA=2500,        X
                PRFLINE=XL12,PRFPU=XP12,PRFLU=XU21,SUFFIX=0001
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP1
*
         X25.FCG QTY=(5),CTCPNO=(1),SPAN=X2501,MAXDATA=2500,        X
                PRFLINE=XL22,PRFPU=XP22,PRFLU=XU22,SUFFIX=0001
*
****************************************************************
         X25.END
****************************************************************
CAGROUP  GROUP LNCTL=CA,                                            X
               CA=TYPE6,                                            X
               DELAY=0.0,                                           X
               NCPCA=ACTIVE
CALINE1  LINE  ADDRESS=08               TO LOAD ON 540=CCUA
CA1PU    PU    PUTYPE=5
               EJECT
         GENEND
         END
****************************************************************
//DBWORKFL  DD UNIT=SYSDA,SPACE=(TRK,10)
//SYSPRINT DD SYSOUT=A
//PRINTER DD SYSOUT=A
//TBL1SRCE DD DSN=&&SRCE1,DISP=(,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(10,10)),DCB=BLKSIZE=3200
//TBL1LIST DD SYSOUT=Z
//*TBL1OBJ  DD DUMMY   TABLE 1 OBJECT FILE
//TBL1OBJ DD DSN=X25.NCPV32.SA324GN(ICNTABL1),DISP=OLD,
//  VOL=SER=MVSWK1,UNIT=3350
//TBL2SRCE DD DSN=&&SRCE2,DISP=(,DELETE),
// UNIT=SYSDA,SPACE=(CYL,(10,10)),DCB=BLKSIZE=3200
//TBL2LIST DD SYSOUT=Z
//*TBL2OBJ  DD DUMMY   TABLE 2 OBJECT FILE
//TBL2OBJ  DD  DSN=X25.NCPV32.SA324GN(ICNTABL2),DISP=OLD,
//  VOL=SER=MVSWK1,UNIT=3350
//NEWDEFN DD DISP=SHR,DSN=SYS1.VTAMLST(SA324GN)
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(10,10)),DISP=(,DELETE)
```

```
//SYSLIB DD DSN=SYS1.SNCPMAC1,DISP=SHR
//        DD DSN=SYS1.SBALMAC1,DISP=SHR
//LNKSTMT DD DSN=X25.NCPV32.SA324GN(SA324LE),DISP=OLD
/*
```

LKEDT Step

```
//LKEDT  EXEC PGM=IEWL,REGION=400K,
// PARM='LIST,NCAL,NOXREF,SIZE=(374K,48K),MAP'
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(1,1)),DISP=(,DELETE)
//SYSLIN DD DSN=X25.NCPV32.SA324GN(SA324LE),DISP=OLD
//SYSPUNCH DD DSN=X25.NCPV32.SA324GN,DISP=OLD,UNIT=3350,VOL=SER=MVSWK1
//SYSPRINT DD SYSOUT=A
//SYSLMOD DD DSN=SYS1.NCPLOAD,DISP=SHR
//ANCPMOD1 DD DSN=SYS1.SNCPMOD1,DISP=SHR
//ABALMOD1 DD DSN=SYS1.SBALMOD1,DISP=SHR
/*
```

NCP Input Produced by NDF (X.25 NPSI)

```
         OPTIONS USERGEN=X25NPSI,NEWDEFN=(YES,,SUPP)
BAKLOCAL PCCU DUMPDS=DUMPX25,SUBAREA=1
OTHLOCAL PCCU DUMPDS=DUMPX25,SUBAREA=16
REMVTAM  PCCU DUMPDS=DUMPX25,SUBAREA=2
*
BAKBUILD BUILD NPA=YES,VERSION=V5R2,LOADLIB=LNCP11,TYPGEN=NCP,MODEL=374*
               5,USGTIER=3,X25.USGTIER=3,NETID=NETID1,MAXSUBA=63,SUBARE*
               A=4,BFRS=124,LTRACE=4,OLT=YES,DR3270=NO,BRANCH=8000,TRAC*
               E=(YES,100),NEWNAME=SA324GN,X25.PREFIX=S,X25.IDNUMH=02,T*
               YPSYS=OS,X25.SNAP=YES,X25.MCHCNT=6,X25.MAXPIU=64K
BAKSYSC  SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,RIMM,NAKLIM*
               ,SESSION,SSPAUSE,XMTLMT)
BAKHOST  HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=1,DELAY=0*
               .1,TIMEOUT=30
OTHHOST  HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,DELAY=*
               0.1,TIMEOUT=30
REMHOST  HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=2,DELAY=0*
               .1,TIMEOUT=30
PATH14   PATH DESTSA=(1),ER0=(1,1),ER1=(1,1),ER2=(1,1)
PATH116  PATH DESTSA=(16),ER0=(16,1),ER1=(16,1),ER2=(16,1)
PATH42   PATH DESTSA=(5,2,3),ER0=(5,2),ER1=(5,3),ER2=(3,4)
         LUDRPOOL NUMTYP1=10,NUMTYP2=10,NUMILU=2
*******************************************************
SDLC6    GROUP LNCTL=SDLC,TYPE=NCP,DIAL=YES,REPLYTO=20
**************************************
SL6      LINE ADDRESS=6,CLOCKNG=EXT,NEWSYNC=NO,DUPLEX=HALF,NRZI=NO,CALL*
               =INOUT,RETRIES=(7,0,0)
SP6      PU ISTATUS=INACTIVE,PUTYPE=2
*******************************************************
SDLC5    GROUP LNCTL=SDLC,TYPE=NCP,DIAL=NO,REPLYTO=3,DISCNT=NO,ISTATUS=*
               INACTIVE
**************************************
SL5      LINE ADDRESS=5,CLOCKNG=EXT,NEWSYNC=NO,DUPLEX=HALF,NRZI=NO,NPAC*
               OLL=YES,RETRIES=(3)
         SERVICE ORDER=(SP5)
SP5      PU ADDR=C2,MAXDATA=261,MAXOUT=3,PUTYPE=2,NPACOLL=YES,VPACING=2*
               ,PACING=1
SU5      LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,NPACOLL=YES
*************************************************************
GRNPA    GROUP LNCTL=SDLC,TYPE=NCP,DIAL=NO,DISCNT=NO,VIRTUAL=YES,NPARSC*
               =YES,ISTATUS=INACTIVE
LNNPA    LINE LINEFVT=NPAVFVT
PUNPA    PU PUTYPE=2,PUFVT=NPAPFVT
LUNPA    LU MAXCOLL=7,LUFVT=(NPALFVT,NPALFVT),VPACING=0,LOCADDR=1
**************************************
***** X25 NPSI INPUT
*     ALLOW 3 VCCPT AND OUFT ENTRIES
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES
*
         X25.VCCPT INDEX=1,MAXPKTL=128,VWINDOW=1,INSLOW=(100,50)
*
         X25.VCCPT INDEX=2,MAXPKTL=128,VWINDOW=2,INSLOW=(100,50)
*
         X25.VCCPT INDEX=3,MAXPKTL=128,VWINDOW=3,INSLOW=(100,50)
*
         X25.OUFT INDEX=1
*
```

```
        X25.OUFT INDEX=2,OPTFACL=420707430202
*
        X25.OUFT INDEX=3,OPTFACL=03430102420707430303,USRFILD=12345678*
              90
**********************************************************************
*
**********************************************************************
*       MCH  SL7: NO DATE/GATE BUT SVC INN
**********************************************************************
        X25.MCH ADDRESS=7,ANS=CONT,LCGDEF=(0,7),FRMLGTH=131,MWINDOW=7,*
              STATION=DTE,TPTIMER=3,TDTIMER=1,NPRETRY=7,NDRETRY=1,LLCL*
              IST=(LLC0,LLC2,LLC3,LLC5),LCN0=USED,SPAN=X2501,DBIT=NO,P*
              AD=INTEG,TRAN=EVEN,PWPROT=YES,ITRACE=NO,SPEED=9600,T1TIM*
              ER=1,SVCINN=2,SHM=YES,SDRTCNT=3,SDRTIME=10
*
        X25.LCG LCGN=0
*
*
* PVC FOR INTEGRATED PAD FOR USE WITH TSO AND WITH PASSWORD PROTECTION
*
        X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC5,SPAN=X2501,MAXDATA=2000*
              ,SSCPFM=USSNTO,MODETAB=MODTWX,DLOGMOD=TWXCONT,TERM=TWX,U*
              SSTAB=USSTWX
*
*** 2 LINE'S FOR SUBAREA DIAL(2 SVC'S RESERVED FOR SVC INN)
*
        X25.LINE DSTNODE=INN,TYPE=S
        X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
        X25.LINE DSTNODE=INN,TYPE=S
        X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
*
* DEFINE 7 SVC TO BE SHARED BETWEEN INN SVC'S(MAX OF 2 AT A TIME)
* AND BNN SVC (MAX OF 5 AT A TIME)
*
        X25.VC LCN=(1,7),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1,SPAN=X2*
              501
*
**********************************************************************
*       MCH  SL0: NO DATE/GATE BUT TRANSPARENT PAD
**********************************************************************
        X25.MCH ADDRESS=0,ANS=CONT,LCGDEF=(0,4),FRMLGTH=131,MWINDOW=2,*
              STATION=DTE,XMONLNK=YES,TPTIMER=3,TDTIMER=1,NPRETRY=7,ND*
              RETRY=1,LLCLIST=(LLC0,LLC2,LLC3,LLC5),LCN0=USED,SPAN=X25*
              01,DBIT=NO,PAD=TRANSP,TRAN=EVEN,ITRACE=YES,SPEED=9600,T1*
              TIMER=1
*
        X25.LCG LCGN=0
*
*** X25 LINE FOR PSH (PVC) LINE NAME=SL0000 PU=SP0000 LU=SU0000
*
        X25.LINE LCN=0,VCCINDX=3,LLC=LLC2,TYPE=P,SPAN=X2501
*
        X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,PACING=2,ISTATUS*
              =INACTIVE
        X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
* 4 SVC'S: 1 IN, 2 IN/OUT, 1 OUT
*
```

```
         X25.VC LCN=1,VCCINDX=2,TYPE=S,CALL=IN,OUFINDX=2,SPAN=X2501
         X25.VC LCN=(2,3),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=3,SPAN=X2*
               501
         X25.VC LCN=4,VCCINDX=3,TYPE=S,CALL=OUT,OUFINDX=1,SPAN=X2501
*
***********************************************************************
*         MCH  SL1: GATE WITH SUBADDRESSING & PU T2.1
***********************************************************************
         X25.MCH ADDRESS=1,ANS=CONT,LCGDEF=((0,5),(1,0)),FRMLGTH=131,MW*
               INDOW=3,STATION=DTE,XMONLNK=YES,SHUTD=NOINVCLR,TPTIMER=2*
               ,TDTIMER=3,NPRETRY=3,NDRETRY=3,LCN0=USED,PAD=INTEG,TRAN=*
               EVEN,GATE=GENERAL,SUBADDR=YES,LLCLIST=(LLC0,LLC2,LLC3,LL*
               C4,LLC5),LLC0=(0,2),LLC2=8,LLC3=9,LLC4=(1,4,3,7),LLC5=(6*
               ,5),SPAN=X2501,DBIT=NO
*
*
         X25.LCG LCGN=0
*
* PVC FOR PCNE: LINK NAME=SL1000  PU=SP1000   LU=SU1000
*
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,SPAN=X2501,MAXDATA=2000
*
*******  X25 LINE FOR INN ***THIS SIDE IS SECONDARY****
*
SL1001   X25.LINE LCN=1,VCCINDX=3,MONLINK=YES,DSTNODE=INN,LLC=LLC3,SPAN*
               =X2501,TYPE=P
SP1001   X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,SPAN=2*
               501
*
*******  X25 LINE FOR INN ****THIS SIDE IS PRIMARY****
*
SL1002   X25.LINE LCN=2,VCCINDX=3,MONLINK=YES,DSTNODE=INN,LLC=LLC3,SPAN*
               =X2501,TYPE=P
SP1002   X25.PU PUTYPE=4,TGN=4,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE,SPAN=2*
               501
*
*******  X25 LINE FOR BNN  QLLC  ******************
*
SL1003   X25.LINE LCN=3,VCCINDX=3,LLC=LLC3,SPAN=X2501,TYPE=P
SP1003   X25.PU PUTYPE=2,ADDR=01,MAXDATA=265,VPACING=2,PACING=1,SPAN=X2*
               501,ISTATUS=INACTIVE
SU1003   X25.LU LOCADDR=2,USSTAB=USSTD3,MODETAB=MODTD3
*
*              *** PVC 4 FOR PU2.1 ON BNN QLLC   ***
*              ***           WITH DEPENDENT LU'S ***
*
         X25.LINE LCN=4,VCCINDX=3,LLC=LLC3,SPAN=X2501,TYPE=P
*
         X25.PU PUTYPE=2,ADDR=01,VPACING=2,XID=YES,DATMODE=HALF,PACING=*
               1,SPAN=X2501,ISTATUS=INACTIVE,ANS=CONT
*
         X25.LU LOCADDR=2
*
******************
*
*
*              *** PVC 5 FOR PU2.1 ON BNN QLLC     ***
*              ***           WITH INDEPENDENT LU'S ***
*
```

```
         X25.LINE LCN=5,VCCINDX=3,LLC=LLC3,SPAN=X2501,TYPE=P
*
         X25.PU PUTYPE=2,ADDR=01,VPACING=2,XID=YES,DATMODE=HALF,PACING=*
               1,SPAN=X2501,ISTATUS=INACTIVE,ANS=CONT
*
         X25.LU LOCADDR=0,MODETAB=LENMODE
*
*
**  VC USING SUBADDRESSING TO SELECT THE LLC TYPE *********
*
         X25.LCG LCGN=1
**
         X25.VC LCN=0,VCCINDX=3,OUFINDX=1,CALL=IN,SPAN=X2501,TYPE=SWITC*
               HED
***********************************************************************
*         MCH  SL2 : GATE WITH USER DEFINED RELATION BETWEEN
*                    FIRST CUD BYTE AND CTCP/LLC
***********************************************************************
         X25.MCH ADDRESS=2,ANS=CONT,LCGDEF=(0,2),FRMLGTH=131,MWINDOW=3,*
               STATION=DTE,TPTIMER=3.1,TDTIMER=2,NPRETRY=7,NDRETRY=1,LC*
               N0=USED,PAD=INTEG,TRAN=EVEN,GATE=GENERAL,SPAN=X2501,LLCL*
               IST=(LLC0,LLC2,LLC3,LLC4,LLC5),CUD0=(00,02,21,22,NULL,03*
               ,B0,C1,C5,CC,FF),CTCP=(00,80,01,02,85,85,85,80,85,80,85)
*********
*
*    3 CTCP'S FOR GATE.CUD0 SELECTIONS: CTCP0=00,CTCP1=21,CTCP2=22
*              PCNE WILL BE SELECTED BY CUD0=02,C1,CC
*              PAD  WILL BE SELECTED BY CUD0=NULL,03,B0,C5,FF
*
*    FOR CALLOUT IF L=7(PAD) THE CALL OUT PKT WILL HAVE A NULL CUD
*    FOR CALLOUT IF L=.(PCNE) THE CALL OUT PKT WILL HAVE 02 IN CUD0
*********
         X25.LCG LCGN=0
*
***     PVC FOR PCNE  ******************
*
         X25.VC LCN=0,VCCINDX=2,LLC=LLC0,MAXDATA=2000,TYPE=P
*
**       2 SVC'S         *********************
*
         X25.VC LCN=(1,2),VCCINDX=3,OUFINDX=1,CALL=INOUT,TYPE=SWITCHED
***********************************************************************
*          MCH  SL3: DATE MCH
***********************************************************************
*
         X25.MCH ADDRESS=3,ANS=CONT,GATE=DEDICAT,LCGDEF=(0,2),FRMLGTH=1*
               31,MWINDOW=7,STATION=DTE,TPTIMER=3,TDTIMER=1,NPRETRY=7,N*
               DRETRY=1,LLCLIST=(LLC0,LLC2,LLC3,LLC5),LCN0=NOTUSED,DBIT*
               =NO,SPEED=9600,T1TIMER=1,PAD=TRANSP,TRAN=EVEN
*
         X25.LCG LCGN=0
***
*
         X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2
*
***********************************************************************
*          MCH XL11: 7 VC'S FOR FAST CONNECT WITH 2 CTCP'S
***********************************************************************
*
```

```
***
XL12     X25.MCH ADDRESS=4,PUNAME=XP12,LUNAME=(XU12,XU22),ANS=CONT,LCGD*
               EF=(0,7),FRMLGTH=131,MWINDOW=7,STATION=DTE,TPTIMER=3,TDT*
               IMER=1,SPAN=X2501,NPRETRY=7,NDRETRY=3,GATE=GENERAL,LLCLI*
               ST=LLC4,LCN0=NOTUSED,ITRACE=NO,LOGAPPL=(GBGTPLS,GBGTPLT)*
               ,CONNECT=SUBD,SUBD=(0,9,1),CTCP=(0,1,1)
*
         X25.LCG LCGN=0
*
         X25.VC LCN=(1,7),VCCINDX=3,TYPE=S,CALL=INOUT
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP0
*
         X25.FCG QTY=(5),CTCPNO=(0),SPAN=X2501,MAXDATA=2500,PRFLINE=XL1*
               2,PRFPU=XP12,PRFLU=XU21,SUFFIX=0001
*
* DEFINE THE MAX NB OF LU'S USABLE AT THE SAME TIME ON CTCP1
*
         X25.FCG QTY=(5),CTCPNO=(1),SPAN=X2501,MAXDATA=2500,PRFLINE=XL2*
               2,PRFPU=XP22,PRFLU=XU22,SUFFIX=0001
*
*****************************************************************
         X25.END
S25P7A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LNC*
               TL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),T*
               YPE=NCP,USERID=(5688035,BALPBDT,NORECMS),XIO=(BALNAVXL,B*
               ALNAVXS,BALNAVXI,BALNAVXK)
SL7000   LINE IPL=NO,SPAN=X2501,UACB=XA7000
SC7000   SERVICE
SP7000   PU ADDR=01,PACING=1,PUDR=NO,PUTYPE=1,XID=NO,SPAN=X2501,MAXDATA*
               =2000
SU7000   LU LOCADDR=0,SPAN=X2501,TERM=TWX,DLOGMOD=TWXCONT,SSCPFM=USSNTO*
               ,USSTAB=USSTWX,MODETAB=MODTWX,VPACING=(2,1),LUDR=NO
S25P0A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LNC*
               TL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),T*
               YPE=NCP,USERID=(5688035,BALPBDT,NORECMS),XIO=(BALNAVXL,B*
               ALNAVXS,BALNAVXI,BALNAVXK)
SL0000   LINE SPAN=X2501,IPL=NO,UACB=XA0000
SC0000   SERVICE
SP0000   PU ADDR=01,MAXDATA=265,PACING=2,ISTATUS=INACTIVE,VPACING=2,PUT*
               YPE=2,XID=NO,PUDR=NO
SU0000   LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,LUDR=NO
S25P1A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LNC*
               TL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),T*
               YPE=NCP,USERID=(5688035,BALPBDT,NORECMS),XIO=(BALNAVXL,B*
               ALNAVXS,BALNAVXI,BALNAVXK)
SL1000   LINE IPL=NO,SPAN=X2501,UACB=XA1000
SC1000   SERVICE
SP1000   PU ADDR=01,PACING=1,PUDR=NO,PUTYPE=1,XID=NO,SPAN=X2501,MAXDATA*
               =2000
SU1000   LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
SL1001   LINE SPAN=X2501,IPL=NO,MONLINK=YES,UACB=XA1001
SC1001   SERVICE
SP1001   PU ANS=CONT,TGN=2,ISTATUS=INACTIVE,SPAN=2501,PUTYPE=4,PUDR=NO
SL1002   LINE SPAN=X2501,IPL=NO,MONLINK=YES,UACB=XA1002
SC1002   SERVICE
SP1002   PU ANS=CONT,TGN=4,ISTATUS=INACTIVE,SPAN=2501,PUTYPE=4,PUDR=NO
```

```
SL1003   LINE SPAN=X2501,IPL=NO,UACB=XA1003
SC1003   SERVICE
SP1003   PU ADDR=01,MAXDATA=265,PACING=1,ISTATUS=INACTIVE,SPAN=X2501,VP*
               ACING=2,PUTYPE=2,PUDR=NO
SU1003   LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,LUDR=NO
SL1004   LINE SPAN=X2501,IPL=NO,UACB=XA1004
SC1004   SERVICE
SP1004   PU ADDR=01,ANS=CONT,DATMODE=HALF,PACING=1,ISTATUS=INACTIVE,SPA*
               N=X2501,VPACING=2,PUTYPE=2,XID=YES,PUDR=NO
SU1004   LU LOCADDR=2,LUDR=NO
SL1005   LINE SPAN=X2501,IPL=NO,UACB=XA1005
SC1005   SERVICE
SP1005   PU ADDR=01,ANS=CONT,DATMODE=HALF,PACING=1,ISTATUS=INACTIVE,SPA*
               N=X2501,VPACING=2,PUTYPE=2,XID=YES,PUDR=NO
SU1005   LU LOCADDR=0,MODETAB=LENMODE,LUDR=NO
S25P2A   GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LNC*
               TL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),T*
               YPE=NCP,USERID=(5688035,BALPBDT,NORECMS),XIO=(BALNAVXL,B*
               ALNAVXS,BALNAVXI,BALNAVXK)
SL2000   LINE IPL=NO,UACB=XA2000
SC2000   SERVICE
SP2000   PU ADDR=01,PACING=1,PUDR=NO,PUTYPE=1,XID=NO,MAXDATA=2000
SU2000   LU LOCADDR=0,VPACING=(2,1),LUDR=NO
S25PG50B GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LNC*
               TL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),T*
               YPE=NCP,USERID=(5688035,BALFBDT,NORECMS),LOGAPPL=GBGTPLS*
               ,XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
XL120001 LINE IPL=NO,SPAN=X2501,UACB=XAG50000
SCG50000 SERVICE
XP120001 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
               YPE=1
XU210001 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL120002 LINE IPL=NO,SPAN=X2501,UACB=XAG50001
SCG50001 SERVICE
XP120002 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
               YPE=1
XU210002 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL120003 LINE IPL=NO,SPAN=X2501,UACB=XAG50002
SCG50002 SERVICE
XP120003 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
               YPE=1
XU210003 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL120004 LINE IPL=NO,SPAN=X2501,UACB=XAG50003
SCG50003 SERVICE
XP120004 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
               YPE=1
XU210004 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL120005 LINE IPL=NO,SPAN=X2501,UACB=XAG50004
SCG50004 SERVICE
XP120005 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
               YPE=1
XU210005 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
S25PG51C GROUP DIAL=NO,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINEA*
               DD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LNC*
               TL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),T*
               YPE=NCP,USERID=(5688035,BALFBDT,NORECMS),LOGAPPL=GBGTPLT*
               ,XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
XL220001 LINE IPL=NO,SPAN=X2501,UACB=XAG51000
```

```
SCG51000 SERVICE
XP220001 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
          YPE=1
XU220001 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL220002 LINE IPL=NO,SPAN=X2501,UACB=XAG51001
SCG51001 SERVICE
XP220002 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
          YPE=1
XU220002 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL220003 LINE IPL=NO,SPAN=X2501,UACB=XAG51002
SCG51002 SERVICE
XP220003 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
          YPE=1
XU220003 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL220004 LINE IPL=NO,SPAN=X2501,UACB=XAG51003
SCG51003 SERVICE
XP220004 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
          YPE=1
XU220004 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
XL220005 LINE IPL=NO,SPAN=X2501,UACB=XAG51004
SCG51004 SERVICE
XP220005 PU ADDR=01,MAXDATA=2500,XID=NO,PACING=1,PUDR=NO,SPAN=X2501,PUT*
          YPE=1
XU220005 LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),LUDR=NO
S25S3A   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
          ADD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LI*
          NEAUT=YES,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATS*
          T,BALNATLS),TYPE=NCP,USERID=(5688035,BALSBDT,NORECMS),XI*
          O=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
SL3002   LINE CALL=IN,UACB=XA3002
SP3002   PU PUTYPE=(1,2)
SL3001   LINE CALL=IN,UACB=XA3001
SP3001   PU PUTYPE=(1,2)
S25S2B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
          ADD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LI*
          NEAUT=YES,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATS*
          T,BALNATLS),TYPE=NCP,USERID=(5688035,BALSBDT,NORECMS),XI*
          O=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
SL2002   LINE CALL=INOUT,UACB=XA2002
SP2002   PU PUTYPE=(1,2)
SL2001   LINE CALL=INOUT,UACB=XA2001
SP2001   PU PUTYPE=(1,2)
S25S1B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
          ADD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LI*
          NEAUT=YES,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATS*
          T,BALNATLS),TYPE=NCP,USERID=(5688035,BALSBDT,NORECMS),XI*
          O=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
SL1100   LINE CALL=IN,SPAN=X2501,UACB=XA1100
SP1100   PU SPAN=X2501,PUTYPE=(1,2)
S25S0B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
          ADD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LI*
          NEAUT=YES,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATS*
          T,BALNATLS),TYPE=NCP,USERID=(5688035,BALSBDT,NORECMS),XI*
          O=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
SL0004   LINE CALL=OUT,SPAN=X2501,UACB=XA0004
SP0004   PU SPAN=X2501,PUTYPE=(1,2)
SL0003   LINE CALL=INOUT,SPAN=X2501,UACB=XA0003
SP0003   PU SPAN=X2501,PUTYPE=(1,2)
SL0002   LINE CALL=INOUT,SPAN=X2501,UACB=XA0002
SP0002   PU SPAN=X2501,PUTYPE=(1,2)
```

```
SL0001   LINE CALL=IN,SPAN=X2501,UACB=XA0001
SP0001   PU SPAN=X2501,PUTYPE=(1,2)
S25S7C   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
               ADD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LI*
               NEAUT=YES,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATS*
               T,BALNATLS),TYPE=NCP,USERID=(5688035,BALSBDT,NORECMS),XI*
               O=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
SL7007   LINE CALL=INOUT,SPAN=X2501,UACB=XA7007
SP7007   PU SPAN=X2501,PUTYPE=(1,2)
SL7006   LINE CALL=INOUT,SPAN=X2501,UACB=XA7006
SP7006   PU SPAN=X2501,PUTYPE=(1,2)
SL7005   LINE CALL=INOUT,SPAN=X2501,UACB=XA7005
SP7005   PU SPAN=X2501,PUTYPE=(1,2)
SL7004   LINE CALL=INOUT,SPAN=X2501,UACB=XA7004
SP7004   PU SPAN=X2501,PUTYPE=(1,2)
SL7003   LINE CALL=INOUT,SPAN=X2501,UACB=XA7003
SP7003   PU SPAN=X2501,PUTYPE=(1,2)
S25S7B   GROUP DIAL=YES,LEVEL2=BALNAVL2,LEVEL3=BALNAVL3,LEVEL5=NCP,LINE*
               ADD=NONE,COMPTAD=NO,COMPOWN=YES,COMPSWP=NO,COMPACB=NO,LN*
               CTL=SDLC,NPACOLL=NO,TIMER=(BALNATER,,BALNATST,BALNATLS),*
               TYPE=NCP,USERID=(5688035,BALIBDT,NORECMS),PUTYPE=4,SHM=Y*
               ES,ACTIVTO=0.0,BRKCON=NONE,XIO=(BALNAVXL,BALNAVXS,BALNAV*
               XI,BALNAVXK)
SL7GGI   LINE CALL=INOUT,UACB=XA7GGI
SP7GGI   PU ISTATUS=INACTIVE,PUTYPE=4
SL7GGH   LINE CALL=INOUT,UACB=XA7GGH
SP7GGH   PU ISTATUS=INACTIVE,PUTYPE=4
SNET11   GROUP DIAL=NO,BERPROC=BALNMBER,COMPACB=YES,COMPTAD=YES,COMPOWN*
               =YES,COMPSWP=YES,LEVEL2=BALNAML2,LEVEL3=BALNAML3,LEVEL5=*
               NCP,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALLAP4,,BALLAP4,BALLAP*
               4),TYPE=NCP,USERID=(5688035,BALMBDT,NORECMS,P),XIO=(BALN*
               AMXL,BALNAMXS,BALNAMXI,BALNAMXK)
SL7      LINE ADDRESS=(7,FULL),SPAN=X2501,XMONLNK=NO,UACB=(X25A7X,X25A7*
               R)
SC7      SERVICE
SP7      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,XID=NO,PUTYPE=1
SU7      LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=INACTIVE
SNET12   GROUP DIAL=NO,BERPROC=BALNMBER,COMPACB=YES,COMPTAD=YES,COMPOWN*
               =YES,COMPSWP=YES,LEVEL2=BALNAML2,LEVEL3=BALNAML3,LEVEL5=*
               NCP,LNCTL=SDLC,NPACOLL=NO,TIMER=(BALLAP4,,BALLAP4,BALLAP*
               4),TYPE=NCP,USERID=(5688035,BALNBDT,NORECMS,P),XIO=(BALN*
               AMXL,BALNAMXS,BALNAMXI,BALNAMXK)
SL0      LINE ADDRESS=(0,FULL),SPAN=X2501,XMONLNK=YES,UACB=(X25A0X,X25A*
               0R)
SC0      SERVICE
SP0      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,XID=NO,PUTYPE=1
SU0      LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=INACTIVE
SL1      LINE ADDRESS=(1,FULL),SPAN=X2501,XMONLNK=YES,UACB=(X25A1X,X25A*
               1R)
SC1      SERVICE
SP1      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,XID=NO,PUTYPE=1
SU1      LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=ACTIVE
SL2      LINE ADDRESS=(2,FULL),SPAN=X2501,XMONLNK=NO,UACB=(X25A2X,X25A2*
               R)
SC2      SERVICE
SP2      PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,XID=NO,PUTYPE=1
SU2      LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=ACTIVE
SU2L1    LU LOCADDR=1,SPAN=X2501,VPACING=(2,1),ISTATUS=ACTIVE
SU2L2    LU LOCADDR=2,SPAN=X2501,VPACING=(2,1),ISTATUS=ACTIVE
SL3      LINE ADDRESS=(3,FULL),XMONLNK=NO,UACB=(X25A3X,X25A3R)
```

```
SC3      SERVICE
SP3      PU ADDR=01,ANS=CONT,MAXDATA=261,XID=NO,PUTYPE=1
SU3      LU LOCADDR=0,VPACING=(2,1),ISTATUS=ACTIVE
XL12     LINE ADDRESS=(4,FULL),SPAN=X2501,XMONLNK=NO,UACB=(X25A4X,X25A4*
               R)
SC4      SERVICE
XP12     PU ADDR=01,ANS=CONT,SPAN=X2501,MAXDATA=261,XID=NO,PUTYPE=1
XU12     LU LOCADDR=0,LOGAPPL=GBGTPLS,SPAN=X2501,VPACING=(2,1),ISTATUS=*
               ACTIVE
XU22     LU LOCADDR=1,LOGAPPL=GBGTPLT,SPAN=X2501,VPACING=(2,1),ISTATUS=*
               ACTIVE
*****************************************************************
CAGROUP  GROUP LNCTL=CA,CA=TYPE6,DELAY=0.0,NCPCA=ACTIVE
CALINE1  LINE ADDRESS=08
CA1PU    PU PUTYPE=5
         GENEND INIT=BALINIMD,LINOPT=BSC,TMRTICK=BALTICK,UGLOBAL=BALNMG*
               OP
*****************************************************************
```

Main Switched Major Node

```
*********************************************************************** 00000010
* SWITCHED MAJOR NODE TO BE USED IN CORRELATION WITH SA324GN GEN        00000020
*********************************************************************** 00000030
**                                                                      00000090
SWS25    VBUILD MAXGRP=20,                                             *00000040
               MAXNO=20,                                               *00000050
               TYPE=SWNET                                               00000060
**                                                                      00000090
**********************************************************              00000010
*    ENTRY   FOR PCNE THAT RECEIVES DATA BEFORE SDT      *              00000020
**********************************************************              00000030
*
PCNEPBK  PU    ADDR=01,                 PCNE FOR TEST WITH DXPCNEBK    *00000100
               IDBLK=003,               AND PCNEBK APPL. DATA IS       *00000110
               IDNUM=22225,             QUEUED IN NPSI UNTIL SDT, BE THE*00000120
               DISCNT=NO,MAXOUT=6,      SDT AFTER ACTLU OR UNBIND W/O  *00000140
               MAXDATA=1024,            ACTLU. NOTICE THE DISCNT=NO... *00000150
               PACING=1,                                               *00000170
               VPACING=2,                                              *00000180
               PUTYPE=1,                                               *00000190
               SSCPFM=USSSCS                                            00000200
PCNELBK  LU    LOCADDR=0,LOGAPPL=TD5SR MAXOUT=6 GOES W LOGAPPL          00000210
**                                                                      00000090
**********************************************************              00000010
*    ENTRIES FOR PCNE TO PCNE COMMUNICATION              *              00000020
*                (BACK TO BACK)                          *              00000020
**********************************************************              00000030
*
PCNEPI   PU    ADDR=01,        PCNE TO PCNE INBOUND                    *00000100
               IDBLK=003,                                              *00000110
               IDNUM=22223,    ZZZZZ OF OUT CALLER +1                  *00000120
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *00022000
               MAXOUT=1,       TO LET LOGON MSG IN AFTER ACTLU         *00000140
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *00000150
               PACING=1,       PACING=1 IS REQUIRED                    *00000170
               VPACING=2,                                              *00000180
               ANS=CONT,       FOR SW SESSION CONTINUATION             *00000180
               PUTYPE=1,                                               *00000190
               SSCPFM=USSSCS                                            00000200
PCNELI   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES    00000210
**                                                                      00000240
PCNEPO   PU    ADDR=01,        PCNE TO PCNE OUTBOUND                   *00000250
               IDBLK=003,                                              *00000260
               IDNUM=22222,    EQUAL ZZZZZ                             *00000270
               MAXPATH=6,                                              *00000310
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *00022000
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *00000300
               PACING=1,       PACING=1 IS REQUIRED                    *00000320
               VPACING=2,                                              *00000330
               ANS=CONT,       FOR SW SESSION CONTINUATION             *00000180
               PUTYPE=1,                                               *00000340
               SSCPFM=USSSCS                                            00000350
PCNEP1   PATH  DIALNO=10604016500201*22222,   ZZZZZ=22222=IDNUM        *00000360
               GRPNM=S25S0B,GID=2,PID=20      S25S0B=GROUP OF SWITCHED  00000370
*                              VC'S ON INVOLVED MCH IN GENERATION
PCNEP3   PATH  DIALNO=10604016900201*22222,                            *00000400
               GRPNM=S25S0B,GID=2,PID=22                                00000410
PCNELO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES    00000210
```

```
*
**********************************************************           00000010
*                                                        *
* ENTRY FOR INCOMING AND OUTGOING CALLS FOR PADX ON MCH0 *
*                                                        *
**********************************************************           00000010
*
*********
*
*      DEFAULT IDNUM VALUES FOR INCOMING CALLS ARE BUILT AS FOLLOW:
*              IDNUM=02012
*                   ..012      FOR 9TH SVC FROM LAST SVC (9*2)=12(HEX)
*                   02...      COME FROM X25.IDNUMH IN NPSI BUILD MACRO
*********
*
PADXPO   PU    ADDR=01,        ENTRY USED FOR IN AND OUTCALL          *00000250
               IDBLK=003,                                             *00000260
               IDNUM=02012,    FOR 9TH SVC FROM END OF GEN(9*2)=12    *00000270
               MAXPATH=6,                                             *00000310
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *00022000
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED               *00000150
               PACING=1,       PACING=1 IS REQUIRED                   *00000170
               VPACING=2,                                             *00000180
               ANS=CONT,       FOR SW SESSION CONTINUATION            *00000180
               PUTYPE=1,                                              *00000340
               SSCPFM=USSSCS                                           00000350
PADP1    PATH  DIALNO=10605023650101*02012, ZZZZZ=02012=IDNUM         *00000750
               GRPNM=S25S0B,GID=2,PID=50                               00000760
PADXLO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES   00000210
*
**********************************************************             00000010
*                                                        *             00000020
* ENTRY FOR INCOMING AND OUTGOING CALLS FOR BNN QLLC/PSH *
*                                                        *             00000020
**********************************************************             00000030
*
PSHPI    PU    ADDR=01,                                               *00018000
               IDBLK=017,                                             *00019000
               IDNUM=41264,    IDNUM OF REMOTE PU                     *00020000
               MAXPATH=6,                                             *00024000
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *00022000
               MAXDATA=265,    SEGMENTING SUPPORTED                   *00023000
               PACING=3,                                              *00025000
               ANS=CONT,       FOR SW SESSION CONTINUATION            *00000180
               VPACING=3,                                             *00026000
               PUTYPE=2,                                              *00027000
               SSCPFM=USSSCS             OUTGOING CALL FOR PSH         00028000
PSHP1    PATH  DIALNO=10604016420201,    L=2 FOR PSH                  *00000750
               GRPNM=S25S0B,GID=2,PID=30 S25S0B=GROUP OF SWITCHED      00000370
*                              VC'S ON INVOLVED MCH IN GENERATION
PSHP2    PATH  DIALNO=10604016430201,    L=3 FOR BNN QLLC             *00000750
               GRPNM=S25S0B,GID=2,PID=31                               00000760
PSHLI    LU    LOCADDR=2,MODETAB=MODTD3                                00030000
*                                                                      00031000
******************************************************************     00000010
*                                                                *     00000020
* ENTRY FOR SUBADDRESSING ON MCH1 FOR NON SNA VIRTUAL CIRCUITS    *     00000020
*                                                                *     00000020
******************************************************************     00000030
```

```
*                                                                        00000090
SAPI     PU    ADDR=01,        GATE OR PCNE OR PAD CALL IN              *00000100
               IDBLK=003,                                               *00000110
               IDNUM=0200A,    FOR 5TH SVC FROM LAST SVC (5*2)=A        *00000120
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *00022000
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED                 *00000150
               PACING=1,       PACING=1 IS REQUIRED                     *00000170
               VPACING=2,                                               *00000180
               PUTYPE=1,MAXOUT=6,  TO QUEUE DATA UNTIL SDT              *00000190
               SSCPFM=USSSCS                                             00000200
SALI     LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES     00000210
*
*******************************************************************      00000010
*                                                                 *      00000020
*    ENTRIES  FOR GATE AND PADI                                   *      00000020
* FOR GATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED  *      00000020
*                                                                 *      00000020
*******************************************************************      00000030
*                                                                        00000090
GATEPI   PU    ADDR=01,        PADI INCALL OR 1ST GATE VC USED          *00000100
               IDBLK=003,                     (IN OR OUT CALL)          *00000110
               IDNUM=02008,    FOR 4TH SVC FROM LAST SVC (4*2)=8        *00000120
               MAXOUT=6,       TO QUEUE INBOUND MSG COMING BEFORE SDT   *00000140
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *00022000
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED                 *00000150
               PACING=1,       PACING=1 IS REQUIRED                     *00000170
               VPACING=2,                                               *00000180
               ANS=CONT,       FOR SW SESSION CONTINUATION              *00000180
               PUTYPE=1,                                                *00000190
               SSCPFM=USSSCS                                             00000200
PADILI   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES     00000210
*                                                                        00000240
**                                                                       00000010
*                                                                        00000240
GATEPO   PU    ADDR=01,        2ND GATE VC USED(IN OR OUT CALL)         *00000250
               IDBLK=003,                                               *00000260
               IDNUM=02006,    FOR 3RD SVC FROM LAST SVC (3*2)=6        *00000120
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *00022000
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED                 *00000150
               PACING=1,       PACING=1 IS REQUIRED                     *00000170
               VPACING=2,                                               *00000180
               ANS=CONT,       FOR SW SESSION CONTINUATION              *00000180
               PUTYPE=1,                                                *00000340
               SSCPFM=USSSCS                                             00000350
GATELO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES     00000210
*
**********************************************************               00000010
*                                                        *
* ENTRIES  FOR USER DEFINED CUD0 (CALLOUT)               *               00000020
*                                                        *               00000020
**********************************************************               00000030
*
UDCUDP1  PU    ADDR=01,                TO BE USED FOR PCNE              **0001800
               IDBLK=003,                                               **0001900
               MAXPATH=4,                                               **0002300
               IDNUM=55544,    CUD123 FOR CALLIN,EQ ZZZZZ FOR CALL OUT *00000120
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *00022000
               MAXDATA=1024,   SEGMENTING NOT SUPPORTED                 *00000150
               PACING=1,       PACING=1 IS REQUIRED                     *00000170
               VPACING=2,                                               *00000180
```

```
                PUTYPE=1,                                               **0002700
                SSCPFM=USSSCS USSTAB=USSTABZ                             0002800
UDCUDH1  PATH   DIALNO=106050236.0101*55544,  .MEANS USER DEFINED CUD0  *00000750
                GRPNM=S25S2B,GID=2,PID=96     AND NOTHING IN CUD1 2 3    00000760
UDCUDU1  LU     LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES    00000210
*
UDCUDP2  PU     ADDR=01,                TO BE USED FOR PCNE             **0001800
                IDBLK=003,                                              **0001900
                MAXPATH=4,                                              **0002300
                IDNUM=55555,    CUD123 FOR CALLIN, EQ ZZZZZ FOR CALLOUT **0002000
                DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *00022000
                MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *00000150
                PACING=1,       PACING=1 IS REQUIRED                    *00000170
                VPACING=2,                                              *00000180
                PUTYPE=1,                                               **0002700
                SSCPFM=USSSCS USSTAB=USSTABZ                             0002800
UDCUDH2  PATH   DIALNO=106050236:0101*55555,   MEANS USER DEFINED CUD0  *00000750
                GRPNM=S25S2B,GID=2,PID=97     AND ZZZZZ+1 IN CUD1,2,3.   00000760
UDCUDU2  LU     LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES    00000210
*                                                                        0001700
**********************************************************               00000010
*                                                        *
* ENTRIES FOR OUTGOING CALLS FOR PADI ON MCH2            *
*                                                        *
**********************************************************               00000010
*                                                                        0001700
*********
*
*      DEFAULT IDNUM-1 VALUES FOR OUTCALLS ARE NO LONGER USED
*              ZZZZZ MUST BE SPECIFIED IN THE DIALNO
*********
*                                                                        0001700
PADIPO   PU     ADDR=01,                                                *00000250
                IDBLK=003,                                              *00000260
                IDNUM=02005,    EQUAL ZZZZZ BELOW(ODD NO TO AVOID       *00000270
                MAXPATH=6,      INTERFERENCE W CALL IN)                 *00000310
                DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *00022000
                MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *00000150
                PACING=1,       PACING=1 IS REQUIRED                    *00000170
                VPACING=2,                                              *00000180
                ANS=CONT,       FOR SW SESSION CONTINUATION             *00000180
                PUTYPE=1,                                               *00000340
                SSCPFM=USSSCS                                            00000350
PADP2    PATH   DIALNO=10605023650201*02005,   L=5(PAD)                 *00000750
                GRPNM=S25S2B,GID=2,PID=60                                00000760
PADILO   LU     LOCADDR=0,TERM=TWX   REQUIRED FOR NON SNA X25 DEVICES    00000210
*
******************************************************************       00000010
*                                                                *       00000020
* ENTRIES FOR DATE VC'S, TO BE USED FOR PCNE OR PADX             *       00000020
* FOR DATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED  *       00000020
******************************************************************       00000030
*
DATEPI   PU     ADDR=01,        1ST DATE VC USED (IN OR OUT CALL)       **0001800
                IDBLK=003,                                              **0001900
                IDNUM=02004,    FOR 2ND SVC FROM LAST SVC (2*2)=4       *00000120
                DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *00022000
                MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *00000150
                PACING=1,       PACING=1 IS REQUIRED                    *00000170
                VPACING=2,                                              *00000180
```

```
                 ANS=CONT,        FOR SW SESSION CONTINUATION           *00000180
                 PUTYPE=1,                                              **0002700
                 SSCPFM=USSSCS                                            0002800
DATELI    LU     LOCADDR=0                                                0003000
*
DATEPO    PU     ADDR=01,         2ND DATE VC USED (IN OR OUT CALL)     **0001800
                 IDBLK=003,                                             **0001900
                 IDNUM=02002,     FOR 1ST SVC FROM LAST SVC (1*2)=2     *00000120
                 DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU      *00022000
                 MAXDATA=1024,    SEGMENTING NOT SUPPORTED              *00000150
                 PACING=1,        PACING=1 IS REQUIRED                  *00000170
                 VPACING=2,                                             *00000180
                 ANS=CONT,        FOR SW SESSION CONTINUATION           *00000180
                 PUTYPE=1,                                              **0002700
                 SSCPFM=USSSCS                                            0002800
DATELO    LU     LOCADDR=0                                                0003000
*
```

Switched Major Node for SNA Type 2.1 and SVCSC

```
************************************************************************* 00000010
*                                                                       *
* SWITCHED MAJOR NODE TO BE USED TO TEST NPSI SWITCHED SESSION CONT.    * 00000020
*                                                 AND LEN FUNCTIONS.    *
* NCP/NPSI GENERATION: SA324GN                                          *
*                                                                       *
************************************************************************* 00000030
*                                                                         00000090
SWLENSAD VBUILD MAXGRP=20,                                               *00000040
               MAXNO=20,                                                 *00000050
               TYPE=SWNET                                                 00000060
*                                                                         00000090
*
************************************************************************* 00000030
*                                                                       * 00000090
*              THE FOLLOWING SWITH MAJOR NODE IS USED:                  * 00000090
*                                                                       * 00000090
*                  - MP1006 IS A PU2.1 WITH LU6.2                       * 00000090
*                                                                       * 00000090
*                  - MP2004 IS A PU2.1 WITH LU2                         * 00000090
*                                                                       * 00000090
*                  - MP2006 IS A PU2.1 WITH LU6.2                       * 00000090
*                                                                       * 00000090
************************************************************************* 00000030
*
SMP0006  PU    ADDR=01,                                                  *00018000
               CPNAME=NODE16,         EQUIVALENT TO IDBLK/IDNUM          *00019000
               MAXPATH=1,                                                *00024000
               DISCNT=YES,    DISCONTACT/ABCONN ON LAST DACTLU           *00022000
               PACING=1,                                                 *00025000
               VPACING=2,                                                *00026000
               PUTYPE=2,                                                 *00027000
               ANS=CONT,                                                 *00027000
               SSCPFM=USSSCS                                              00028000
*
LENP2    PATH  DIALNO=10604016430201, COMMUNICATES WITH SMP4006 VIA      *00000750
               GRPNM=S25S0B,          SAME MCH(APPL NEEDED IF CALLOUT    *00000370
               GID=2,                 IS DONE)                           *00000370
               PID=47                                                     00000370
*
SMU0006  LU    LOCADDR=0,                                                *00030000
               MODETAB=LENMODE                                            00031000
*                                                                         00031000
*******************************************************                   00000030
*
SMP4004  PU    ADDR=01,                                                  *00018000
               CPNAME=NODE24,         REPLACES IDNUM/IDBLK FOR PUT2.1    *00019000
               PUTYPE=2,                                                 *00027000
               ANS=CONT,                                                 *00025000
               VPACING=2,                                                *00026000
               PACING=1,                                                 *00023000
               MAXPATH=1,                                                *00024000
               DISCNT=YES,    DISCONTACT/ABCONN ON LAST DACTLU           *00022000
               SSCPFM=USSSCS                                              00028000
*
LENP1    PATH  DIALNO=10604016430201,     L=3 FOR QLLC BNN               *00000750
               GRPNM=S25S0B,              GENERATED GROUP OF SWITCHED    *00000370
               GID=2,                     VC'S                       VCS *00000370
```

```
                PID=47                                                  00000370
*
SMU4004  LU     LOCADDR=1                                               00030000
*                                                                       00031000
**********************************************************              00000030
*
SMP4006  PU     ADDR=01,                                               *00018000
                CPNAME=NODE26,                                         *00019000
                MAXPATH=1,                                             *00024000
                DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *00022000
                PACING=1,                                              *00025000
                VPACING=2,                                             *00026000
                PUTYPE=2,                                              *00027000
                ANS=CONT,                                              *00027000
                SSCPFM=USSSCS                                           00028000
*
LENP3    PATH   DIALNO=10604016430201,  COMMUNICATES WITH SMP0006 VIA  *00000750
                GRPNM=S25S0B,           SAME MCH (APPL NEEDED IF CALLOUT*00000370
                GID=2,                  TO BE DONE)                    *00000370
                PID=47                                                  00000370
*
SMU4006  LU     LOCADDR=0,                                             *00030000
                MODETAB=LENMODE                                         00031000
*                                                                       00031000
*******************************************************************     00000010
*******************************************************************     00000010
*                                                                 *     00000020
*              X25 SVC SUBAREA COMMUNICATION(SVCSC)               *     00000020
*                                                                 *     00000020
*     SWITCHED MAJOR NODE FOR X25  FOR BOTH NCP'S                 *     00000020
*                                                                 *     00000020
*    SHM SUPPORTED ON BOTH SIDES, EITHER SIDE CAN CALL            *
*                                                                 *     00000020
* CONFIG =  VTAM1(SA16)- NCP SA4---'X25NW'----NCP SA5---VTAM2(SA2)*
*                                                                 *     00000020
*******************************************************************     00000030
*
**                                                                      00000240
**    FOR OUTGOING CALL ISSUED FROM VTAM1 OR INCOMING CALL FROM VTAM2   00000090
SVCSCPU5 PU     PUTYPE=4,                                              *00000100
                ADDR=05,                SA 5 IS PRIMARY                *00000120
                TGN=ANY,                                               *
                SUBAREA=5,              SA NO OF OTHER SIDE            *00000100
                IDNUM=AAAAA,            MUST BE SAME ON BOTH SIDES     *00000120
                NETID=NETID1,           OTHER SIDE'S NETID (VTAM2)     *00000120
                ANS=CONT,                                              *00000120
                MAXDATA=1024,                                          *00000120
                MAXPATH=1
*                                                                       00000240
SVCSCPA5 PATH   DIALNO=10604016410201,GID=51,PID=30,  *L=1 FOR SVCSC   *00000360
                GRPNM=S25S7B,           SVCSC LINES GROUP NAME         *00000370
                VERIFY=IN,              VERIFY INCOMING CALL ADDR      *00000370
                VERID=106040164,        CALLER ADDR                    *00000370
                SHM=YES,                                               *00000370
                SHMTIM=45               CLEAR AFTER 45 SEC OF INACTIVITY 00000370
*
*
**    THIS PART IS IN VTAM2 SWITCH MAJ NODE BUT IS COPIED HERE FOR INFO  00000240
*
```

```
**   FOR INCOMING CALL RECEIVED BY VTAM2 SIDE OR OUTCALL BY VTAM2        00000240
SVCSCPU4 PU     PUTYPE=4,                                                *00000190
                ADDR=04,                SA 4 IS SECONDARY                *00000120
                TGN=2,                  TG 2 ALSO USED IN PATH IN NCP    *
                SUBAREA=4,              SA NO OF OTHER SIDE              *00000100
                IDNUM=AAAAA,            MUST BE SAME ON BOTH SIDES       *00000120
                NETID=NETID1,           VTAM1 NETID(SAME NW AS VTAM1)    *00000120
                ANS=CONT,                                                *00000120
                MAXDATA=1024,                                            *00000120
                MAXPATH=1
*                                                                         00000240
SVCSCPA4 PATH   DIALNO=10604016910201,GID=52,PID=30,     *L=1            *00000360
                GRPNM=C25S0A,           SVCSC LINES GROUP NAME           *00000370
                SHM=YES,                                                 *00000370
                SHMTIM=33         CLEAR AFTER 33 SEC(IGNORED(LOWEST))     00000370
*****************************************************************         00000010
*                                                               *         00000020
*             X25 SVC SUBAREA COMMUNICATION(SVCSC)              *         00000020
*                                                               *         00000020
*    SWITCHED MAJOR NODE FOR X25  FOR BOTH NCP'S                *         00000020
*                                                               *         00000020
*   SHM NOT SUPPORTED AT ALL. CALLING ALLOWED FROM SA3 ONLY     *
*                                                               *         00000020
* CONFIG =  VTAM1(SA16)- NCP SA4---'X25NW'----NCP SA3---VTAM2(SA2)*
*                                                               *         00000020
*****************************************************************         00000030
*
**                                                                        00000240
**   FOR OUTGOING CALL ISSUED FROM VTAM1 OR INCOMING CALL FROM VTAM2      00000090
SVCSCPU3 PU     PUTYPE=4,                                                *00000100
                ADDR=03,                SA 3 IS SECONDARY                *00000120
                TGN=ANY,                                                 *
                SUBAREA=3,              SA NO OF OTHER SIDE              *00000100
                IDNUM=AAAA3,            MUST BE SAME ON BOTH SIDES       *00000120
                NETID=NETID1,           OTHER SIDE'S NETID (VTAM2)       *00000120
                ANS=CONT,                                                *00000120
                MAXDATA=1024,                                            *00000120
                MAXPATH=1
*                                                                         00000240
SVCSCPA3 PATH   CALL=IN,GID=31,PID=30,  *TO SA5                          *00000360
                GRPNM=S25S7B,           SVCSC LINES GROUP NAME           *00000370
                VERIFY=NONE             NO CALLER ID VERIFICATION         00000370
*
*
**   THIS PART IS IN VTAM2 SWITCH MAJ NODE BUT IS COPIED HERE FOR INFO  00000240
*
**   FOR INCOMING CALL RECEIVED BY VTAM2 SIDE OR OUTCALL BY VTAM2        00000240
SVCSCPUD PU     PUTYPE=4,                                                *00000190
                ADDR=04,                                                 *00000120
                TGN=4,                  TG 4 ALSO USED IN PATH IN NCP    *
                SUBAREA=4,              SA NO OF OTHER SIDE              *00000100
                IDNUM=AAAA3,            MUST BE SAME ON BOTH SIDES       *00000120
                NETID=NETID1,           VTAM1 NETID                      *00000120
                ANS=CONT,                                                *00000120
                MAXDATA=1024,                                            *00000120
                MAXPATH=1
*                                                                         00000240
SVCSCPAD PATH   DIALNO=10604016910201,GID=32,PID=30,     *TO SA4         *00000360
                GRPNM=T25S0A,           SVCSC GROUP NAME                 *00000370
                CALL=OUT                ALLOW OUT CALL ONLY               00 0370
```

MODETAB for Password Protection and LU 6.2

```
MTTWX  TITLE 'MODE TABLE ENTRIES FOR TWX 3101 TERMINAL THROUGH X.25'
         PRINT NOGEN
         EJECT
MODTWX MODETAB
TWXFLIP  MODEENT LOGMODE=TWXFLIP,      FOR PAD PASSWORD PROTECTION     X
               FMPROF=X'03',           OF NPSI V3R1 AND UP             X
               TSPROF=X'03',                                           X
               PRIPROT=X'B1',                                          X
               SECPROT=X'A0',                                          X
               COMPROT=X'3080',                                        X
               RUSIZES=X'8585',                                        X
               DCODE=X'80',      FOR DEVICES WHICH SUPPORT INP/ENP     X
               PSERVIC=X'010000000000000000000000'
*                        0 1 2 3 4 5 6 7 8 9 1011
TWXCONT  MODEENT LOGMODE=TWXCONT,      FOR PAD PASSWORD PROTECTION     X
               FMPROF=X'03',           OF NPSI V3R1 AND UP             X
               TSPROF=X'03',                                           X
               PRIPROT=X'B1',                                          X
               SECPROT=X'A0',                                          X
               COMPROT=X'3040',                                        X
               RUSIZES=X'8585',                                        X
               DCODE=X'80',      FOR DEVICES WHICH SUPPORT INP/ENP     X
               PSERVIC=X'010000000000000000000000'
*                        0 1 2 3 4 5 6 7 8 9 1011
TWXFLIPP MODEENT LOGMODE=TWXFLIPP,                                     X
               FMPROF=X'03',                                           X
               TSPROF=X'03',                                           X
               PRIPROT=X'B1',                                          X
               SECPROT=X'A0',                                          X
               COMPROT=X'3080',                                        X
               RUSIZES=X'8585',                                        X
               DCODE=X'00',                                            X
               PSERVIC=X'010000000000000000000000'
*                        0 1 2 3 4 5 6 7 8 9 1011
TWXCONTP MODEENT LOGMODE=TWXCONTP,                                     X
               FMPROF=X'03',                                           X
               TSPROF=X'03',                                           X
               PRIPROT=X'B1',                                          X
               SECPROT=X'A0',                                          X
               COMPROT=X'3040',                                        X
               RUSIZES=X'8585',                                        X
               DCODE=X'00',                                            X
               PSERVIC=X'010000000000000000000000'
*                        0 1 2 3 4 5 6 7 8 9 1011
         MODEEND                                                        00170000
```

```
        TITLE 'MODE TABLE ENTRIES FOR LU 6.2 THROUGH X.25'
LENMODE  MODETAB
LU62MODE MODEENT LOGMODE=LU62MODE,         ENTRY NAME                  X
                 COMPROT=X'51B1',          COMMON PROTOCOL             X
                 ENCR=0,                   ENCRYPTION                  X
                 FMPROF=19,                FM PROFILE 19               X
                 PRIPROT=X'B0',            PRIMARY PROTOCOL            X
                 PSERVIC=X'060200000000000000002300',                  X
                 PSNDPAC=9,                PRIMARY SEND PACING         X
```

```
                 RUSIZES=X'C3C3',          RU SIZES                    X
                 SECPROT=X'B0',            SECONDARY PROTOCOLS         X
                 SRCVPAC=5,                SECONDARY RECEIVE PACING COUX
                 SSNDPAC=5,                SECONDARY SEND PACING COUNT X
                 TSPROF=7,                 TS PROFILE                  X
                 TYPE=0                    NEGOCIABLE BIND
*
SNASVCMG MODEENT LOGMODE=SNASVCMG,         ENTRY NAME                  X
                 COMPROT=X'50A5',          COMMON PROTOCOL             X
                 ENCR=0,                   ENCRYPTION                  X
                 FMPROF=19,                FM PROFILE 19               X
                 PRIPROT=X'B0',            PRIMARY PROTOCOL            X
                 PSERVIC=X'060200000000000000002380',                  X
                 PSNDPAC=35,               PRIMARY SEND PACING         X
                 RUSIZES=X'8585',          RU SIZES                    X
                 SECPROT=X'B0',            SECONDARY PROTOCOLS         X
                 SRCVPAC=7,                SECONDARY RECEIVE PACING COUX
                 SSNDPAC=7,                SECONDARY SEND PACING COUNT X
                 TSPROF=7,                 TS PROFILE                  X
                 TYPE=0                    NEGOCIABLE BIND
*
         MODEEND
         END                                                            00180000
```

Version 3 Release 3 (Example C)

This section consists of three examples:

- Example C1 shows the use of default IDNUM values, and the definition of a link to example C3 on which the NCP can be loaded.
- Example C2 shows a similar configuration to example C1, however, this example illustrates the use of user-defined IDNUM values.
- Example C3 is of a remote NCP that contains a link to example C1 upon which this NCP can be loaded.

NCP and X.25 NPSI Generation Input - Example C1

```
** EXAMPLE C1*
***********************************************************************
*   GENERATION NAME: EX3346Z                                          *
*                                                                     *
* - MCH1 (64)           PVC0  FOR PCNE                                *
*                       2SVC  FOR PCNE PAD GATE                       *
* - MCH2 (65)           PVC0  FOR CASUAL CONNECT                      *
*                       3SVC     FOR PSH,BNNQLLC AND CASUAL CONNECT  *
*                       PVC4     FOR CASUAL CONNECT                   *
*                       PVC5     FOR GATE                             *
* - MCH3 (66)           PVC0     FOR INN QLLC REMOTE LOADING          *
*                       SVC1     FOR INN QLLC REMOTE LOADING          *
* - MCH4 (67)           SVC1     FOR X21 ACCESS (GATE)                *
********************************************************************* *
* IDNUM ARE USER DEFINED AS IDNUMT IS  SPECIFIED IN X25.VC            *
***********************************************************************
*
**
***   STAGE 1 INPUT
**
*
         OPTIONS USERGEN=X25NPSI,NEWDEFN=(YES,ECHO)
*
ATTACHED PCCU  DUMPDS=DUMPX25,SUBAREA=16
*
BAKBUILD BUILD NPA=YES,                                                X
               VERSION=V5R3,                                           X
               LOADLIB=LNCP10,                                         X
               TYPGEN=NCP,                                             X
               MODEL=3745,                                             X
               NETID=FRIBM412,                                         X
               MAXSUBA=63,                                             X
               SUBAREA=46,                                             X
               BFRS=124,                                               X
               USGTIER=5,                                              X
               LTRACE=8,                                               X
               OLT=YES,                                                X
               DR3270=NO,                                              X
               BRANCH=8000,                                            X
               TRACE=(YES,100),                                        X
               NEWNAME=EX3346Z,                                        X
               X25.PREFIX=Z,        *                                  X
               TYPSYS=OS,           *     X25 PART                     X
               X25.SNAP=YES,        *                                  X
               X25.USGTIER=5,       *                                  X
               X25.MCHCNT=4,        *                                  X
               X25.MWINDOW=1,       *                                  X
               X25.IDNUMH=2,        * X25.IDNUMH MUST MATCH WITH SWITCHX
               X25.MAXPIU=64K,      *                                  X
               X25.PAHINDX=2        * MAX NUMBER OF PAD PARAMETERS
*
BAKSYSC SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,            X
               RIMM,NAKLIM,SESSION,SSPAUSE,XMTLMT)
*
ATTACHED HOST  INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,     X
               DELAY=0.1,STATMOD=YES,TIMEOUT=30
*
PATH45   PATH   DESTSA=(45),ER1=(45,2),ER2=(45,3)    * CCU REMOTE
```

```
PATH16   PATH   DESTSA=(16),ER0=(16,1),ER1=(16,1),ER2=(16,1)
*        LUPOOL NUMBER=5
         LUDRPOOL NUMTYP1=10,NUMTYP2=10
*******************************************************
         EJECT
ZDLC4    GROUP LNCTL=SDLC,                                       X
               TYPE=NCP,                                         X
               DIAL=YES,                                         X
               REPLYTO=20
**************************************
ZL4      LINE  ADDRESS=4,                                        X
               CLOCKNG=EXT,                                      X
               NEWSYNC=NO,                                       X
               DUPLEX=HALF,                                      X
               NRZI=NO,                                          X
               CALL=INOUT,                                       X
               RETRIES=(7,0,0)
ZP4       PU   ISTATUS=INACTIVE,                                 X
               PUTYPE=2
*******************************************************
         EJECT
*************************************************************
GRNPZ    GROUP LNCTL=SDLC,                                       X
               TYPE=NCP,                                         X
               DIAL=NO,                                          X
               DISCNT=NO,                                        X
               VIRTUAL=YES,                                      X
               NPARSC=YES,                                       X
               ISTATUS=INACTIVE
LNNPZ    LINE  LINEFVT=NPAVFVT
PUNPZ    PU    PUTYPE=2,PUFVT=NPAPFVT
LUNPZ    LU    MAXCOLL=6,LUFVT=(NPALFVT,NPALFVT),                X
               VPACING=0,LOCADDR=1
**************************************
         EJECT
***** INSERT HERE BELOW X25 STAGE1 OUTPUT
*
*        PAD - PARAMETERS
*
PAD1     X25.PAD INDEX=1,PADPARM=0715080001000400
PAD2     X25.PAD INDEX=2,PADPARM=0701080001000400
*
*        USER TRANSLATE
*
*
*       NDF SAMPLE STATEMENTS FOR PAD USER TRANSLATE TABLES
*
TRANS1   X25.TRAN     USER=1,                                    C
               DCIN0=00010203372D2E2F1605250B0C0D0E0F,           C
               DCIN1=101112133C5A322618193F271C1D1E1F,           C
               DCIN2=404F7F7B5B6C507D4D5D5C4E6B604B61,           C
               DCIN3=F0F1F2F3F4F5F6F7F8F97A5E4C7E6E6F,           C
               DCIN4=43C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6,           C
               DCIN5=D7D8D9E2E3E4E5E6E7E8E9AD51BD5F6D,           C
               DCIN6=79818283848586878889919293949596,           C
               DCIN7=979899A2A3A4A5A6A7A8A98BBA9BA107,           C
               DCIN8=80DCC083DA7C86E08FC9D08B568D8E8F,           C
               DCIN9=909192FBFB95969798999A9B9C9D9E9F,           C
               DCINA=A0A1A2A3A4A5A6A7A8A9AA64ACADAEAF,           C
               DCINB=B0B1B2FAECB5B6B7B8B9BABBBCBDBEBC,           C
```

```
                DCINC=ABCBCCEBBF8FC6C7ABC9CACBCCCDCECF,                C
                DCIND=D0D1D2D3D4D5D6D7D8BBACDBDCDDDEDF,                C
                DCINE=E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF,                C
                DCINF=F0F1F2F3F4F5F6F7B0F9FAFBFCFDFEFF,                C
                DCOT0=000102033A093A7F3A3A3A0B0C0D0E0F,                C
                DCOT1=101112133A0A087F18193A3A1C1D1E1F,                C
                DCOT2=3A3A3A3A3A0A171B3A3A3A3A3A050607,                C
                DCOT3=3A3A163A3A3A3A043A3A3A3A14153A1A,                C
                DCOT4=203A3A403A3A3A3A3A3A5B2E3C282B21,                C
                DCOT5=265C3A3A3A3A8C3A3A3A15242A293B5E,                C
                DCOT6=2D2F3A3AAB3A3A3A3A3A7C2C255F3E3F,                C
                DCOT7=3A3A3A3A3A3A3A3A3A603A2385273D22,                C
                DCOT8=3A616263646566676869 3A7B3A3A3AC5,                C
                DCOT9=3A6A6B6C6D6E6F7071723A7D3A3A3A3A,                C
                DCOTA=3A7E737475767778797A3AC0DA5B3A3A,                C
                DCOTB=F83A3A3A3A3A3A3A3A3A3AD9BF5D3AC4,                C
                DCOTC=824142434445464748493AC1C23A3A3A,                C
                DCOTD=8A4A4B4C4D4E4F505152843A813A3AFF,                C
                DCOTE=873A535455565758595A3AC3B43A3A3A,                C
                DCOTF=303132333435363738393B393883A3A3A
*                      0 1 2 3 4 5 6 7 8 9 A B C D E F
*
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES,                           X
               INACTO=120,  CLEAR SVC AFTER 120 SECONDS  IF NO TRAFIC  X
               RESETINO=(XX26,80XX)   FOR ALL RESET WITH DIAG CODE 26
**                                    AND ALL RESET WITH CAUSE CODE 80
**
         X25.VCCPT INDEX=1,                                            X
               MAXPKTL=128,                                            X
               VWINDOW=3,                                              X
               INSLOW=(50,12)
*
         X25.VCCPT INDEX=2,                                            X
               MAXPKTL=128,                                            X
               VWINDOW=2,                                              X
               INSLOW=(100,50)
*
         X25.VCCPT INDEX=3,                                            X
               MAXPKTL=128,                                            X
               VWINDOW=3,                                              X
               INSLOW=(100,50)
*
         X25.OUFT INDEX=1
*
         X25.OUFT INDEX=2,                                             X
               OPTFACL=420707430202
*
         X25.OUFT INDEX=3,                                             X
               OPTFACL=03690102420707430303,     *REVERSE CHARGING     X
               USRFILD=1234567890
*
***********************************************************************
*
               EJECT
               EJECT
****     FIRST   MCH      (GATE) ************************
***
          X25.MCH ADDRESS=64,                                          X
               ANS=CONT,NCPGRP=GRZ1,                                   X
               LCGDEF=(0,2),                                           X
```

```
                FRMLGTH=131,                                             X
                MWINDOW=7,                                               X
                STATION=DTE,                                             X
                TPTIMER=2,                                               X
                TDTIMER=3,                                               X
                NPRETRY=3,                                               X
                NDRETRY=3,                                               X
                LCN0=USED,       *FOR TRANSPAC                           X
                XMONLNK=YES,                                             X
                PAD=INTEG,TRAN=USER1,     *8 BITS TRANSLATE TABLE 1      X
                PADINDX=1,                * FOR PAD PARAMETER SELECTION  X
                GATE=GENERAL,                                            X
                LLCLIST=(LLC0,LLC4,LLC5),                                X
                SPAN=X2501,                                              X
                T1TIMER=1,                                               X
                IDBLKC=064,       *PCNE                                  X
                IDBLKP=063,       *PAD                                   X
                IDBLKG=062,       *GATE                                  X
                MBITCHN=YES,                                             X
                DBIT=YES
*********
             X25.LCG LCGN=0
*****************BNN PCNE*******************
             X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,MAXDATA=2000,        X
                SPAN=X2501,VPACING=20
***
***
*** 2 SVC,S  USER DEFINED IDNUM
***
             X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2,     X
                SPAN=X2501,IDNUMT=0040
*
*
***********************************************************************
*
                EJECT
****  SECOND    MCH  (GATE)       **********************
*                      1 SVC FOR SECONDARY CASUAL CONNECTION
*                      1 PVC FOR SECONDARY CASUAL CONNECTION
*                      1 PVC FOR PRIMARY  CASUAL CONNECTION
***
           X25.MCH ADDRESS=65,                                           X
                ANS=CONT,NCPGRP=GRZ2,                                    X
                LCGDEF=(0,5),                                            X
                FRMLGTH=131,                                             X
                STATION=DTE,                                             X
                TPTIMER=3.1,                                             X
                TDTIMER=2,                                               X
                NPRETRY=7,                                               X
                NDRETRY=1,                                               X
                LLCLIST=(LLC2,LLC3),                                     X
                CCXDELAY=5,  *INITIAL TRANSMISSION DELAY CASUAL CONNECT X
                ROLE=PRI, *LOCAL PERIPHERAL PU 2.1 ASSUMES PRIMARY ROLE X
                LSPRI=YES,  ALLOWS TRAFIC PRIORITY FOR LLC2 AND BNN LLC3X
                LCN0=USED,                                               X
                GATE=GENERAL,       *FOR A PVC                           X
                CUD0=(ALL),                                              X
                INTFAC=YES,                                              X
                MWINDOW=7,                                               X
                T1TIMER=1,                                               X
```

```
             MBITCHN=NO
***
          X25.LCG LCGN=0
***
*            *** PVC 0 FOR PU2.1 ON BNN QLLC     ***
*                     CASUAL CONNECTION (PRIMARY)
*
         X25.LINE LCN=0,        *                                   X
               VCCINDX=3,       *                                   X
               LLC=LLC3,        * DSTNODE=BNN DEFAULTED             X
               SPAN=X2501,      *                                   X
               TYPE=P           *
*
         X25.PU PUTYPE=2,       *                                   X
               ADDR=01,         *                                   X
               VPACING=2,       *                                   X
               XID=YES,         * LEN                               X
               DATMODE=HALF,    *                                   X
               PACING=1,        *                                   X
               SPAN=X2501,      *                                   X
               ISTATUS=INACTIVE, *                                  X
               ANS=CONT         *
*
SLUSEC26 X25.LU LOCADDR=0       *  FOR INDEPENDANT LU
*
****     3 SVC'S               *************************
***
         X25.VC LCN=(1,3),                                          X
               VCCINDX=3,                                           X
               OUFINDX=1,                                           X
               CALL=INOUT,                                          X
               ID=06344444,     * ANNONYMOUS CALLER (CANNED XID)    X
               TYPE=SWITCHED
*
*
*            *** PVC 3 FOR CASUAL CONNECTION  (SECONDARY)
*
         X25.LINE LCN=4,        *                                   X
               VCCINDX=3,       *                                   X
               LLC=LLC3,        * QLLC                              X
               SPAN=X2501,      *                                   X
               MODE=SEC,        * CCX SECONDARY DEFINITION          X
               TADDR=C1,        * CCX SECONDARY DEFINITION          X
               TYPE=P           *
*
         X25.PU PUTYPE=2,       *                                   X
               VPACING=2,       *                                   X
               MODETAB=LSPRITAB, * VTAM USER DEFINED TABLE          X
               XID=YES,         * LEN SUPPORT                       X
               DATMODE=HALF,    *                                   X
               PACING=1,        *                                   X
               SPAN=X2501,      *                                   X
               ISTATUS=INACTIVE, *                                  X
               ANS=CONT         *
*
PLUPRI15 X25.LU LOCADDR=0,      * INDEPENDANT LU                    X
               DLOGMOD=LSPRI62B, * VTAM USER DEFINED TABLE          X
               ISTATUS=ACTIVE   *
*
***
```

```
         X25.VC LCN=5,                                                X
              VCCINDX=3,                                              X
              LLC=LLC4,                                               X
              MAXDATA=2000,                                           X
              VPACING=20,                                             X
              TYPE=P
***
*
***********************************************************************
* THIRD  MCH   FOR INN  (REMOTE LOADING)
** RELATED WITH THE GEN NAMED NCPREM LOADED FROM DISK INTO REMOTE CCU
***********************************************************************
         X25.MCH ADDRESS=66,         *CONTROLLER LINE ADDR            X
              ANS=CONT,                                               X
              LCGDEF=(0,1),                                           X
              FRMLGTH=131,                                            X
              MWINDOW=7,             *LAP WINDOW                      X
              STATION=DTE,                                            X
              TPTIMER=3,             *LAPB RECOVERY PARAMETERS        X
              TDTIMER=1,             *                                X
              NPRETRY=7,             *                                X
              NDRETRY=1,             *                                X
              LLCLIST=(LLC3),                                         X
              LCN0=USED,                                              X
              DBIT=NO,               *NO DBIT SUPPORT ON THIS MCH     X
              ITRACE=YES,            * LAP INTERNAL TRACE ACTIVE      X
              SPEED=9600,            *REAL MCH SPEED                  X
              T1TIMER=1,             *REAL T1 OF THE DCE              X
              SVCINN=1,              *NB OF SIMULT.SWINN CONNECT.     X
              SDRTCNT=1,             *NB OF RETRIES                   X
              SHM=NO,                *NO SHM FOR REMOTE               X
              SDRTIME=10             *TIMER BETWEEN RETRIES
*
         X25.LCG LCGN=0
*
******************** (PVC) ***********************************
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC3,TYPE=P,                    X
              DSTNODE=INN
*
         X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE
*
******************** (SVC) ***********************************
*
         X25.LINE DSTNODE=INN,          *MANDATORY FOR INN            X
              TYPE=S
*
         X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.VC LCN=1,VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1
*
***********************************************************************
* FOURTH  MCH FOR GATE X.21 SWITCHED ACCESS
*
***********************************************************************
         X25.MCH ADDRESS=67,                                          X
              ANS=CONT,                                               X
              LCGDEF=(0,1),                                           X
              FRMLGTH=131,                                            X
              MWINDOW=5,       LAP WINDOW                             X
```

```
               STATION=DTE,                                         X
               TPTIMER=3,                                           X
               TDTIMER=2,                                           X
               NPRETRY=10,                                          X
               NDRETRY=2,                                           X
               LCN0=NOTUSED,                                        X
               GATE=GENERAL,                                        X
               SPAN=X2501,                                          X
               LLCLIST=(LLC4),                                      X
               X21SW=YES,       *X21 SWITCH ACCESS TO ISDN NETWORK  X
               X21NTWK=1984,                                        X
               X21RTYTO=4.0,    *X21 CALL OUT RETRY TIME            X
               X21RTYCT=5,      *X21 CALL OUT RETRY COUNT           X
               X21INACT=40,                                         X
               SPEED=64000    SPECIFIED TO SELECT LIC4B
*
         X25.LCG  LCGN=0
*
**       1 SVC'S        *********************
*
         X25.VC  LCN=1,                                             X
               VCCINDX=3,                                           X
               OUFINDX=1,                                           X
               CALL=INOUT,                                          X
               IDNUMT=0080,                                         X
               TYPE=SWITCHED
*
**********************************************************************
*
*
         X25.END
*
*************************************************************
CZGROUP  GROUP LNCTL=CA,                                            X
               CA=TYPE6,                                            X
               DELAY=0.0,                                           X
               NCPCA=ACTIVE
CZLINE5  LINE  ADDRESS=00
CZ5PU    PU    PUTYPE=5
CZLINE1  LINE  ADDRESS=08
CZ1PU    PU    PUTYPE=5
               EJECT
**************************************
         GENEND
         END
*****************************************************************
```

NCP Input Produced by NDF (X.25 NPSI) - Example C1

```
         OPTIONS USERGEN=X25NPSI,NEWDEFN=(YES,ECHO)
*
ATTACHED PCCU DUMPDS=DUMPX25,SUBAREA=16
*
BAKBUILD BUILD NPA=YES,                                                *
               VERSION=V5R3,                                           *
               LOADLIB=LNCP10,                                         *
               TYPGEN=NCP,                                             *
               MODEL=3745,                                             *
               NETID=FRIBM412,                                         *
               MAXSUBA=63,                                             *
               SUBAREA=46,                                             *
               BFRS=124,                                               *
               USGTIER=5,                                              *
               LTRACE=8,                                               *
               OLT=YES,                                                *
               DR3270=NO,                                              *
               BRANCH=8000,                                            *
               TRACE=(YES,100),                                        *
               NEWNAME=EX3346Z,                                        *
               X25.PREFIX=Z,       *                                   *
               TYPSYS=OS,          *     X25 PART                      *
               X25.SNAP=YES,       *                                   *
               X25.USGTIER=5,      *                                   *
               X25.MCHCNT=4,       *                                   *
               X25.MWINDOW=1,      *                                   *
               X25.IDNUMH=2,       * X25.IDNUMH MUST MATCH WITH SWITCH*
               X25.MAXPIU=64K,     *                                   *
               X25.PAHINDX=2       * MAX NUMBER OF PAD PARAMETERS
*
BAKSYSC  SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,RIMM,NAKLIM*
               ,SESSION,SSPAUSE,XMTLMT)
*
ATTACHED HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,      *
               DELAY=0.1,STATMOD=YES,TIMEOUT=30
*
PATH45   PATH DESTSA=(45),ER1=(45,2),ER2=(45,3)      * CCU REMOTE
PATH16   PATH DESTSA=(16),ER0=(16,1),ER1=(16,1),ER2=(16,1)
*        LUPOOL NUMBER=5
         LUDRPOOL NUMTYP1=10,NUMTYP2=10
*****************************************************
ZDLC4    GROUP LNCTL=SDLC,                                             *
               TYPE=NCP,                                               *
               DIAL=YES,                                               *
               REPLYTO=20
**************************************
ZL4      LINE ADDRESS=4,                                               *
               CLOCKNG=EXT,                                            *
               NEWSYNC=NO,                                             *
               DUPLEX=HALF,                                            *
               NRZI=NO,                                                *
               CALL=INOUT,                                             *
               RETRIES=(7,0,0)
ZP4      PU ISTATUS=INACTIVE,                                          *
               PUTYPE=2
*****************************************************
***********************************************************
GRNPZ    GROUP LNCTL=SDLC,                                             *
```

```
                TYPE=NCP,                                                *
                DIAL=NO,                                                 *
                DISCNT=NO,                                               *
                VIRTUAL=YES,                                             *
                NPARSC=YES,                                              *
                ISTATUS=INACTIVE
LNNPZ    LINE LINEFVT=NPAVFVT
PUNPZ    PU PUTYPE=2,PUFVT=NPAPFVT
LUNPZ    LU MAXCOLL=6,LUFVT=(NPALFVT,NPALFVT),                           *
                VPACING=0,LOCADDR=1
*************************************
***** INSERT HERE BELOW X25 STAGE1 OUTPUT
*
*        PAD - PARAMETERS
*
PAD1     X25.PAD INDEX=1,PADPARM=0715080001000400
PAD2     X25.PAD INDEX=2,PADPARM=0701080001000400
*
*        USER TRANSLATE
*
*
*       NDF SAMPLE STATEMENTS FOR PAD USER TRANSLATE TABLES
*
TRANS1   X25.TRAN USER=1,                                                *
               DCIN0=00010203372D2E2F1605250B0C0D0E0F,                   *
               DCIN1=101112133C5A322618193F271C1D1E1F,                   *
               DCIN2=404F7F7B5B6C507D4D5D5C4E6B604B61,                   *
               DCIN3=F0F1F2F3F4F5F6F7F8F97A5E4C7E6E6F,                   *
               DCIN4=43C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6,                   *
               DCIN5=D7D8D9E2E3E4E5E6E7E8E9AD51BD5F6D,                   *
               DCIN6=79818283848586878889919293949596,                   *
               DCIN7=979899A2A3A4A5A6A7A8A98BBA9BA107,                   *
               DCIN8=80DCC083DA7C86E08FC9D08B568D8E8F,                   *
               DCIN9=909192FBFB95969798999A9B9C9D9E9F,                   *
               DCINA=A0A1A2A3A4A5A6A7A8A9AA64ACADAEAF,                   *
               DCINB=B0B1B2FAECB5B6B7B8B9BABBBCBDBEBC,                   *
               DCINC=ABCBCCEBBF8FC6C7ABC9CACBCCCDCECF,                   *
               DCIND=D0D1D2D3D4D5D6D7D8BBACDBDCDDDEDF,                   *
               DCINE=E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF,                   *
               DCINF=F0F1F2F3F4F5F6F7B0F9FAFBFCFDFEFF,                   *
               DCOT0=000102033A093A7F3A3A3A0B0C0D0E0F,                   *
               DCOT1=101112133A0A087F18193A3A1C1D1E1F,                   *
               DCOT2=3A3A3A3A3A0A171B3A3A3A3A3A050607,                   *
               DCOT3=3A3A163A3A3A3A043A3A3A3A14153A1A,                   *
               DCOT4=203A3A403A3A3A3A3A3A5B2E3C282B21,                   *
               DCOT5=265C3A3A3A3A8C3A3A3A15242A293B5E,                   *
               DCOT6=2D2F3A3AAB3A3A3A3A3A7C2C255F3E3F,                   *
               DCOT7=3A3A3A3A3A3A3A3A3A603A2385273D22,                   *
               DCOT8=3A616263646566676869 3A7B3A3A3AC5,                   *
               DCOT9=3A6A6B6C6D6E6F7071723A7D3A3A3A3A,                   *
               DCOTA=3A7E737475767778797A3AC0DA5B3A3A,                   *
               DCOTB=F83A3A3A3A3A3A3A3A3A3AD9BF5D3AC4,                   *
               DCOTC=824142434445464748493AC1C23A3A3A,                   *
               DCOTD=8A4A4B4C4D4E4F505152843A813A3AFF,                   *
               DCOTE=873A535455565758595A3AC3B43A3A3A,                   *
               DCOTF=30313233343536373839B393883A3A3A
*                     0 1 2 3 4 5 6 7 8 9 A B C D E F
*
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES,                             *
               INACTO=120,  CLEAR SVC AFTER 120 SECONDS  IF NO TRAFIC  *
```

```
               RESETINO=(XX26,80XX),  FOR ALL RESET WITH DIAG CODE 26  *
               DONE=YES
**                                    AND ALL RESET WITH CAUSE CODE 80
**
         X25.VCCPT INDEX=1,                                            *
               MAXPKTL=128,                                            *
               VWINDOW=3,                                              *
               INSLOW=(50,12)
*
         X25.VCCPT INDEX=2,                                            *
               MAXPKTL=128,                                            *
               VWINDOW=2,                                              *
               INSLOW=(100,50)
*
         X25.VCCPT INDEX=3,                                            *
               MAXPKTL=128,                                            *
               VWINDOW=3,                                              *
               INSLOW=(100,50)
*
         X25.OUFT INDEX=1
*
         X25.OUFT INDEX=2,                                             *
               OPTFACL=420707430202
*
         X25.OUFT INDEX=3,                                             *
               OPTFACL=03690102420707430303,     *REVERSE CHARGING     *
               USRFILD=1234567890
*
***********************************************************************
*
****     FIRST   MCH  ZL64(GATE) *************************
***
         X25.MCH ADDRESS=64,                                           *
               ANS=CONT,NCPGRP=GRZ1,                                   *
               LCGDEF=(0,2),                                           *
               FRMLGTH=131,                                            *
               MWINDOW=7,                                              *
               STATION=DTE,     *XPAC1                                 *
               TPTIMER=2,                                              *
               TDTIMER=3,                                              *
               NPRETRY=3,                                              *
               NDRETRY=3,                                              *
               LCN0=USED,       *FOR TRANSPAC                          *
               XMONLNK=YES,                                            *
               PAD=INTEG,TRAN=USER1,    *8 BITS TRANSLATE TABLE 1      *
               PADINDX=1,               * FOR PAD PARAMETER SELECTION  *
               GATE=GENERAL,                                           *
               LLCLIST=(LLC0,LLC4,LLC5),                               *
               SPAN=X2501,                                             *
               T1TIMER=1,                                              *
               IDBLKC=064,       *PCNE                                 *
               IDBLKP=063,       *PAD                                  *
               IDBLKG=062,       *GATE                                 *
               MBITCHN=YES,                                            *
               DBIT=YES
*********
         X25.LCG LCGN=0
*****************BNN PCNE*******************
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,MAXDATA=2000,          *
```

```
              SPAN=X2501,VPACING=20
***
***
*** 2 SVC,S  USER DEFINED IDNUM
***
        X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2,       *
              SPAN=X2501,IDNUMT=0040
*
*
***********************************************************************
*
****  SECOND    MCH  (GATE) ZL65  **********************
*                      1 SVC FOR SECONDARY CASUAL CONNECTION
*                      1 PVC FOR SECONDARY CASUAL CONNECTION
*                      1 PVC FOR PRIMARY  CASUAL CONNECTION
***
        X25.MCH ADDRESS=65,                                           *
              ANS=CONT,NCPGRP=GRZ2,                                   *
              LCGDEF=(0,5),                                           *
              FRMLGTH=131,                                            *
              STATION=DTE,       *XPAC3                               *
              TPTIMER=3.1,                                            *
              TDTIMER=2,                                              *
              NPRETRY=7,                                              *
              NDRETRY=1,                                              *
              LLCLIST=(LLC2,LLC3),                                    *
              CCXDELAY=5,  *INITIAL TRANSMISSION DELAY CASUAL CONNECT *
              ROLE=PRI, *LOCAL PERIPHERAL PU 2.1 ASSUMES PRIMARY ROLE *
              LSPRI=YES,  ALLOWS TRAFIC PRIORITY FOR LLC2 AND BNN LLC3*
              LCN0=USED,                                              *
              GATE=GENERAL,      *FOR A PVC                           *
              CUD0=(ALL),                                             *
              INTFAC=YES,                                             *
              MWINDOW=7,                                              *
              T1TIMER=1,                                              *
              MBITCHN=NO
***
        X25.LCG LCGN=0
***
*             *** PVC 0 FOR PU2.1 ON BNN QLLC      ***
*                      CASUAL CONNECTION (PRIMARY)
*
        X25.LINE LCN=0,        *                                      *
              VCCINDX=3,       *                                      *
              LLC=LLC3,        * DSTNODE=BNN DEFAULTED                *
              SPAN=X2501,      *                                      *
              TYPE=P           *
*
        X25.PU PUTYPE=2,       *                                      *
              ADDR=01,         *                                      *
              VPACING=2,       *                                      *
              XID=YES,         * LEN                                  *
              DATMODE=HALF,    *                                      *
              PACING=1,        *                                      *
              SPAN=X2501,      *                                      *
              ISTATUS=INACTIVE, *                                     *
              ANS=CONT         *
*
SLUSEC26 X25.LU LOCADDR=0       *  FOR INDEPENDANT LU
*
```

```
****      3 SVC'S              *************************
***
         X25.VC LCN=(1,3),                                                    *
               VCCINDX=3,                                                     *
               OUFINDX=1,                                                     *
               CALL=INOUT,                                                    *
               ID=06344444,       * ANNONYMOUS CALLER (CANNED XID)            *
               TYPE=SWITCHED
*
*
*              *** PVC 3 FOR CASUAL CONNECTION  (SECONDARY)
*
         X25.LINE LCN=4,          *                                           *
               VCCINDX=3,         *                                           *
               LLC=LLC3,          * QLLC                                      *
               SPAN=X2501,        *                                           *
               MODE=SEC,          * CCX SECONDARY DEFINITION                  *
               TADDR=C1,          * CCX SECONDARY DEFINITION                  *
               TYPE=P             *
*
         X25.PU PUTYPE=2,         *                                           *
               VPACING=2,         *                                           *
               MODETAB=LSPRITAB,  * VTAM USER DEFINED TABLE                   *
               XID=YES,           * LEN SUPPORT                               *
               DATMODE=HALF,      *                                           *
               PACING=1,          *                                           *
               SPAN=X2501,        *                                           *
               ISTATUS=INACTIVE,  *                                           *
               ANS=CONT           *
*
PLUPRI15 X25.LU LOCADDR=0,        * INDEPENDANT LU                            *
               DLOGMOD=LSPRI62B,  * VTAM USER DEFINED TABLE                   *
               ISTATUS=ACTIVE     *
*
***
         X25.VC LCN=5,                                                        *
               VCCINDX=3,                                                     *
               LLC=LLC4,                                                      *
               MAXDATA=2000,                                                  *
               VPACING=20,                                                    *
               TYPE=P
***
*
***********************************************************************
* THIRD  MCH   FOR INN  (REMOTE LOADING) ZL66
** RELATED WITH THE GEN NAMED NCPREM LOADED FROM DISK INTO REMOTE CCU
***********************************************************************
         X25.MCH ADDRESS=66,            *CONTROLLER LINE ADDR                 *
               ANS=CONT,                                                      *
               LCGDEF=(0,1),            *MAX LCN IS 7 ON LCGN 0               *
               FRMLGTH=131,                                                   *
               MWINDOW=7,               *LAP WINDOW                           *
               STATION=DTE,                                                   *
               TPTIMER=3,               *LAPB RECOVERY PARAMETERS             *
               TDTIMER=1,               *                                     *
               NPRETRY=7,               *                                     *
               NDRETRY=1,               *                                     *
               LLCLIST=(LLC3),                                                *
               LCN0=USED,                                                     *
               DBIT=NO,                 *NO DBIT SUPPORT ON THIS MCH          *
```

```
                ITRACE=YES,              * LAP INTERNAL TRACE ACTIVE     *
                SPEED=9600,              *REAL MCH SPEED                 *
                T1TIMER=1,               *REAL T1 OF THE DCE             *
                SVCINN=1,                *NB OF SIMULT.SWINN CONNECT.    *
                SDRTCNT=1,               *NB OF RETRIES                  *
                SHM=NO,                  *NO SHM FOR REMOTE              *
                SDRTIME=10               *TIMER BETWEEN RETRIES
*
         X25.LCG LCGN=0
*
******************** (PVC) ************************************
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC3,TYPE=P,                       *
                DSTNODE=INN
*
         X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE
*
******************** (SVC) ************************************
*
         X25.LINE DSTNODE=INN,            *MANDATORY FOR INN             *
                TYPE=S
*
         X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.VC LCN=1,VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1
*
***********************************************************************
* FOURTH  MCH FOR GATE X.21 SWITCHED ACCESS    ZL67
*
***********************************************************************
         X25.MCH ADDRESS=67,                                             *
                ANS=CONT,                                                *
                LCGDEF=(0,1),                                            *
                FRMLGTH=131,                                             *
                MWINDOW=5,         LAP WINDOW                            *
                STATION=DTE,                                             *
                TPTIMER=3,                                               *
                TDTIMER=2,                                               *
                NPRETRY=10,                                              *
                NDRETRY=2,                                               *
                LCN0=NOTUSED,                                            *
                GATE=GENERAL,                                            *
                SPAN=X2501,                                              *
                LLCLIST=(LLC4),                                          *
                X21SW=YES,        *X21 SWITCH ACCESS TO ISDN NETWORK     *
                X21NTWK=1984,                                            *
                X21RTYTO=4.0,     *X21 CALL OUT RETRY TIME               *
                X21RTYCT=5,       *X21 CALL OUT RETRY COUNT              *
                X21INACT=40,                                             *
                SPEED=64000    SPECIFIED TO SELECT LIC4B
*
         X25.LCG LCGN=0
*
**       1 SVC'S        *********************
*
         X25.VC LCN=1,                                                   *
                VCCINDX=3,                                               *
                OUFINDX=1,                                               *
                CALL=INOUT,                                              *
                IDNUMT=0080,                                             *
```

```
                TYPE=SWITCHED
*
**********************************************************************
*
*
         X25.END
* GENERATED BY X25NPSI
Z25P64A  GROUP DIAL=NO,                                                X
               LEVEL2=BALNAVL2,                                        X
               LEVEL3=BALNAVL3,                                        X
               LEVEL5=NCP,                                             X
               LINEADD=NONE,                                           X
               COMPTAD=NO,                                             X
               COMPOWN=YES,                                            X
               COMPSWP=NO,                                             X
               COMPACB=NO,                                             X
               LNCTL=SDLC,                                             X
               NPACOLL=NO,                                             X
               TIMER=(BALNATER,,BALNATST,BALNATLS),                    X
               TYPE=NCP,                                               X
               USERID=(5688035,BALPBDT,NORECMS),                       X
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL64000  LINE IPL=NO,                                                  X
               SPAN=X2501,                                             X
               UACB=XA64000
* GENERATED BY X25NPSI
ZC64000  SERVICE
* GENERATED BY X25NPSI
ZP64000  PU ADDR=01,                                                   X
               PUDR=NO,                                                X
               PUTYPE=1,                                               X
               XID=NO,                                                 X
               SPAN=X2501,                                             X
               MAXDATA=2000
* GENERATED BY X25NPSI
ZU64000  LU LOCADDR=0,                                                 X
               SPAN=X2501,                                             X
               VPACING=20,                                             X
               PACING=1,                                               X
               LUDR=NO
* GENERATED BY X25NPSI
Z25P65A  GROUP DIAL=NO,                                                X
               LSPRI=YES,                                              X
               LEVEL2=BALNAVL2,                                        X
               LEVEL3=BALNAVL3,                                        X
               LEVEL5=NCP,                                             X
               LINEADD=NONE,                                           X
               COMPTAD=NO,                                             X
               COMPOWN=YES,                                            X
               COMPSWP=NO,                                             X
               COMPACB=NO,                                             X
               LNCTL=SDLC,                                             X
               NPACOLL=NO,                                             X
               TIMER=(BALNATER,,BALNATST,BALNATLS),                    X
               TYPE=NCP,                                               X
               USERID=(5688035,BALPBDT,NORECMS),                       X
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65000  LINE SPAN=X2501,                                              X
```

```
              UACB=XA65000
* GENERATED BY X25NPSI
ZC65000  SERVICE
* GENERATED BY X25NPSI
ZP65000  PU ADDR=01,                                                   *
              ANS=CONT,                                                *
              DATMODE=HALF,                                            *
              PACING=1,                                                *
              ISTATUS=INACTIVE,                                        *
              SPAN=X2501,                                              *
              VPACING=2,                                               *
              PUTYPE=2,                                                *
              XID=YES,                                                 *
              PUDR=NO
* GENERATED BY X25NPSI
SLUSEC26 LU LOCADDR=0,                                                 *
              LUDR=NO
* GENERATED BY X25NPSI
Z25P65C  GROUP DIAL=NO,                                                *
              LSPRI=YES,                                               *
              MODE=SEC,                                                *
              LEVEL2=BALNAVL2,                                         *
              LEVEL3=BALNAVL3,                                         *
              LEVEL5=NCP,                                              *
              LINEADD=NONE,                                            *
              COMPTAD=NO,                                              *
              COMPOWN=YES,                                             *
              COMPSWP=NO,                                              *
              COMPACB=NO,                                              *
              LNCTL=SDLC,                                              *
              NPACOLL=NO,                                              *
              TIMER=(BALNATER,,BALNATST,BALNATLS),                     *
              TYPE=NCP,                                                *
              USERID=(5688035,BALPBDT,NORECMS),                        *
              XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65004  LINE SPAN=X2501,                                              *
              TADDR=C1,                                                *
              UACB=XA65004
* GENERATED BY X25NPSI
ZC65004  SERVICE
* GENERATED BY X25NPSI
ZP65004  PU ANS=CONT,                                                  *
              DATMODE=HALF,                                            *
              PACING=1,                                                *
              ISTATUS=INACTIVE,                                        *
              MODETAB=LSPRITAB,                                        *
              SPAN=X2501,                                              *
              VPACING=2,                                               *
              PUTYPE=2,                                                *
              XID=YES,                                                 *
              PUDR=NO
* GENERATED BY X25NPSI
PLUPRI15 LU LOCADDR=0,                                                 *
              DLOGMOD=LSPRI62B,                                        *
              ISTATUS=ACTIVE,                                          *
              LUDR=NO
* GENERATED BY X25NPSI
Z25P65D  GROUP DIAL=NO,                                                *
              LEVEL2=BALNAVL2,                                         *
```

```
               LEVEL3=BALNAVL3,                                  *
               LEVEL5=NCP,                                       *
               LINEADD=NONE,                                     *
               COMPTAD=NO,                                       *
               COMPOWN=YES,                                      *
               COMPSWP=NO,                                       *
               COMPACB=NO,                                       *
               LNCTL=SDLC,                                       *
               NPACOLL=NO,                                       *
               TIMER=(BALNATER,,BALNATST,BALNATLS),              *
               TYPE=NCP,                                         *
               USERID=(5688035,BALPBDT,NORECMS),                 *
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65005  LINE IPL=NO,                                            *
               UACB=XA65005
* GENERATED BY X25NPSI
ZC65005  SERVICE
* GENERATED BY X25NPSI
ZP65005  PU ADDR=01,                                             *
               PUDR=NO,                                          *
               PUTYPE=1,                                         *
               XID=NO,                                           *
               MAXDATA=2000
* GENERATED BY X25NPSI
ZU65005  LU LOCADDR=0,                                           *
               VPACING=20,                                       *
               PACING=1,                                         *
               LUDR=NO
* GENERATED BY X25NPSI
Z25P66A  GROUP DIAL=NO,                                          *
               LEVEL2=BALNAVL2,                                  *
               LEVEL3=BALNAVL3,                                  *
               LEVEL5=NCP,                                       *
               LINEADD=NONE,                                     *
               COMPTAD=NO,                                       *
               COMPOWN=YES,                                      *
               COMPSWP=NO,                                       *
               COMPACB=NO,                                       *
               LNCTL=SDLC,                                       *
               NPACOLL=NO,                                       *
               TIMER=(BALNATER,,BALNATST,BALNATLS),              *
               TYPE=NCP,                                         *
               USERID=(5688035,BALPBDT,NORECMS),                 *
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL66000  LINE UACB=XA66000
* GENERATED BY X25NPSI
ZC66000  SERVICE
* GENERATED BY X25NPSI
ZP66000  PU ANS=CONT,                                            *
               TGN=2,                                            *
               ISTATUS=INACTIVE,                                 *
               PUTYPE=4,                                         *
               PUDR=NO
* GENERATED BY X25NPSI
Z25S67A  GROUP DIAL=YES,                                         *
               LEVEL2=BALNAVL2,                                  *
               LEVEL3=BALNAVL3,                                  *
               LEVEL5=NCP,                                       *
```

```
                LINEADD=NONE,                                    *
                COMPTAD=NO,                                      *
                COMPOWN=YES,                                     *
                COMPSWP=NO,                                      *
                COMPACB=NO,                                      *
                LINEAUT=YES,                                     *
                LNCTL=SDLC,                                      *
                NPACOLL=NO,                                      *
                TIMER=(BALNATER,,BALNATST,BALNATLS),             *
                TYPE=NCP,                                        *
                USERID=(5688035,BALSBDT,NORECMS),                *
                XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL67001  LINE CALL=INOUT,                                        *
                UACB=XA67001
* GENERATED BY X25NPSI
ZP67001  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
Z25S66B  GROUP DIAL=YES,                                         *
                LEVEL2=BALNAVL2,                                 *
                LEVEL3=BALNAVL3,                                 *
                LEVEL5=NCP,                                      *
                LINEADD=NONE,                                    *
                COMPTAD=NO,                                      *
                COMPOWN=YES,                                     *
                COMPSWP=NO,                                      *
                COMPACB=NO,                                      *
                LNCTL=SDLC,                                      *
                NPACOLL=NO,                                      *
                TIMER=(BALNATER,,BALNATST,BALNATLS),             *
                TYPE=NCP,                                        *
                USERID=(5688035,BALIBDT,NORECMS),                *
                PUTYPE=4,                                        *
                SHM=NO,                                          *
                ACTIVTO=0.0,                                     *
                BRKCON=NONE,                                     *
                XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL66GGH  LINE CALL=INOUT,                                        *
                UACB=XA66GGH
* GENERATED BY X25NPSI
ZP66GGH  PU ISTATUS=INACTIVE,                                    *
                PUTYPE=4
* GENERATED BY X25NPSI
Z25S65B  GROUP DIAL=YES,                                         *
                LSPRI=YES,                                       *
                LEVEL2=BALNAVL2,                                 *
                LEVEL3=BALNAVL3,                                 *
                LEVEL5=NCP,                                      *
                LINEADD=NONE,                                    *
                COMPTAD=NO,                                      *
                COMPOWN=YES,                                     *
                COMPSWP=NO,                                      *
                COMPACB=NO,                                      *
                LINEAUT=YES,                                     *
                LNCTL=SDLC,                                      *
                NPACOLL=NO,                                      *
                TIMER=(BALNATER,,BALNATST,BALNATLS),             *
                TYPE=NCP,                                        *
                USERID=(5688035,BALSBDT,NORECMS),                *
```

```
                 XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65003  LINE CALL=INOUT,                                           *
                 ROLE=PRI,                                          *
                 ID=06344448,                                       *
                 UACB=XA65003
* GENERATED BY X25NPSI
ZP65003  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
ZL65002  LINE CALL=INOUT,                                           *
                 ROLE=PRI,                                          *
                 ID=06344446,                                       *
                 UACB=XA65002
* GENERATED BY X25NPSI
ZP65002  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
ZL65001  LINE CALL=INOUT,                                           *
                 ROLE=PRI,                                          *
                 ID=06344444,                                       *
                 UACB=XA65001
* GENERATED BY X25NPSI
ZP65001  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
Z25S64B  GROUP DIAL=YES,                                            *
                 LEVEL2=BALNAVL2,                                   *
                 LEVEL3=BALNAVL3,                                   *
                 LEVEL5=NCP,                                        *
                 LINEADD=NONE,                                      *
                 COMPTAD=NO,                                        *
                 COMPOWN=YES,                                       *
                 COMPSWP=NO,                                        *
                 COMPACB=NO,                                        *
                 LINEAUT=YES,                                       *
                 LNCTL=SDLC,                                        *
                 NPACOLL=NO,                                        *
                 TIMER=(BALNATER,,BALNATST,BALNATLS),               *
                 TYPE=NCP,                                          *
                 USERID=(5688035,BALSBDT,NORECMS),                  *
                 XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL64002  LINE CALL=INOUT,                                           *
                 SPAN=X2501,                                        *
                 UACB=XA64002
* GENERATED BY X25NPSI
ZP64002  PU SPAN=X2501,                                             *
                 PUTYPE=(1,2)
* GENERATED BY X25NPSI
ZL64001  LINE CALL=INOUT,                                           *
                 SPAN=X2501,                                        *
                 UACB=XA64001
* GENERATED BY X25NPSI
ZP64001  PU SPAN=X2501,                                             *
                 PUTYPE=(1,2)
* GENERATED BY X25NPSI
GRZ1     GROUP DIAL=NO,                                             *
                 BERPROC=BALNMBER,                                  *
                 COMPACB=YES,                                       *
                 COMPTAD=YES,                                       *
                 COMPOWN=YES,                                       *
                 COMPSWP=YES,                                       *
```

```
                LEVEL2=BALNAML2,                                        *
                LEVEL3=BALNAML3,                                        *
                LEVEL5=NCP,                                             *
                LNCTL=SDLC,                                             *
                NPACOLL=NO,                                             *
                TIMER=(BALLAP4,,BALLAP4,BALLAP4),                       *
                TYPE=NCP,                                               *
                USERID=(5688035,BALMBDT,NORECMS,P),                     *
                XIO=(BALNAMXL,BALNAMXS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
ZL64     LINE ADDRESS=(64,FULL),                                        *
                SPAN=X2501,                                             *
                XMONLNK=YES,                                            *
                UACB=(X25A64X,X25A64R)
* GENERATED BY X25NPSI
ZC64     SERVICE
* GENERATED BY X25NPSI
ZP64     PU ADDR=01,                                                    *
                ANS=CONT,                                               *
                SPAN=X2501,                                             *
                MAXDATA=261,                                            *
                PUDR=NO,                                                *
                XID=NO,                                                 *
                PUTYPE=1
* GENERATED BY X25NPSI
ZU64     LU LOCADDR=0,                                                  *
                SPAN=X2501,                                             *
                VPACING=(2,1),                                          *
                ISTATUS=ACTIVE
* GENERATED BY X25NPSI
GRZ2     GROUP DIAL=NO,                                                 *
                BERPROC=BALNMBER,                                       *
                COMPACB=YES,                                            *
                COMPTAD=YES,                                            *
                COMPOWN=YES,                                            *
                COMPSWP=YES,                                            *
                LEVEL2=BALNAML2,                                        *
                LEVEL3=BALNAML3,                                        *
                LEVEL5=NCP,                                             *
                LNCTL=SDLC,                                             *
                NPACOLL=NO,                                             *
                TIMER=(BALLAP4,,BALLAP4,BALLAP4),                       *
                TYPE=NCP,                                               *
                USERID=(5688035,BALNBDT,NORECMS,P),                     *
                XIO=(BALNAMXL,BALNAMXS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
ZL65     LINE ADDRESS=(65,FULL),                                        *
                XMONLNK=NO,                                             *
                UACB=(X25A65X,X25A65R)
* GENERATED BY X25NPSI
ZC65     SERVICE
* GENERATED BY X25NPSI
ZP65     PU ADDR=01,                                                    *
                ANS=CONT,                                               *
                MAXDATA=261,                                            *
                PUDR=NO,                                                *
                XID=NO,                                                 *
                PUTYPE=1
* GENERATED BY X25NPSI
ZU65     LU LOCADDR=0,                                                  *
```

```
                VPACING=(2,1),                                          *
                ISTATUS=ACTIVE
* GENERATED BY X25NPSI
ZU65L1   LU LOCADDR=1,                                                  *
                VPACING=(2,1),                                          *
                ISTATUS=ACTIVE
* GENERATED BY X25NPSI
ZL66     LINE ADDRESS=(66,FULL),                                        *
                XMONLNK=NO,                                             *
                UACB=(X25A66X,X25A66R)
* GENERATED BY X25NPSI
ZC66     SERVICE
* GENERATED BY X25NPSI
ZP66     PU ADDR=01,                                                    *
                ANS=CONT,                                               *
                MAXDATA=261,                                            *
                PUDR=NO,                                                *
                XID=NO,                                                 *
                PUTYPE=1
* GENERATED BY X25NPSI
ZU66     LU LOCADDR=0,                                                  *
                VPACING=(2,1),                                          *
                ISTATUS=INACTIVE
* GENERATED BY X25NPSI
ZL67     LINE ADDRESS=(67,FULL),                                        *
                SPAN=X2501,                                             *
                SPEED=55855,                                            *
                XMONLNK=NO,                                             *
                UACB=(X25A67X,X25A67R)
* GENERATED BY X25NPSI
ZC67     SERVICE
* GENERATED BY X25NPSI
ZP67     PU ADDR=01,                                                    *
                ANS=CONT,                                               *
                SPAN=X2501,                                             *
                MAXDATA=261,                                            *
                PUDR=NO,                                                *
                XID=NO,                                                 *
                PUTYPE=1
* GENERATED BY X25NPSI
ZU67     LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=ACTIVE
*
************************************************************
CZGROUP  GROUP LNCTL=CA,                                                *
                CA=TYPE6,                                               *
                DELAY=0.0,                                              *
                NCPCA=ACTIVE
CZLINE5  LINE ADDRESS=00
CZ5PU    PU PUTYPE=5
CZLINE1  LINE ADDRESS=08
CZ1PU    PU PUTYPE=5
**************************************
         GENEND INIT=BALINIMD,                                          *
                TMRTICK=BALTICK,                                        *
                UGLOBAL=BALNMGOP
****************************************************************
```

Switched Major Node - Example C1

```
//* THIS JCL UPDATES THE SYS1.VTAMLST (MVS6)
//* GET THE FILE TO BE UPDATED UNDER THE ./ ADD CHANGE ITS NAME.
//UPD EXEC PGM=IEBUPDTE,PARM=NEW
//SYSPRINT DD SYSOUT=A
//SYSUT2   DD DISP=SHR,DSN=SYS1.VTAMLST,VOL=SER=MVSVM3,UNIT=3350
//SYSIN DD DATA
// ADD NAME=EX3346MN    MEMBER NAME
*********************************************************************
* SWITCHED MAJOR NODE TO BE USED IN CORRELATION WITH EX3346Z GEN
*********************************************************************
**
EX3346MN VBUILD MAXGRP=20,                                            *
               MAXNO=20,                                              *
               TYPE=SWNET
**
*
*
*****************************************************************
*                                                               *
*    ENTRIES  FOR GATE                                          *
* FOR GATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED *
*                                                               *
* TO USE WITH GEN: EX3346Z, MCH:ZL64-ZP64-ZU64                  *
* SVC:ZL64001 USER DEFINED IDNUM:06220042  (CALLIN GATEN <<<<<I *
* SVC:ZL64002 USER DEFINED IDNUM:06220044  (CALLOUT GATEN-----I *
*                                                               *
*****************************************************************
*
GATEPI   PU    ADDR=01,        GATE INCALL                            *
               IDBLK=062,      1ST GATE VC    (INCOMING  CALL)        *
               IDNUM=20042,                                           *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED               *
               PACING=1,       PACING=1 IS REQUIRED                   *
               VPACING=2,                                             *
               ANS=CONT,       FOR SW SESSION CONTINUATION            *
               PUTYPE=1,                                              *
               SSCPFM=USSSCS
GATELI   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
**
GATEPO   PU    ADDR=01,        2ND GATE VC USED(CALL OUT WITHOUT PATH) *
               IDBLK=062,                                             *
               IDNUM=20044,                                           *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED               *
               PACING=1,       PACING=1 IS REQUIRED                   *
               VPACING=2,                                             *
               ANS=CONT,       FOR SW SESSION CONTINUATION            *
               PUTYPE=1,                                              *
               SSCPFM=USSSCS
GATELO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES

*****************************************************************
*                                                               *
*    ENTRIES  FOR X21 GATE                                      *
* FOR GATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED *
* SVC:ZL67001 USER DEFINED IDNUM:00320082                       *
```

```
*                                                                 *
*******************************************************************
*
**
*
BATEPO   PU    ADDR=01,         2ND GATE VC USED(IN OR OUT CALL)        *
               IDBLK=003,       DEFAULT VALUE (IDBLKG NOT CODED IN GEN) *
               IDNUM=20082,                                             *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU        *
               MAXDATA=2000,    SEGMENTING NOT SUPPORTED                *
               PACING=1,        PACING=1 IS REQUIRED                    *
               VPACING=2,                                               *
               ANS=CONT,        FOR SW SESSION CONTINUATION             *
               PUTYPE=1,                                                *
               SSCPFM=USSSCS
BATELO   LU    LOCADDR=0        0 IS REQUIRED FOR NON SNA X25 DEVICES
*
*******************************************************************
*                                                                 *
*    ENTRIES  FOR PAD                                             *
*                                                                 *
* SVC:ZL64001 USER DEFINED IDNUM:06320042  (CALLIN PAD          ) *
* SVC:ZL64002 USER DEFINED IDNUM:06320044  (CALLIN CALLOUT PAD ) *
*                                                                 *
*******************************************************************
*
PADIPI   PU    ADDR=01,         PADI INCALL OR 1ST GATE VC USED         *
               IDBLK=063,                      (IN OR OUT CALL)         *
               IDNUM=20044,                                             *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU        *
               MAXDATA=2000,    SEGMENTING NOT SUPPORTED                *
               PACING=1,        PACING=1 IS REQUIRED                    *
               VPACING=2,                                               *
               MAXPATH=1,                                               *
               ANS=CONT,        FOR SW SESSION CONTINUATION             *
               PUTYPE=1,                                                *
               SSCPFM=USSSCS
PADILI   LU    LOCADDR=0,       0 IS REQUIRED FOR NON SNA X25 DEVICES   *
               SSCPFM=USSNTO,       *LOGON ENDS WITH CRLF               *
               MODETAB=MODRAL,      *MODETAB FOR LU1 3767/TWX           *
               DLOGMOD=SSCICSF,     *FLIPFLOP OR CONTENTION PROT        *
               TERM=TWX,            *MUST BE DEFINED FOR TWX/3101       *
               USSTAB=USSTWX        *SPECIAL USSTAB FOR TWX/3101
*
*
PADIPO   PU    ADDR=01,         PADI INCALL OR 1ST GATE VC USED         *
               IDBLK=063,                      (IN OR OUT CALL)         *
               IDNUM=20042,                                             *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU        *
               MAXDATA=2000,    SEGMENTING NOT SUPPORTED                *
               PACING=1,        PACING=1 IS REQUIRED                    *
               VPACING=2,                                               *
               MAXPATH=1,                                               *
               ANS=CONT,        FOR SW SESSION CONTINUATION             *
               PUTYPE=1,                                                *
               SSCPFM=USSSCS
*
PADPATH  PATH  DIALNO=10605023650201*20042, L=5 PAD (MODEM PAD)         *
```

```
              GRPNM=Z25S64B,GID=2,PID=31   Z25S64B=GROUP OF SWITCHED
*
PADILO   LU   LOCADDR=0,          *FOR NON SNA X25 DEVICES           *
              SSCPFM=USSNTO,      *LOGON ENDS WITH CRLF              *
              MODETAB=MODRAL,     *MODETAB FOR LU1 3767/TWX          *
              DLOGMOD=SSCICSF,    *FLIPFLOP OR CONTENTION PROT       *
              TERM=TWX,           *MUST BE DEFINED FOR TWX/3101      *
              USSTAB=USSTWX       *SPECIAL USSTAB FOR TWX/3101
****************************************************************
* ENTRIES FOR PCNE
* SVC:ZL64001 IDNUM=ZZZZZ OF CUD FIELD                         *
* SVC:ZL64002                                                  *
*********************************************************
*
PCNEPI   PU   ADDR=01,         PCNE TO PCNE INBOUND                 *
              IDBLK=064,                                            *
              IDNUM=22225,     IDNUM=ZZZZZ OF INCOM CALL CUD FIELD  *
              DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU     *
              MAXOUT=1,        TO LET LOGON MSG IN AFTER ACTLU      *
              MAXDATA=1024,    SEGMENTING NOT SUPPORTED             *
              PACING=1,        PACING=1 IS REQUIRED                 *
              VPACING=2,                                            *
              ANS=CONT,        FOR SW SESSION CONTINUATION          *
              PUTYPE=1,                                             *
              SSCPFM=USSSCS
PCNELI   LU   LOCADDR=0        0 IS REQUIRED FOR NON SNA X25 DEVICES
**
PCNEPO   PU   ADDR=01,         PCNE TO PCNE OUTBOUND                *
              IDBLK=064,                                            *
              IDNUM=22224,     EQUAL ZZZZZ                          *
              MAXPATH=6,                                            *
              DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU     *
              MAXDATA=1024,    SEGMENTING NOT SUPPORTED             *
              PACING=1,        PACING=1 IS REQUIRED                 *
              VPACING=2,                                            *
              ANS=CONT,        FOR SW SESSION CONTINUATION          *
              PUTYPE=1,                                             *
              SSCPFM=USSSCS
PCNELO   LU   LOCADDR=0        0 IS REQUIRED FOR NON SNA X25 DEVICES
**                          HEREUNDER FOR MODEM XPAC4
PCNEP1   PATH DIALNO=10604016500201*22224, ZZZZZ+1=CUD FIELD OF CALLRQ*
              GRPNM=Z25S64B,GID=2,PID=20    Z25S64B=GROUP OF SWITCHED
*                              VC'S ON INVOLVED MCH IN GENERATION
************************************************************
*                                                          *
* ENTRY FOR INCOMING AND OUTGOING CALLS FOR BNN PSH AND QLLC*
* WITH CANNED XID. GEN=EX3346Z MCH=65 (ZL65 ZP65)          *
*            ID=0634444                                    *
*                     6                                    *
*                     8                                    *
************************************************************
PSHPO    PU   ADDR=01,                                              *
              IDBLK=063,                                            *
              IDNUM=41264,     IDNUM OF REMOTE PU                   *
              MAXPATH=3,                                            *
              DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU     *
              MAXDATA=265,     SEGMENTING SUPPORTED                 *
              PACING=3,                                             *
              ANS=CONT,        FOR SW SESSION CONTINUATION          *
              VPACING=3,                                            *
```

```
                  PUTYPE=2,                                          *
                  SSCPFM=USSSCS              OUTGOING CALL FOR PSH
PSHP      PATH    DIALNO=10604016420201,     L=2 FOR PSH     MODEM PTT1*
                  GRPNM=Z25S65B,GID=2,PID=31   Z25S65B=GROUP OF SWITCHED
*                              VC'S ON INVOLVED MCH IN GENERATION EX3346Z
PSHLO     LU      LOCADDR=2,MODETAB=MODTD3
*
PSHPI     PU      ADDR=01,                                           *
                  IDBLK=063,                                         *
                  IDNUM=44444,    IDNUM FOR ANONYMOUS CALLING PU     *
                  MAXPATH=3,                                         *
                  DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU   *
                  MAXDATA=265,    SEGMENTING SUPPORTED               *
                  PACING=3,                                          *
                  ANS=CONT,       FOR SW SESSION CONTINUATION        *
                  VPACING=3,                                         *
                  PUTYPE=2,                                          *
                  SSCPFM=USSSCS
PSHLI     LU      LOCADDR=2,MODETAB=MODTD3
*
QBNNPO    PU      ADDR=01,                                           *
                  IDBLK=063,                                         *
                  IDNUM=44446,    IDNUM FOR ANONYMOUS CALLING PU     *
                  MAXPATH=3,                                         *
                  DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU   *
                  MAXDATA=265,    SEGMENTING SUPPORTED               *
                  PACING=3,                                          *
                  ANS=CONT,       FOR SW SESSION CONTINUATION        *
                  VPACING=3,                                         *
                  PUTYPE=2,                                          *
                  SSCPFM=USSSCS
QBNNP     PATH    DIALNO=10604016530101,     L=3 FOR BNN QLLC  MODEM PTT2*
                  GRPNM=Z25S65B,GID=2,PID=32   Z25S65B=GROUP OF SWITCHED
*                              VC'S ON INVOLVED MCH IN GENERATION EX3346Z
QBNNLO    LU      LOCADDR=2,MODETAB=MODTD3
PSHPI2    PU      ADDR=01,                                           *
                  IDBLK=063,                                         *
                  IDNUM=44448,    IDNUM FOR ANONYMOUS CALLING PU     *
                  MAXPATH=3,                                         *
                  DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU   *
                  MAXDATA=265,    SEGMENTING SUPPORTED               *
                  PACING=3,                                          *
                  ANS=CONT,       FOR SW SESSION CONTINUATION        *
                  VPACING=3,                                         *
                  PUTYPE=2,                                          *
                  SSCPFM=USSSCS
PSHLI2    LU      LOCADDR=2,MODETAB=MODTD3
**********************************************************************
*                                                                    *
*                 ENTRY FOR SWITCHED CASUAL CONNECTION               *
*                     - IFNYL7P IS A CEN(VTAM/NCP) WORKING AS A NODE T2.1*
**********************************************************************
*
IFNYL7P   PU      ADDR=01,                                           *
                  MAXPATH=1,                                         *
                  DISCNT=YES,                                        *
                  PACING=1,                                          *
                  VPACING=2,                                         *
                  PUTYPE=2,                                          *
                  ANS=CONT,                                          *
```

```
              MODETAB=LSPRITAB,  VTAM USER DEFINED TABLE            *
              SSCPFM=USSSCS,                                        *
              CPNAME=IFNYL7      ADJACENT LINK STATION SSCP NAME
*                           (REPLACES IDNUM/IDBLK FOR PUT2.1)
**
IFNYL7P1 PATH DIALNO=10604016930201,  (ALS  MODEM)                  *
              GRPNM=Z25S65B,                                        *
              GID=2,                                                *
              PID=33
*
SLUSEC26 LU   LOCADDR=0, IDEPENDANT LU DEFINITION (NEEDED FOR CCX)  *
              DLOGMOD=LSPRI62B   VTAM USER DEFINED TABLE
***********************************************************************
*
*  ENTRY FOR REMOTE LOAD
***********************************************************************
*
*
*      VTAM.....NCP SA46---------|  X  |--------NCP SA45
*                                | 25  |
*
*******************************************************************
*                                                                 *
*                                                                 *
*    SWITCHED MAJOR NODE FOR X25  FOR BOTH NCP'S WHICH ARE:       *
*      - SA46 LOCAL                                               *
*      - SA45 REMOTE   (RELATED REMOTE GEN IS REMNCP)             *
*                                                                 *
*******************************************************************
**
**       FOR OUTGOING CALL ISSUED FROM LOCAL TO REMOTE
*
SADREM   PU   PUTYPE=4, * LOADABLE REMOTE PU                        *
              ADDR=01,  * VALUE ANY (OPERAND IGNORED FOR SAD CONN.) *
              TGN=3,                                                *
              SUBAREA=45,                                           *
              IDNUM=AAAAA,                                          *
              IDBLK=003,                                            *
              NETID=FRIBM412,                                       *
              ANS=CONT,                                             *
              MAXPATH=1,                                            *
              MAXDATA=1024
*
LOCPTH   PATH DIALNO=10604016410201,  L=1 FOR INN SWITCHED  MODEM PTT1*
              GRPNM=Z25S66B,PID=34
*
SADLOC   PU   PUTYPE=4, * PU LOADER                                 *
              ADDR=01,  * VALUE ANY (OPERAND IGNORED FOR SAD CONN.) *
              TGN=3,                                                *
              SUBAREA=46,                                           *
              IDNUM=AAAAA,                                          *
              IDBLK=003,                                            *
              NETID=FRIBM412,                                       *
              ANS=CONT,                                             *
              MAXPATH=1,                                            *
              MAXDATA=1024
**********************************************************
```

NCP and X.25 NPSI Generation Input - Example C2

```
**EXAMPLE C2 *
*********************************************************************
*                                                                   *
*                                                                   *
* - MCH1 (64)          PVC0  FOR PCNE                               *
*                      2SVC  FOR PCNE PAD GATE                      *
* - MCH2 (65)          PVC0  FOR CASUAL CONNECT                     *
*                      3SVC     FOR PSH,BNNQLLC AND CASUAL CONNECT  *
*                      PVC4     FOR CASUAL CONNECT                  *
*                      PVC5     FOR GATE                            *
* - MCH3 (66)          PVC0     FOR INN QLLC REMOTE LOADING         *
*                      SVC1     FOR INN QLLC REMOTE LOADING         *
* - MCH4 (67)          SVC1     FOR X21 ACCESS (GATE)               *
*********************************************************************
*IDNUM ARE DEFAULT VALUES (NO IDNUMT SPECIFIED IN X25.VC/X25.LINE)    *
*********************************************************************
*
**
***   STAGE 1 INPUT
**
*
         OPTIONS USERGEN=X25NPSI,NEWDEFN=(YES,ECHO)
*
ATTACHED PCCU  DUMPDS=DUMPX25,SUBAREA=16
*
BAKBUILD BUILD NPA=YES,                                              X
               VERSION=V5R3,                                         X
               LOADLIB=LNCP10,                                       X
               TYPGEN=NCP,                                           X
               MODEL=3745,                                           X
               NETID=FRIBM412,                                       X
               MAXSUBA=63,                                           X
               SUBAREA=46,                                           X
               BFRS=124,                                             X
               USGTIER=5,                                            X
               LTRACE=8,                                             X
               OLT=YES,                                              X
               DR3270=NO,                                            X
               BRANCH=8000,                                          X
               TRACE=(YES,100),                                      X
               NEWNAME=PT3346Z,                                      X
               X25.PREFIX=Z,         *                               X
               TYPSYS=OS,            *     X25 PART                  X
               X25.SNAP=YES,         *                               X
               X25.USGTIER=5,        *                               X
               X25.MCHCNT=4,         *                               X
               X25.MWINDOW=1,        *                               X
               X25.IDNUMH=2,         * X25.IDNUMH MUST MATCH WITH SWITCHX
               X25.MAXPIU=64K,       *                               X
               X25.PAHINDX=2         * MAX NUMBER OF PAD PARAMETERS
*
BAKSYSC SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,          X
               RIMM,NAKLIM,SESSION,SSPAUSE,XMTLMT)
*
ATTACHED HOST  INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,   X
               DELAY=0.1,STATMOD=YES,TIMEOUT=30
*
PATH45   PATH   DESTSA=(45),ER1=(45,2),ER2=(45,3)
```

```
PATH16   PATH   DESTSA=(16),ER0=(16,1),ER1=(16,1),ER2=(16,1)
*        LUPOOL NUMBER=5
         LUDRPOOL NUMTYP1=10,NUMTYP2=10
*******************************************************
         EJECT
ZDLC4    GROUP LNCTL=SDLC,                                          X
               TYPE=NCP,                                            X
               DIAL=YES,                                            X
               REPLYTO=20
**************************************
ZL4      LINE  ADDRESS=4,                                           X
               CLOCKNG=EXT,                                         X
               NEWSYNC=NO,                                          X
               DUPLEX=HALF,                                         X
               NRZI=NO,                                             X
               CALL=INOUT,                                          X
               RETRIES=(7,0,0)
ZP4       PU   ISTATUS=INACTIVE,                                    X
               PUTYPE=2
*
         EJECT
*************************************************************
GRNPZ    GROUP LNCTL=SDLC,                                          X
               TYPE=NCP,                                            X
               DIAL=NO,                                             X
               DISCNT=NO,                                           X
               VIRTUAL=YES,                                         X
               NPARSC=YES,                                          X
               ISTATUS=INACTIVE
LNNPZ    LINE  LINEFVT=NPAVFVT
PUNPZ    PU    PUTYPE=2,PUFVT=NPAPFVT
LUNPZ    LU    MAXCOLL=7,LUFVT=(NPALFVT,NPALFVT),                   X
               VPACING=0,LOCADDR=1
**************************************
         EJECT
***** INSERT HERE BELOW X25 STAGE1 OUTPUT
*
*        PAD - PARAMETERS
*
PAD1     X25.PAD INDEX=1,PADPARM=0715080001000400
PAD2     X25.PAD INDEX=2,PADPARM=0701080001000400
*
*        USER TRANSLATE
*
*
*       NDF SAMPLE STATEMENTS FOR PAD USER TRANSLATE TABLES
*
TRANS1   X25.TRAN    USER=1,                                        C
               DCIN0=00010203372D2E2F1605250B0C0D0E0F,              C
               DCIN1=101112133C5A322618193F271C1D1E1F,              C
               DCIN2=404F7F7B5B6C507D4D5D5C4E6B604B61,              C
               DCIN3=F0F1F2F3F4F5F6F7F8F97A5E4C7E6E6F,              C
               DCIN4=43C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6,              C
               DCIN5=D7D8D9E2E3E4E5E6E7E8E9AD51BD5F6D,              C
               DCIN6=79818283848586878889919293949596,              C
               DCIN7=979899A2A3A4A5A6A7A8A98BBA9BA107,              C
               DCIN8=80DCC083DA7C86E08FC9D08B568D8E8F,              C
               DCIN9=909192FBFB95969798999A9B9C9D9E9F,              C
               DCINA=A0A1A2A3A4A5A6A7A8A9AA64ACADAEAF,              C
               DCINB=B0B1B2FAECB5B6B7B8B9BABBBCBDBEBC,              C
```

```
                DCINC=ABCBCCEBBF8FC6C7ABC9CACBCCCDCECF,                C
                DCIND=D0D1D2D3D4D5D6D7D8BBACDBDCDDDEDF,                C
                DCINE=E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF,                C
                DCINF=F0F1F2F3F4F5F6F7B0F9FAFBFCFDFEFF,                C
                DCOT0=000102033A093A7F3A3A3A0B0C0D0E0F,                C
                DCOT1=101112133A0A087F18193A3A1C1D1E1F,                C
                DCOT2=3A3A3A3A3A0A171B3A3A3A3A3A050607,                C
                DCOT3=3A3A163A3A3A3A043A3A3A3A14153A1A,                C
                DCOT4=203A3A403A3A3A3A3A3A5B2E3C282B21,                C
                DCOT5=265C3A3A3A3A8C3A3A3A15242A293B5E,                C
                DCOT6=2D2F3A3AAB3A3A3A3A3A7C2C255F3E3F,                C
                DCOT7=3A3A3A3A3A3A3A3A3A603A2385273D22,                C
                DCOT8=3A616263646566676869 3A7B3A3A3AC5,                C
                DCOT9=3A6A6B6C6D6E6F7071723A7D3A3A3A3A,                C
                DCOTA=3A7E737475767778797A3AC0DA5B3A3A,                C
                DCOTB=F83A3A3A3A3A3A3A3A3A3AD9BF5D3AC4,                C
                DCOTC=824142434445464748493AC1C23A3A3A,                C
                DCOTD=8A4A4B4C4D4E4F505152843A813A3AFF,                C
                DCOTE=873A535455565758595A3AC3B43A3A3A,                C
                DCOTF=30313233343536373839B393883A3A3A
*                      0 1 2 3 4 5 6 7 8 9 A B C D E F
*
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES,                           X
                INACTO=120,  CLEAR SVC AFTER 120 SECONDS  IF NO TRAFIC X
                RESETINO=(XX26,80XX)   FOR ALL RESET WITH DIAG CODE 26
**                                     AND ALL RESET WITH CAUSE CODE 80
**
         X25.VCCPT INDEX=1,                                            X
                MAXPKTL=128,                                           X
                VWINDOW=3,                                             X
                INSLOW=(50,12)
*
         X25.VCCPT INDEX=2,                                            X
                MAXPKTL=128,                                           X
                VWINDOW=2,                                             X
                INSLOW=(100,50)
*
         X25.VCCPT INDEX=3,                                            X
                MAXPKTL=128,                                           X
                VWINDOW=3,                                             X
                INSLOW=(100,50)
*
         X25.OUFT INDEX=1
*
         X25.OUFT INDEX=2,                                             X
                OPTFACL=420707430202
*
         X25.OUFT INDEX=3,                                             X
                OPTFACL=03690102420707430303,     *REVERSE CHARGING    X
                USRFILD=1234567890
*
***********************************************************************
*
                EJECT
                EJECT
****     FIRST   MCH  ZL64(GATE) ************************
***
          X25.MCH ADDRESS=64,                                          X
                ANS=CONT,NCPGRP=GRZ1,                                  X
                LCGDEF=(0,2),                                          X
```

```
              FRMLGTH=131,                                              X
              MWINDOW=7,                                                X
              STATION=DTE,                                              X
              TPTIMER=2,                                                X
              TDTIMER=3,                                                X
              NPRETRY=3,                                                X
              NDRETRY=3,                                                X
              LCN0=USED,                *FOR TRANSPAC                   X
              XMONLNK=YES,                                              X
              PAD=INTEG,TRAN=USER1      *8 BITS TRANSLATE TABLE 1       X
              PADINDX=1,                * FOR PAD PARAMETER SELECTION   X
              GATE=GENERAL,                                             X
              LLCLIST=(LLC0,LLC4,LLC5)                                  X
              SPAN=X2501,                                               X
              T1TIMER=1,                                                X
              IDBLKC=064,               *PCNE                           X
              IDBLKP=063,               *PAD                            X
              IDBLKG=062,               *GATE                           X
              MBITCHN=YES,                                              X
              DBIT=YES
*********
            X25.LCG LCGN=0
*****************BNN PCNE*******************
            X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,MAXDATA=2000,        X
              SPAN=X2501,VPACING=20
***
***
*** 2 SVC,S  DEFAULT IDNUM
***
            X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2,     X
              SPAN=X2501
*
*
***********************************************************************
*
              EJECT
****  SECOND   MCH  (GATE) ZL65  **********************
*                    THIS MCH INCLUDES DEFINITIONS FOR:
*                    1 SVC FOR SECONDARY CASUAL CONNECTION
*                    1 PVC FOR SECONDARY CASUAL CONNECTION
*                    1 PVC FOR PRIMARY  CASUAL CONNECTION
***
          X25.MCH ADDRESS=65,                                           X
              ANS=CONT,NCPGRP=GRZ2,                                     X
              LCGDEF=(0,5),                                             X
              FRMLGTH=131,                                              X
              STATION=DTE,                                              X
              TPTIMER=3.1,                                              X
              TDTIMER=2,                                                X
              NPRETRY=7,                                                X
              NDRETRY=1,                                                X
              LLCLIST=(LLC2,LLC3),                                      X
              CCXDELAY=5,  *INITIAL TRANSMISSION DELAY CASUAL CONNECT X
              ROLE=PRI, *LOCAL PERIPHERAL PU 2.1 ASSUMES PRIMARY ROLE X
              LSPRI=YES,  ALLOWS TRAFIC PRIORITY FOR LLC2 AND BNN LLC3X
              LCN0=USED,                                                X
              GATE=GENERAL,       *FOR A PVC                            X
              CUD0=(ALL),                                               X
              INTFAC=YES,                                               X
              MWINDOW=7,                                                X
```

```
                T1TIMER=1,                                            X
                MBITCHN=NO
***
             X25.LCG LCGN=0
***
*               *** PVC 0 FOR PU2.1 ON BNN QLLC     ***
*                       CASUAL CONNECTION (PRIMARY)
*
          X25.LINE LCN=0,         *                                   X
                VCCINDX=3,        *                                   X
                LLC=LLC3,         * DSTNODE=BNN DEFAULTED             X
                SPAN=X2501,       *                                   X
                TYPE=P            *
*
          X25.PU PUTYPE=2,        *                                   X
                ADDR=01,          *                                   X
                VPACING=2,        *                                   X
                XID=YES,          * LEN                               X
                DATMODE=HALF,     *                                   X
                PACING=1,         *                                   X
                SPAN=X2501,       *                                   X
                ISTATUS=INACTIVE, *                                   X
                ANS=CONT          *
*
SLUSEC26 X25.LU LOCADDR=0         *  FOR INDEPENDANT LU
*
****      3 SVC'S                 *************************
***
          X25.VC LCN=(1,3),                                           X
                VCCINDX=3,                                            X
                OUFINDX=1,                                            X
                CALL=INOUT,                                           X
                ID=06344444,      * ANNONYMOUS CALLER (CANNED XID)    X
                TYPE=SWITCHED
*
*
*               *** PVC 3 FOR CASUAL CONNECTION  (SECONDARY)
*
          X25.LINE LCN=4,         *                                   X
                VCCINDX=3,        *                                   X
                LLC=LLC3,         * QLLC                              X
                SPAN=X2501,       *                                   X
                MODE=SEC,         * CCX SECONDARY DEFINITION          X
                TADDR=C1,         * CCX SECONDARY DEFINITION          X
                TYPE=P            *
*
          X25.PU PUTYPE=2,        *                                   X
                VPACING=2,        *                                   X
                MODETAB=LSPRITAB, * VTAM USER DEFINED TABLE           X
                XID=YES,          * LEN SUPPORT                       X
                DATMODE=HALF,     *                                   X
                PACING=1,         *                                   X
                SPAN=X2501,       *                                   X
                ISTATUS=INACTIVE, *                                   X
                ANS=CONT          *
*
PLUPRI15 X25.LU LOCADDR=0,        * INDEPENDANT LU                    X
                DLOGMOD=LSPRI62B, * VTAM USER DEFINED TABLE           X
```

```
              ISTATUS=ACTIVE    *
*
***
          X25.VC LCN=5,                                                X
              VCCINDX=3,                                               X
              LLC=LLC4,                                                X
              MAXDATA=2000,                                            X
              VPACING=20,                                              X
              TYPE=P
***
*
***********************************************************************
* THIRD  MCH   FOR INN  (REMOTE LOADING) ZL66
** RELATED WITH THE GEN NAMED NCPREM LOADED FROM DISK INTO REMOTE CCU
***********************************************************************
         X25.MCH ADDRESS=66,          *CONTROLLER LINE ADDR            X
              ANS=CONT,                                                X
              LCGDEF=(0,1),                                            X
              FRMLGTH=131,                                             X
              MWINDOW=7,              *LAP WINDOW                      X
              STATION=DTE,                                             X
              TPTIMER=3,              *LAPB RECOVERY PARAMETERS        X
              TDTIMER=1,              *                                X
              NPRETRY=7,              *                                X
              NDRETRY=1,              *                                X
              LLCLIST=(LLC3),                                          X
              LCN0=USED,                                               X
              DBIT=NO,                *NO DBIT SUPPORT ON THIS MCH     X
              ITRACE=YES,             * LAP INTERNAL TRACE ACTIVE      X
              SPEED=9600,             *REAL MCH SPEED                  X
              T1TIMER=1,              *REAL T1 OF THE DCE              X
              SVCINN=1,               *NB OF SIMULT.SWINN CONNECT.     X
              SDRTCNT=1,              *NB OF RETRIES                   X
              SHM=NO,                 *NO SHM FOR REMOTE               X
              SDRTIME=10              *TIMER BETWEEN RETRIES
*
         X25.LCG LCGN=0
*
********************* (PVC) ***********************************
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC3,TYPE=P,                     X
              DSTNODE=INN
*
         X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE
*
********************* (SVC) ***********************************
*
         X25.LINE DSTNODE=INN,           *MANDATORY FOR INN            X
              TYPE=S
*
         X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.VC LCN=1,VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1
*
***********************************************************************
* FOURTH  MCH FOR GATE X.21 SWITCHED ACCESS    ZL67
*
***********************************************************************
         X25.MCH ADDRESS=67,                                           X
              ANS=CONT,                                                X
```

```
                 LCGDEF=(0,1),                                      X
                 FRMLGTH=131,                                       X
                 MWINDOW=5,        LAP WINDOW                       X
                 STATION=DTE,                                       X
                 TPTIMER=3,                                         X
                 TDTIMER=2,                                         X
                 NPRETRY=10,                                        X
                 NDRETRY=2,                                         X
                 LCN0=NOTUSED,                                      X
                 GATE=GENERAL,                                      X
                 SPAN=X2501,                                        X
                 LLCLIST=(LLC4),                                    X
                 X21SW=YES,       *X21 SWITCH ACCESS TO ISDN NETWORK X
                 X21NTWK=1984,                                      X
                 X21RTYTO=4.0,    *X21 CALL OUT RETRY TIME          X
                 X21RTYCT=5,      *X21 CALL OUT RETRY COUNT         X
                 X21INACT=40,                                       X
                 SPEED=64000   SPECIFIED TO SELECT LIC4B
*
         X25.LCG  LCGN=0
*
**       1 SVC'S        *********************
*
         X25.VC  LCN=1,                                             X
                 VCCINDX=3,                                         X
                 OUFINDX=1,                                         X
                 CALL=INOUT,                                        X
                 TYPE=SWITCHED
*
*********************************************************************
*
*
         X25.END
*
************************************************************
CZGROUP  GROUP LNCTL=CA,                                            X
                 CA=TYPE6,                                          X
                 DELAY=0.0,                                         X
                 NCPCA=ACTIVE
CZLINE5  LINE  ADDRESS=00
CZ5PU    PU    PUTYPE=5
CZLINE1  LINE  ADDRESS=08
CZ1PU    PU    PUTYPE=5
               EJECT
**************************************
         GENEND
         END
****************************************************************
```

NCP Input Produced by NDF (X.25 NPSI) - Example C2

```
         OPTIONS USERGEN=X25NPSI,NEWDEFN=(YES,ECHO)
*
ATTACHED PCCU DUMPDS=DUMPX25,SUBAREA=16
*
BAKBUILD BUILD NPA=YES,                                              *
               VERSION=V5R3,                                         *
               LOADLIB=LNCP10,                                       *
               TYPGEN=NCP,                                           *
               MODEL=3745,                                           *
               NETID=FRIBM412,                                       *
               MAXSUBA=63,                                           *
               SUBAREA=46,                                           *
               BFRS=124,                                             *
               USGTIER=5,                                            *
               LTRACE=8,                                             *
               OLT=YES,                                              *
               DR3270=NO,                                            *
               BRANCH=8000,                                          *
               TRACE=(YES,100),                                      *
               NEWNAME=PT3346Z,                                      *
               X25.PREFIX=Z,       *                                 *
               TYPSYS=OS,          *     X25 PART                    *
               X25.SNAP=YES,       *                                 *
               X25.USGTIER=5,      *                                 *
               X25.MCHCNT=4,       *                                 *
               X25.MWINDOW=1,      *                                 *
               X25.IDNUMH=2,       * X25.IDNUMH MUST MATCH WITH SWITCH*
               X25.MAXPIU=64K,     *                                 *
               X25.PAHINDX=2       * MAX NUMBER OF PAD PARAMETERS
*
*        PAD - PARAMETERS
*
PAD1     X25.PAD INDEX=1,PADPARM=0715080001000400
PAD2     X25.PAD INDEX=2,PADPARM=0701080001000400
*
*        USER TRANSLATE
*
*
*       NDF SAMPLE STATEMENTS FOR PAD USER TRANSLATE TABLES
*
TRANS1   X25.TRAN USER=1,                                            *
               DCIN0=00010203372D2E2F1605250B0C0D0E0F,               *
               DCIN1=101112133C5A322618193F271C1D1E1F,               *
               DCIN2=404F7F7B5B6C507D4D5D5C4E6B604B61,               *
               DCIN3=F0F1F2F3F4F5F6F7F8F97A5E4C7E6E6F,               *
               DCIN4=43C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6,               *
               DCIN5=D7D8D9E2E3E4E5E6E7E8E9AD51BD5F6D,               *
               DCIN6=79818283848586878889919293949596,               *
               DCIN7=979899A2A3A4A5A6A7A8A98BBA9BA107,               *
               DCIN8=80DCC083DA7C86E08FC9D08B568D8E8F,               *
               DCIN9=909192FBFB95969798999A9B9C9D9E9F,               *
               DCINA=A0A1A2A3A4A5A6A7A8A9AA64ACADAEAF,               *
               DCINB=B0B1B2FAECB5B6B7B8B9BABBBCBDBEBC,               *
               DCINC=ABCBCCEBBF8FC6C7ABC9CACBCCCDCECF,               *
               DCIND=D0D1D2D3D4D5D6D7D8BBACDBDCDDDEDF,               *
               DCINE=E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF,               *
               DCINF=F0F1F2F3F4F5F6F7B0F9FAFBFCFDFEFF,               *
               DCOT0=000102033A093A7F3A3A3A0B0C0D0E0F,               *
```

```
                  DCOT1=101112133A0A087F18193A3A1C1D1E1F,                 *
                  DCOT2=3A3A3A3A3A0A171B3A3A3A3A3A050607,                 *
                  DCOT3=3A3A163A3A3A3A043A3A3A3A14153A1A,                 *
                  DCOT4=203A3A403A3A3A3A3A3A5B2E3C282B21,                 *
                  DCOT5=265C3A3A3A3A8C3A3A3A15242A293B5E,                 *
                  DCOT6=2D2F3A3AAB3A3A3A3A3A7C2C255F3E3F,                 *
                  DCOT7=3A3A3A3A3A3A3A3A3A603A2385273D22,                 *
                  DCOT8=3A6162636465666768693A7B3A3A3AC5,                 *
                  DCOT9=3A6A6B6C6D6E6F7071723A7D3A3A3A3A,                 *
                  DCOTA=3A7E737475767778797A3AC0DA5B3A3A,                 *
                  DCOTB=F83A3A3A3A3A3A3A3A3A3AD9BF5D3AC4,                 *
                  DCOTC=8241424344454647484 93AC1C23A3A3A,                 *
                  DCOTD=8A4A4B4C4D4E4F505152843A813A3AFF,                 *
                  DCOTE=873A535455565758595A3AC3B43A3A3A,                 *
                  DCOTF=303132333435363738 39B393883A3A3A
*                        0 1 2 3 4 5 6 7 8 9 A B C D E F
*
BAKSYSC  SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,RIMM,NAKLIM*
                  ,SESSION,SSPAUSE,XMTLMT)
*
ATTACHED HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,      *
                  DELAY=0.1,STATMOD=YES,TIMEOUT=30
*
PATH45   PATH DESTSA=(45),ER1=(45,2),ER2=(45,3)
PATH16   PATH DESTSA=(16),ER0=(16,1),ER1=(16,1),ER2=(16,1)
*        LUPOOL NUMBER=5
         LUDRPOOL NUMTYP1=10,NUMTYP2=10
******************************************************
ZDLC4    GROUP LNCTL=SDLC,                                             *
                  TYPE=NCP,                                            *
                  DIAL=YES,                                            *
                  REPLYTO=20
**************************************
ZL4      LINE ADDRESS=4,             SDLC LINE FOR NIA FRONTAL         *
                  CLOCKNG=EXT,                                         *
                  NEWSYNC=NO,                                          *
                  DUPLEX=HALF,                                         *
                  NRZI=NO,                                             *
                  CALL=INOUT,                                          *
                  RETRIES=(7,0,0)
ZP4      PU ISTATUS=INACTIVE,                                          *
                  PUTYPE=2
******************************************************
ZDLC5    GROUP LNCTL=SDLC,                                             *
                  TYPE=NCP,                                            *
                  DIAL=NC,                                             *
                  REPLYTO=3,                                           *
                  DISCNT=NO,                                           *
                  ISTATUS=INACTIVE
**************************************
ZL5      LINE ADDRESS=5,             LEASED SDLC MULTIPOINT LINE       *
                  CLOCKNG=EXT,                                         *
                  NEWSYNC=NO,                                          *
                  DUPLEX=HALF,                                         *
                  NRZI=NO,NPACOLL=YES,                                 *
                  RETRIES=(3)
         SERVICE ORDER=(ZP5)
ZP5      PU ADDR=C2,                 ADDRESS 3274                      *
                  MAXDATA=261,                                         *
                  MAXOUT=3,                                            *
```

```
               PUTYPE=2,NPACOLL=YES,                                        *
               VPACING=2,                                                   *
               PACING=1
ZU5      LU LOCADDR=2,MODETAB=MODTD3,USSTAB=USSTD3,NPACOLL=YES
************************************************************
GRNPZ    GROUP LNCTL=SDLC,                                                  *
               TYPE=NCP,                                                    *
               DIAL=NO,                                                     *
               DISCNT=NO,                                                   *
               VIRTUAL=YES,                                                 *
               NPARSC=YES,                                                  *
               ISTATUS=INACTIVE
LNNPZ    LINE LINEFVT=NPAVFVT
PUNPZ    PU PUTYPE=2,PUFVT=NPAPFVT
LUNPZ    LU MAXCOLL=7,LUFVT=(NPALFVT,NPALFVT),                              *
               VPACING=0,LOCADDR=1
**************************************
***** INSERT HERE BELOW X25 STAGE1 OUTPUT
*
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES,                                *
               INACTO=120,  CLEAR SVC AFTER 120 SECONDS  IF NO TRAFIC       *
               RESETINO=(XX26,80XX),  FOR ALL RESET WITH DIAG CODE 26       *
               DONE=YES
**                                     AND ALL RESET WITH CAUSE CODE 80
**
         X25.VCCPT INDEX=1,                                                 *
               MAXPKTL=128,                                                 *
               VWINDOW=3,                                                   *
               INSLOW=(50,12)
*
         X25.VCCPT INDEX=2,                                                 *
               MAXPKTL=128,                                                 *
               VWINDOW=2,                                                   *
               INSLOW=(100,50)
*
         X25.VCCPT INDEX=3,                                                 *
               MAXPKTL=128,                                                 *
               VWINDOW=3,                                                   *
               INSLOW=(100,50)
*
         X25.OUFT INDEX=1
*
         X25.OUFT INDEX=2,                                                  *
               OPTFACL=420707430202
*
         X25.OUFT INDEX=3,                                                  *
               OPTFACL=03690102420707430303,     *REVERSE CHARGING          *
               USRFILD=1234567890
*
***********************************************************************
*
****     FIRST   MCH  ZL64(GATE) ************************
***
         X25.MCH ADDRESS=64,                                                *
               ANS=CONT,NCPGRP=GRZ1,                                        *
               LCGDEF=(0,2),                                                *
               FRMLGTH=131,                                                 *
               MWINDOW=7,                                                   *
               STATION=DTE,     *XPAC1                                      *
               TPTIMER=2,                                                   *
```

```
              TDTIMER=3,                                                *
              NPRETRY=3,                                                *
              NDRETRY=3,                                                *
              LCN0=USED,       *FOR TRANSPAC                            *
              XMONLNK=YES,                                              *
              PAD=INTEG,TRAN=USER1,     *8 BITS TRANSLATE TABLE 1       *
              PADINDX=1,                * FOR PAD PARAMETER SELECTION   *
              GATE=GENERAL,                                             *
              LLCLIST=(LLC0,LLC4,LLC5),                                 *
              SPAN=X2501,                                               *
              T1TIMER=1,                                                *
              IDBLKC=064,       *PCNE                                   *
              IDBLKP=063,       *PAD                                    *
              IDBLKG=062,       *GATE                                   *
              MBITCHN=NO,                                               *
              DBIT=NO
*********
         X25.LCG LCGN=0
*****************BNN PCNE*******************
         X25.VC LCN=0,VCCINDX=3,TYPE=P,LLC=LLC0,MAXDATA=2000,           *
              SPAN=X2501,VPACING=20
***
***
*** 2 SVC,S  DEFAULT IDNUM
***
         X25.VC LCN=(1,2),VCCINDX=2,TYPE=S,CALL=INOUT,OUFINDX=2,        *
              SPAN=X2501
*
*
***********************************************************************
*
****  SECOND    MCH  (GATE) ZL65  **********************
*                      1 SVC FOR SECONDARY CASUAL CONNECTION
*                      1 PVC FOR SECONDARY CASUAL CONNECTION
*                      1 PVC FOR PRIMARY  CASUAL CONNECTION
***
         X25.MCH ADDRESS=65,                                            *
              ANS=CONT,NCPGRP=GRZ2,                                     *
              LCGDEF=(0,5),                                             *
              FRMLGTH=131,                                              *
              STATION=DTE,       *XPAC3                                 *
              TPTIMER=3.1,                                              *
              TDTIMER=2,                                                *
              NPRETRY=7,                                                *
              NDRETRY=1,                                                *
              LLCLIST=(LLC2,LLC3),                                      *
              CCXDELAY=5, * INITIAL TRANSMISSION DELAY CASUAL CONNECT *
              ROLE=PRI, *LOCAL PERIPHERAL PU 2.1 ASSUMES PRIMARY ROLE *
              LSPRI=YES,  ALLOWS TRAFIC PRIORITY FOR LLC2 AND BNN LLC3*
              LCN0=USED,                                                *
              GATE=GENERAL,      *FOR A PVC                             *
              CUD0=(ALL),                                               *
              INTFAC=YES,                                               *
              MWINDOW=7,                                                *
              T1TIMER=1,                                                *
              MBITCHN=NO
***
         X25.LCG LCGN=0
***
*             *** PVC 0 FOR PU2.1 ON BNN QLLC     ***
```

```
*                       CASUAL CONNECTION (PRIMARY)
*
         X25.LINE LCN=0,           *                                      *
               VCCINDX=3,          *                                      *
               LLC=LLC3,           * DSTNODE=BNN DEFAULTED                *
               SPAN=X2501,         *                                      *
               TYPE=P              *
*
         X25.PU PUTYPE=2,          *                                      *
               ADDR=01,            *                                      *
               VPACING=2,          *                                      *
               XID=YES,            * LEN                                  *
               DATMODE=HALF,       *                                      *
               PACING=1,           *                                      *
               SPAN=X2501,         *                                      *
               ISTATUS=INACTIVE,   *                                      *
               ANS=CONT            *
*
SLUSEC26 X25.LU LOCADDR=0          *  FOR INDEPENDANT LU
*
****      3 SVC'S                 *************************
***
         X25.VC LCN=(1,3),                                                *
               VCCINDX=3,                                                 *
               OUFINDX=1,                                                 *
               CALL=INOUT,                                                *
               ID=06344444,        * ANNONYMOUS CALLER (CANNED XID)       *
               TYPE=SWITCHED
*
*
*              *** PVC 3 FOR CASUAL CONNECTION  (SECONDARY)
*
         X25.LINE LCN=4,           *                                      *
               VCCINDX=3,          *                                      *
               LLC=LLC3,           * QLLC                                 *
               SPAN=X2501,         *                                      *
               MODE=SEC,           * CCX SECONDARY DEFINITION             *
               TADDR=C1,           * CCX SECONDARY DEFINITION             *
               TYPE=P              *
*
         X25.PU PUTYPE=2,          *                                      *
               VPACING=2,          *                                      *
               MODETAB=LSPRITAB,   * VTAM USER DEFINED TABLE              *
               XID=YES,            * LEN SUPPORT                          *
               DATMODE=HALF,       *                                      *
               PACING=1,           *                                      *
               SPAN=X2501,         *                                      *
               ISTATUS=INACTIVE,   *                                      *
               ANS=CONT            *
*
PLUPRI15 X25.LU LOCADDR=0,         * INDEPENDANT LU                       *
               DLOGMOD=LSPRI62B,   * VTAM USER DEFINED TABLE              *
               ISTATUS=ACTIVE      *
*
***
         X25.VC LCN=5,                                                    *
               VCCINDX=3,                                                 *
               LLC=LLC4,                                                  *
               MAXDATA=2000,                                              *
               VPACING=20,                                                *
```

```
             TYPE=P
***
*
**********************************************************************
* THIRD  MCH   FOR INN  (REMOTE LOADING) ZL66
** RELATED WITH THE GEN NAMED NCPREM LOADED FROM DISK INTO REMOTE CCU
**********************************************************************
         X25.MCH ADDRESS=66,          *CONTROLLER LINE ADDR          *
               ANS=CONT,                                             *
               LCGDEF=(0,1),          *MAX LCN IS 7 ON LCGN 0        *
               FRMLGTH=131,                                          *
               MWINDOW=7,             *LAP WINDOW                    *
               STATION=DTE,                                          *
               TPTIMER=3,             *LAPB RECOVERY PARAMETERS      *
               TDTIMER=1,             *                              *
               NPRETRY=7,             *                              *
               NDRETRY=1,             *                              *
               LLCLIST=(LLC3),                                       *
               LCN0=USED,                                            *
               DBIT=NO,               *NO DBIT SUPPORT ON THIS MCH   *
               ITRACE=YES,            * LAP INTERNAL TRACE ACTIVE    *
               SPEED=9600,            *REAL MCH SPEED                *
               T1TIMER=1,             *REAL T1 OF THE DCE            *
               SVCINN=1,              *NB OF SIMULT.SWINN CONNECT.   *
               SDRTCNT=1,             *NB OF RETRIES                 *
               SHM=NO,                *NO SHM FOR REMOTE             *
               SDRTIME=10             *TIMER BETWEEN RETRIES
*
         X25.LCG LCGN=0
*
******************** (PVC) ***********************************
*
         X25.LINE LCN=0,VCCINDX=3,LLC=LLC3,TYPE=P,                   *
               DSTNODE=INN
*
         X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE
*
******************** (SVC) ***********************************
*
         X25.LINE DSTNODE=INN,           *MANDATORY FOR INN          *
               TYPE=S
*
         X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.VC LCN=1,VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1
*
**********************************************************************
* FOURTH  MCH FOR GATE X.21 SWITCHED ACCESS    ZL67
*
**********************************************************************
         X25.MCH ADDRESS=67,                                         *
               ANS=CONT,                                             *
               LCGDEF=(0,1),                                         *
               FRMLGTH=131,                                          *
               MWINDOW=5,       LAP WINDOW                           *
               STATION=DTE,                                          *
               TPTIMER=3,                                            *
               TDTIMER=2,                                            *
               NPRETRY=10,                                           *
               NDRETRY=2,                                            *
```

```
                LCN0=NOTUSED,                                                *
                GATE=GENERAL,                                                *
                SPAN=X2501,                                                  *
                LLCLIST=(LLC4),                                              *
                X21SW=YES,       *X21 SWITCH ACCESS TO ISDN NETWORK          *
                X21NTWK=1984,                                                *
                X21RTYTO=4.0,    *X21 CALL OUT RETRY TIME                    *
                X21RTYCT=5,      *X21 CALL OUT RETRY COUNT                   *
                X21INACT=40,                                                 *
                SPEED=64000    SPECIFIED TO SELECT LIC4B
*
         X25.LCG LCGN=0
*
**       1 SVC'S         *********************
*
         X25.VC LCN=1,                                                       *
                VCCINDX=3,                                                   *
                OUFINDX=1,                                                   *
                CALL=INOUT,                                                  *
                TYPE=SWITCHED
*
*********************************************************************
*
*
         X25.END
* GENERATED BY X25NPSI
Z25P64A  GROUP DIAL=NO,                                                      *
                LEVEL2=BALNAVL2,                                             *
                LEVEL3=BALNAVL3,                                             *
                LEVEL5=NCP,                                                  *
                LINEADD=NONE,                                                *
                COMPTAD=NO,                                                  *
                COMPOWN=YES,                                                 *
                COMPSWP=NO,                                                  *
                COMPACB=NO,                                                  *
                LNCTL=SDLC,                                                  *
                NPACOLL=NO,                                                  *
                TIMER=(BALNATER,,BALNATST,BALNATLS),                         *
                TYPE=NCP,                                                    *
                USERID=(5688035,BALPBDT,NORECMS),                            *
                XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL64000  LINE IPL=NO,                                                        *
                SPAN=X2501,                                                  *
                UACB=XA64000
* GENERATED BY X25NPSI
ZC64000  SERVICE
* GENERATED BY X25NPSI
ZP64000  PU ADDR=01,                                                         *
                PUDR=NO,                                                     *
                PUTYPE=1,                                                    *
                XID=NO,                                                      *
                SPAN=X2501,                                                  *
                MAXDATA=2000
* GENERATED BY X25NPSI
ZU64000  LU LOCADDR=0,                                                       *
                SPAN=X2501,                                                  *
                VPACING=20,                                                  *
                PACING=1,                                                    *
```

```
               LUDR=NO
* GENERATED BY X25NPSI
Z25P65A  GROUP DIAL=NO,                                                *
               LSPRI=YES,                                              *
               LEVEL2=BALNAVL2,                                        *
               LEVEL3=BALNAVL3,                                        *
               LEVEL5=NCP,                                             *
               LINEADD=NONE,                                           *
               COMPTAD=NO,                                             *
               COMPOWN=YES,                                            *
               COMPSWP=NO,                                             *
               COMPACB=NO,                                             *
               LNCTL=SDLC,                                             *
               NPACOLL=NO,                                             *
               TIMER=(BALNATER,,BALNATST,BALNATLS),                    *
               TYPE=NCP,                                               *
               USERID=(5688035,BALPBDT,NORECMS),                       *
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65000  LINE SPAN=X2501,                                              *
               UACB=XA65000
* GENERATED BY X25NPSI
ZC65000  SERVICE
* GENERATED BY X25NPSI
ZP65000  PU ADDR=01,                                                   *
               ANS=CONT,                                               *
               DATMODE=HALF,                                           *
               PACING=1,                                               *
               ISTATUS=INACTIVE,                                       *
               SPAN=X2501,                                             *
               VPACING=2,                                              *
               PUTYPE=2,                                               *
               XID=YES,                                                *
               PUDR=NO
* GENERATED BY X25NPSI
SLUSEC26 LU LOCADDR=0,                                                 *
               LUDR=NO
* GENERATED BY X25NPSI
Z25P65C  GROUP DIAL=NO,                                                *
               LSPRI=YES,                                              *
               MODE=SEC,                                               *
               LEVEL2=BALNAVL2,                                        *
               LEVEL3=BALNAVL3,                                        *
               LEVEL5=NCP,                                             *
               LINEADD=NONE,                                           *
               COMPTAD=NO,                                             *
               COMPOWN=YES,                                            *
               COMPSWP=NO,                                             *
               COMPACB=NO,                                             *
               LNCTL=SDLC,                                             *
               NPACOLL=NO,                                             *
               TIMER=(BALNATER,,BALNATST,BALNATLS),                    *
               TYPE=NCP,                                               *
               USERID=(5688035,BALPBDT,NORECMS),                       *
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65004  LINE SPAN=X2501,                                              *
               TADDR=C1,                                               *
               UACB=XA65004
* GENERATED BY X25NPSI
```

```
ZC65004  SERVICE
* GENERATED BY X25NPSI
ZP65004  PU ANS=CONT,                                                  *
               DATMODE=HALF,                                           *
               PACING=1,                                               *
               ISTATUS=INACTIVE,                                       *
               MODETAB=LSPRITAB,                                       *
               SPAN=X2501,                                             *
               VPACING=2,                                              *
               PUTYPE=2,                                               *
               XID=YES,                                                *
               PUDR=NO
* GENERATED BY X25NPSI
PLUPRI15 LU LOCADDR=0,                                                 *
               DLOGMOD=LSPRI62B,                                       *
               ISTATUS=ACTIVE,                                         *
               LUDR=NO
* GENERATED BY X25NPSI
Z25P65D  GROUP DIAL=NO,                                                *
               LEVEL2=BALNAVL2,                                        *
               LEVEL3=BALNAVL3,                                        *
               LEVEL5=NCP,                                             *
               LINEADD=NONE,                                           *
               COMPTAD=NO,                                             *
               COMPOWN=YES,                                            *
               COMPSWP=NO,                                             *
               COMPACB=NO,                                             *
               LNCTL=SDLC,                                             *
               NPACOLL=NO,                                             *
               TIMER=(BALNATER,,BALNATST,BALNATLS),                    *
               TYPE=NCP,                                               *
               USERID=(5688035,BALPBDT,NORECMS),                       *
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65005  LINE IPL=NO,                                                  *
               UACB=XA65005
* GENERATED BY X25NPSI
ZC65005  SERVICE
* GENERATED BY X25NPSI
ZP65005  PU ADDR=01,                                                   *
               PUDR=NO,                                                *
               PUTYPE=1,                                               *
               XID=NO,                                                 *
               MAXDATA=2000
* GENERATED BY X25NPSI
ZU65005  LU LOCADDR=0,                                                 *
               VPACING=20,                                             *
               PACING=1,                                               *
               LUDR=NO
* GENERATED BY X25NPSI
Z25P66A  GROUP DIAL=NO,                                                *
               LEVEL2=BALNAVL2,                                        *
               LEVEL3=BALNAVL3,                                        *
               LEVEL5=NCP,                                             *
               LINEADD=NONE,                                           *
               COMPTAD=NO,                                             *
               COMPOWN=YES,                                            *
               COMPSWP=NO,                                             *
               COMPACB=NO,                                             *
               LNCTL=SDLC,                                             *
```

```
                 NPACOLL=NO,                                          *
                 TIMER=(BALNATER,,BALNATST,BALNATLS),                 *
                 TYPE=NCP,                                            *
                 USERID=(5688035,BALPBDT,NORECMS),                    *
                 XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL66000  LINE UACB=XA66000
* GENERATED BY X25NPSI
ZC66000  SERVICE
* GENERATED BY X25NPSI
ZP66000  PU ANS=CONT,                                                 *
                 TGN=2,                                               *
                 ISTATUS=INACTIVE,                                    *
                 PUTYPE=4,                                            *
                 PUDR=NO
* GENERATED BY X25NPSI
Z25S67A  GROUP DIAL=YES,                                              *
                 LEVEL2=BALNAVL2,                                     *
                 LEVEL3=BALNAVL3,                                     *
                 LEVEL5=NCP,                                          *
                 LINEADD=NONE,                                        *
                 COMPTAD=NO,                                          *
                 COMPOWN=YES,                                         *
                 COMPSWP=NO,                                          *
                 COMPACB=NO,                                          *
                 LINEAUT=YES,                                         *
                 LNCTL=SDLC,                                          *
                 NPACOLL=NO,                                          *
                 TIMER=(BALNATER,,BALNATST,BALNATLS),                 *
                 TYPE=NCP,                                            *
                 USERID=(5688035,BALSBDT,NORECMS),                    *
                 XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL67001  LINE CALL=INOUT,                                             *
                 UACB=XA67001
* GENERATED BY X25NPSI
ZP67001  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
Z25S66B  GROUP DIAL=YES,                                              *
                 LEVEL2=BALNAVL2,                                     *
                 LEVEL3=BALNAVL3,                                     *
                 LEVEL5=NCP,                                          *
                 LINEADD=NONE,                                        *
                 COMPTAD=NO,                                          *
                 COMPOWN=YES,                                         *
                 COMPSWP=NO,                                          *
                 COMPACB=NO,                                          *
                 LNCTL=SDLC,                                          *
                 NPACOLL=NO,                                          *
                 TIMER=(BALNATER,,BALNATST,BALNATLS),                 *
                 TYPE=NCP,                                            *
                 USERID=(5688035,BALIBDT,NORECMS),                    *
                 PUTYPE=4,                                            *
                 SHM=NO,                                              *
                 ACTIVTO=0.0,                                         *
                 BRKCON=NONE,                                         *
                 XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL66GGH  LINE CALL=INOUT,                                             *
```

```
                UACB=XA66GGH
* GENERATED BY X25NPSI
ZP66GGH  PU ISTATUS=INACTIVE,                                          *
                PUTYPE=4
* GENERATED BY X25NPSI
Z25S65B  GROUP DIAL=YES,                                               *
                LSPRI=YES,                                             *
                LEVEL2=BALNAVL2,                                       *
                LEVEL3=BALNAVL3,                                       *
                LEVEL5=NCP,                                            *
                LINEADD=NONE,                                          *
                COMPTAD=NO,                                            *
                COMPOWN=YES,                                           *
                COMPSWP=NO,                                            *
                COMPACB=NO,                                            *
                LINEAUT=YES,                                           *
                LNCTL=SDLC,                                            *
                NPACOLL=NO,                                            *
                TIMER=(BALNATER,,BALNATST,BALNATLS),                   *
                TYPE=NCP,                                              *
                USERID=(5688035,BALSBDT,NORECMS),                      *
                XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL65003  LINE CALL=INOUT,                                              *
                ROLE=PRI,                                              *
                ID=06344448,                                           *
                UACB=XA65003
* GENERATED BY X25NPSI
ZP65003  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
ZL65002  LINE CALL=INOUT,                                              *
                ROLE=PRI,                                              *
                ID=06344446,                                           *
                UACB=XA65002
* GENERATED BY X25NPSI
ZP65002  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
ZL65001  LINE CALL=INOUT,                                              *
                ROLE=PRI,                                              *
                ID=06344444,                                           *
                UACB=XA65001
* GENERATED BY X25NPSI
ZP65001  PU PUTYPE=(1,2)
* GENERATED BY X25NPSI
Z25S64B  GROUP DIAL=YES,                                               *
                LEVEL2=BALNAVL2,                                       *
                LEVEL3=BALNAVL3,                                       *
                LEVEL5=NCP,                                            *
                LINEADD=NONE,                                          *
                COMPTAD=NO,                                            *
                COMPOWN=YES,                                           *
                COMPSWP=NO,                                            *
                COMPACB=NO,                                            *
                LINEAUT=YES,                                           *
                LNCTL=SDLC,                                            *
                NPACOLL=NO,                                            *
                TIMER=(BALNATER,,BALNATST,BALNATLS),                   *
                TYPE=NCP,                                              *
                USERID=(5688035,BALSBDT,NORECMS),                      *
```

```
              XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
ZL64002  LINE CALL=INOUT,                                               *
              SPAN=X2501,                                               *
              UACB=XA64002
* GENERATED BY X25NPSI
ZP64002  PU SPAN=X2501,                                                 *
              PUTYPE=(1,2)
* GENERATED BY X25NPSI
ZL64001  LINE CALL=INOUT,                                               *
              SPAN=X2501,                                               *
              UACB=XA64001
* GENERATED BY X25NPSI
ZP64001  PU SPAN=X2501,                                                 *
              PUTYPE=(1,2)
* GENERATED BY X25NPSI
GRZ1     GROUP DIAL=NO,                                                 *
              BERPROC=BALNMBER,                                         *
              COMPACB=YES,                                              *
              COMPTAD=YES,                                              *
              COMPOWN=YES,                                              *
              COMPSWP=YES,                                              *
              LEVEL2=BALNAML2,                                          *
              LEVEL3=BALNAML3,                                          *
              LEVEL5=NCP,                                               *
              LNCTL=SDLC,                                               *
              NPACOLL=NO,                                               *
              TIMER=(BALLAP4,,BALLAP4,BALLAP4),                         *
              TYPE=NCP,                                                 *
              USERID=(5688035,BALMBDT,NORECMS,P),                       *
              XIO=(BALNAMXL,BALNAMXS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
ZL64     LINE ADDRESS=(64,FULL),                                        *
              SPAN=X2501,                                               *
              XMONLNK=YES,                                              *
              UACB=(X25A64X,X25A64R)
* GENERATED BY X25NPSI
ZC64     SERVICE
* GENERATED BY X25NPSI
ZP64     PU ADDR=01,                                                    *
              ANS=CONT,                                                 *
              SPAN=X2501,                                               *
              MAXDATA=261,                                              *
              PUDR=NO,                                                  *
              XID=NO,                                                   *
              PUTYPE=1
* GENERATED BY X25NPSI
ZU64     LU LOCADDR=0,                                                  *
              SPAN=X2501,                                               *
              VPACING=(2,1),                                            *
              ISTATUS=ACTIVE
* GENERATED BY X25NPSI
GRZ2     GROUP DIAL=NO,                                                 *
              BERPROC=BALNMBER,                                         *
              COMPACB=YES,                                              *
              COMPTAD=YES,                                              *
              COMPOWN=YES,                                              *
              COMPSWP=YES,                                              *
              LEVEL2=BALNAML2,                                          *
              LEVEL3=BALNAML3,                                          *
```

```
                 LEVEL5=NCP,                                             *
                 LNCTL=SDLC,                                             *
                 NPACOLL=NO,                                             *
                 TIMER=(BALLAP4,,BALLAP4,BALLAP4),                       *
                 TYPE=NCP,                                               *
                 USERID=(5688035,BALNBDT,NORECMS,P),                     *
                 XIO=(BALNAMXL,BALNAMXS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
ZL65     LINE ADDRESS=(65,FULL),                                         *
                 XMONLNK=NO,                                             *
                 UACB=(X25A65X,X25A65R)
* GENERATED BY X25NPSI
ZC65     SERVICE
* GENERATED BY X25NPSI
ZP65     PU ADDR=01,                                                     *
                 ANS=CONT,                                               *
                 MAXDATA=261,                                            *
                 PUDR=NO,                                                *
                 XID=NO,                                                 *
                 PUTYPE=1
* GENERATED BY X25NPSI
ZU65     LU LOCADDR=0,                                                   *
                 VPACING=(2,1),                                          *
                 ISTATUS=ACTIVE
* GENERATED BY X25NPSI
ZU65L1   LU LOCADDR=1,                                                   *
                 VPACING=(2,1),                                          *
                 ISTATUS=ACTIVE
* GENERATED BY X25NPSI
ZL66     LINE ADDRESS=(66,FULL),                                         *
                 XMONLNK=NO,                                             *
                 UACB=(X25A66X,X25A66R)
* GENERATED BY X25NPSI
ZC66     SERVICE
* GENERATED BY X25NPSI
ZP66     PU ADDR=01,                                                     *
                 ANS=CONT,                                               *
                 MAXDATA=261,                                            *
                 PUDR=NO,                                                *
                 XID=NO,                                                 *
                 PUTYPE=1
* GENERATED BY X25NPSI
ZU66     LU LOCADDR=0,                                                   *
                 VPACING=(2,1),                                          *
                 ISTATUS=INACTIVE
* GENERATED BY X25NPSI
ZL67     LINE ADDRESS=(67,FULL),                                         *
                 SPAN=X2501,                                             *
                 SPEED=55855,                                            *
                 XMONLNK=NO,                                             *
                 UACB=(X25A67X,X25A67R)
* GENERATED BY X25NPSI
ZC67     SERVICE
* GENERATED BY X25NPSI
ZP67     PU ADDR=01,                                                     *
                 ANS=CONT,                                               *
                 SPAN=X2501,                                             *
                 MAXDATA=261,                                            *
                 PUDR=NO,                                                *
                 XID=NO,                                                 *
```

```
              PUTYPE=1
* GENERATED BY X25NPSI
ZU67     LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=ACTIVE
*
************************************************************
CZGROUP  GROUP LNCTL=CA,                                              *
              CA=TYPE6,                                               *
              DELAY=0.0,                                              *
              NCPCA=ACTIVE
CZLINE5  LINE ADDRESS=00
CZ5PU    PU PUTYPE=5
CZLINE1  LINE ADDRESS=08
CZ1PU    PU PUTYPE=5
**************************************
         GENEND INIT=BALINIMD,                                        *
              TMRTICK=BALTICK,                                        *
              UGLOBAL=BALNMGOP
****************************************************************
```

Switched Major Node - Example C2

```
//* THIS JCL UPDATE THE SYS1.VTAMLST (MVS6)
//* GET THE FILE TO BE UPDATED UNDER THE ./ ADD CHANGE ITS NAME.
//UPD EXEC PGM=IEBUPDTE,PARM=NEW
//SYSPRINT DD SYSOUT=A
//SYSUT2   DD DISP=SHR,DSN=SYS1.VTAMLST,VOL=SER=MVSVM3,UNIT=3350
//SYSIN DD DATA
// ADD NAME=PT3346MN    MEMBER NAME
**********************************************************************
* SWITCHED MAJOR NODE TO BE USED IN CORRELATION WITH PT3346Z GEN
**********************************************************************
**
PT3346MN VBUILD MAXGRP=20,                                              *
               MAXNO=20,                                                *
               TYPE=SWNET
**
*
*
******************************************************************
*                                                                *
*    ENTRIES  FOR GATE                                           *
* FOR GATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED  *
*                                                                *
* TO USE WITH GEN:PT3346Z, MCH:ZL64-ZP64-ZU64                   *
* SVC:ZL64001 DEFAULT IDNUM:06220006  (CALLIN GATEN <<<<<I       *
* SVC:ZL64002 DEFAULT IDNUM:06220008  (CALLOUT GATEN-----I       *
*                                                                *
******************************************************************
*
GATEPI   PU    ADDR=01,        GATE INCALL                              *
               IDBLK=062,      1ST GATE VC    (INCOMING  CALL)          *
               IDNUM=20006,    3TH SVC FROM LAST SVC (3*2)= 6           *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED                 *
               PACING=1,       PACING=1 IS REQUIRED                     *
               VPACING=2,                                               *
               ANS=CONT,       FOR SW SESSION CONTINUATION              *
               PUTYPE=1,                                                *
               SSCPFM=USSSCS
GATELI   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
*
**
GATEPO   PU    ADDR=01,        2ND GATE VC USED(CALL OUT WITHOUT PATH) *
               IDBLK=062,                                               *
               IDNUM=20008,    4TH SVC FROM LAST (4*2)=8                *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=2000,   SEGMENTING NOT SUPPORTED                 *
               PACING=1,       PACING=1 IS REQUIRED                     *
               VPACING=2,                                               *
               ANS=CONT,       FOR SW SESSION CONTINUATION              *
               PUTYPE=1,                                                *
               SSCPFM=USSSCS
GATELO   LU    LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES

******************************************************************
*                                                                *
*    ENTRIES  FOR X21 GATE                                       *
* FOR GATE, CALLIN IS ALWAYS SIMULATED TO VTAM. PATH NOT NEEDED  *
* SVC:ZL67001 DEFAULT IDNUM:00320002                             *
```

```
*                                                                  *
********************************************************************
*
**
*
BATEPO   PU    ADDR=01,         2ND GATE VC USED(IN OR OUT CALL)       *
               IDBLK=003,       DEFAULT VALUE (IDBLKG NOT CODED IN GEN) *
               IDNUM=20002,     1ST SVC FROM LAST SVC (1*2)=2          *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,    SEGMENTING NOT SUPPORTED               *
               PACING=1,        PACING=1 IS REQUIRED                   *
               VPACING=2,                                              *
               ANS=CONT,        FOR SW SESSION CONTINUATION            *
               PUTYPE=1,                                               *
               SSCPFM=USSSCS
BATELO   LU    LOCADDR=0        0 IS REQUIRED FOR NON SNA X25 DEVICES
*
********************************************************************
*                                                                  *
*    ENTRIES  FOR PAD                                              *
*                                                                  *
* SVC:ZL64001 DEFAULT IDNUM:06320002  (CALLIN PAD        )         *
* SVC:ZL64002 DEFAULT IDNUM:06320008  (CALLIN CALLOUT PAD )        *
*                                                                  *
********************************************************************
*
PADIPI   PU    ADDR=01,         PADI INCALL OR 1ST GATE VC USED        *
               IDBLK=063,                  (IN OR OUT CALL)            *
               IDNUM=20008,                                            *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,    SEGMENTING NOT SUPPORTED               *
               PACING=1,        PACING=1 IS REQUIRED                   *
               VPACING=2,                                              *
               MAXPATH=1,                                              *
               ANS=CONT,        FOR SW SESSION CONTINUATION            *
               PUTYPE=1,                                               *
               SSCPFM=USSSCS
PADILI   LU    LOCADDR=0,       0 IS REQUIRED FOR NON SNA X25 DEVICES  *
               SSCPFM=USSNTO,       *LOGON ENDS WITH CRLF              *
               MODETAB=MODRAL,      *MODETAB FOR LU1 3767/TWX          *
               DLOGMOD=SSCICSF,     *FLIPFLOP OR CONTENTION PROT       *
               TERM=TWX,            *MUST BE DEFINED FOR TWX/3101      *
               USSTAB=USSTWX        *SPECIAL USSTAB FOR TWX/3101
*
*
PADIPO   PU    ADDR=01,         PADI INCALL OR 1ST GATE VC USED        *
               IDBLK=063,                  (IN OR OUT CALL)            *
               IDNUM=20006,               NON SNA CALL OUT.            *
               DISCNT=YES,      DISCONTACT/ABCONN ON LAST DACTLU       *
               MAXDATA=2000,    SEGMENTING NOT SUPPORTED               *
               PACING=1,        PACING=1 IS REQUIRED                   *
               VPACING=2,                                              *
               MAXPATH=1,                                              *
               ANS=CONT,        FOR SW SESSION CONTINUATION            *
               PUTYPE=1,                                               *
               SSCPFM=USSSCS
*
PADPATH  PATH  DIALNO=10605023650201*20006, L=5 PAD (MODEM PAD)        *
```

```
              GRPNM=Z25S64B,GID=2,PID=31   Z25S64B=GROUP OF SWITCHED
*
PADILO   LU   LOCADDR=0,          *FOR NON SNA X25 DEVICES            *
              SSCPFM=USSNTO,      *LOGON ENDS WITH CRLF               *
              MODETAB=MODRAL,     *MODETAB FOR LU1 3767/TWX           *
              DLOGMOD=SSCICSF,    *FLIPFLOP OR CONTENTION PROT        *
              TERM=TWX,           *MUST BE DEFINED FOR TWX/3101       *
              USSTAB=USSTWX       *SPECIAL USSTAB FOR TWX/3101
*****************************************************************
* ENTRIES FOR PCNE
* SVC:ZL64001 IDNUM=ZZZZZ OF CUD FIELD                          *
* SVC:ZL64002                                                   *
**********************************************************
*
PCNEPI   PU   ADDR=01,        PCNE TO PCNE INBOUND                    *
              IDBLK=064,                                              *
              IDNUM=22225,    IDNUM=ZZZZZ OF INCOM CALL CUD FIELD     *
              DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *
              MAXOUT=1,       TO LET LOGON MSG IN AFTER ACTLU         *
              MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *
              PACING=1,       PACING=1 IS REQUIRED                    *
              VPACING=2,                                              *
              ANS=CONT,       FOR SW SESSION CONTINUATION             *
              PUTYPE=1,                                               *
              SSCPFM=USSSCS
PCNELI   LU   LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
**
PCNEPO   PU   ADDR=01,        PCNE TO PCNE OUTBOUND                   *
              IDBLK=064,                                              *
              IDNUM=22224,    EQUAL ZZZZZ                             *
              MAXPATH=6,                                              *
              DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *
              MAXDATA=1024,   SEGMENTING NOT SUPPORTED                *
              PACING=1,       PACING=1 IS REQUIRED                    *
              VPACING=2,                                              *
              ANS=CONT,       FOR SW SESSION CONTINUATION             *
              PUTYPE=1,                                               *
              SSCPFM=USSSCS
PCNELO   LU   LOCADDR=0       0 IS REQUIRED FOR NON SNA X25 DEVICES
**                           HEREUNDER FOR MODEM XPAC4
PCNEP1   PATH DIALNO=10604016500201*22224, ZZZZZ+1=CUD FIELD OF CALLRQ*
              GRPNM=Z25S64B,GID=2,PID=20    Z25S64B=GROUP OF SWITCHED
*                             VC'S ON INVOLVED MCH IN GENERATION
************************************************************
*                                                          *
* ENTRY FOR INCOMING AND OUTGOING CALLS FOR BNN PSH AND QLLC*
* WITH CANNED XID. GEN=PT3346Z MCH=65 (ZL65 ZP65)          *
*            ID=0634444                                    *
*                     6                                    *
*                     8                                    *
************************************************************
PSHPO    PU   ADDR=01,                                                *
              IDBLK=063,                                              *
              IDNUM=41264,    IDNUM OF REMOTE PU                      *
              MAXPATH=3,                                              *
              DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU        *
              MAXDATA=265,    SEGMENTING SUPPORTED                    *
              PACING=3,                                               *
              ANS=CONT,       FOR SW SESSION CONTINUATION             *
              VPACING=3,                                              *
```

```
               PUTYPE=2,                                                *
               SSCPFM=USSSCS               OUTGOING CALL FOR PSH
PSHP     PATH  DIALNO=10604016420201,      L=2 FOR PSH       MODEM PTT1*
               GRPNM=Z25S65B,GID=2,PID=31   Z25S65B=GROUP OF SWITCHED
*                           VC'S ON INVOLVED MCH IN GENERATION PT3346Z
PSHLO    LU    LOCADDR=2,MODETAB=MODTD3
*
PSHPI    PU    ADDR=01,                                                 *
               IDBLK=063,                                               *
               IDNUM=44444,    IDNUM FOR ANONYMOUS CALLING PU           *
               MAXPATH=3,                                               *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=265,    SEGMENTING SUPPORTED                     *
               PACING=3,                                                *
               ANS=CONT,       FOR SW SESSION CONTINUATION              *
               VPACING=3,                                               *
               PUTYPE=2,                                                *
               SSCPFM=USSSCS
PSHLI    LU    LOCADDR=2,MODETAB=MODTD3
*
QBNNPO   PU    ADDR=01,                                                 *
               IDBLK=063,                                               *
               IDNUM=44446,    IDNUM FOR ANONYMOUS CALLING PU           *
               MAXPATH=3,                                               *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=265,    SEGMENTING SUPPORTED                     *
               PACING=3,                                                *
               ANS=CONT,       FOR SW SESSION CONTINUATION              *
               VPACING=3,                                               *
               PUTYPE=2,                                                *
               SSCPFM=USSSCS
QBNNP    PATH  DIALNO=10604016530101,      L=3 FOR BNN QLLC  MODEM PTT2*
               GRPNM=Z25S65B,GID=2,PID=32   Z25S65B=GROUP OF SWITCHED
*                           VC'S ON INVOLVED MCH IN GENERATION PT3346Z
QBNNLO   LU    LOCADDR=2,MODETAB=MODTD3
PSHPI2   PU    ADDR=01,                                                 *
               IDBLK=063,                                               *
               IDNUM=44448,    IDNUM FOR ANONYMOUS CALLING PU           *
               MAXPATH=3,                                               *
               DISCNT=YES,     DISCONTACT/ABCONN ON LAST DACTLU         *
               MAXDATA=265,    SEGMENTING SUPPORTED                     *
               PACING=3,                                                *
               ANS=CONT,       FOR SW SESSION CONTINUATION              *
               VPACING=3,                                               *
               PUTYPE=2,                                                *
               SSCPFM=USSSCS
PSHLI2   LU    LOCADDR=2,MODETAB=MODTD3
***********************************************************************
*                                                                     *
*              ENTRY FOR SWITCHED CASUAL CONNECTION                   *
*                  - IFNYL7P IS A CEN(VTAM/NCP) WORKING AS A NODE T2.1*
***********************************************************************
*
IFNYL7P  PU    ADDR=01,                                                 *
               MAXPATH=1,                                               *
               DISCNT=YES,                                              *
               PACING=1,                                                *
               VPACING=2,                                               *
               PUTYPE=2,                                                *
               ANS=CONT,                                                *
```

```
              ROLE=PRI,   PRIMARY ROLE FORCED DURING ROLE NEGOTIATION *
              MODETAB=LSPRITAB,  VTAM USER DEFINED TABLE              *
              SSCPFM=USSSCS,                                          *
              CPNAME=IFNYL7      ADJACENT LINK STATION SSCP NAME
*                           (REPLACES IDNUM/IDBLK FOR PUT2.1)
**
IFNYL7P1 PATH  DIALNO=10604016930201,  (ALS  MODEM)                   *
              GRPNM=Z25S65B,                                          *
              GID=2,                                                  *
              PID=33
*
SLUSEC26 LU    LOCADDR=0, IDEPENDANT LU DEFINITION (NEEDED FOR CCX)   *
              DLOGMOD=LSPRI62B   VTAM USER DEFINED TABLE
***********************************************************************
*
*  ENTRY FOR REMOTE LOAD
***********************************************************************
*
*
*      VTAM.....NCP SA46---------|  X  |--------NCP SA45
*                                | 25  |
*
*******************************************************************
*                                                                 *
*                                                                 *
*    SWITCHED MAJOR NODE FOR X25  FOR BOTH NCP'S WHICH ARE:       *
*      - SA46 LOCAL                                               *
*      - SA45 REMOTE   (RELATED REMOTE GEN IS REMNCP)             *
*                                                                 *
*******************************************************************
**
**       FOR OUTGOING CALL ISSUED FROM LOCAL TO REMOTE
*
SADREM   PU    PUTYPE=4, * LOADABLE REMOTE PU                         *
               ADDR=01,  * VALUE ANY (OPERAND IGNORED FOR SAD CONN.)  *
               TGN=3,                                                 *
               SUBAREA=45,                                            *
               IDNUM=AAAAA,                                           *
               IDBLK=003,                                             *
               NETID=FRIBM412,                                        *
               ANS=CONT,                                              *
               MAXPATH=1,                                             *
               MAXDATA=1024
*
LOCPTH   PATH  DIALNO=10604016410201,  L=1 FOR INN SWITCHED  MODEM PTT1*
               GRPNM=Z25S66B,PID=34
*
SADLOC   PU    PUTYPE=4, * PU LOADER                                  *
               ADDR=01,  * VALUE ANY (OPERAND IGNORED FOR SAD CONN.)  *
               TGN=3,                                                 *
               SUBAREA=46,                                            *
               IDNUM=AAAAA,                                           *
               IDBLK=003,                                             *
               NETID=FRIBM412,                                        *
               ANS=CONT,                                              *
               MAXPATH=1,                                             *
               MAXDATA=1024
**********************************************************
```

NCP and X.25 NPSI Connection Input - Example C3

```
* EXAMPLE C3
***********************************************************************
* GENERATION NAME: REMNCPG
*
*  MCH 01 (CL1)   PVC0 FOR REMOTE LOAD
*                 SVC1 FOR REMOTE LOAD
*
* REMNCPG IS A MINI NCP RECORDED ON CCU DISK OR DISKETTE
*
*
***********************************************************************
*                        *
         OPTIONS USERGEN=X25NPSI,      *INDICATE NEO NAME              X
               NEWDEFN=(YES,ECHO)      *INCLUDE NPSI STMTS IN VTAMLST
ATTACHED PCCU DUMPDS=DUMPX25,SUBAREA=16,VFYLM=YES
*
BAKBUILD BUILD NPA=YES,                                                X
               VERSION=V5R3,        * NCP VERSION  FOR 3745            X
               PUNAME=MANETREM,     * NCP NAME                         X
               LOADLIB=LNCP10,                                         X
               TYPGEN=NCP,                                             X
               MODEL=3745,                                             X
               USGTIER=4,                                              X
               X25.USGTIER=4,                                          X
               NETID=FRIBM412,      * HOST ID                          X
               MAXSSCP=8,           * MAX SSCP OWNER                   X
               MAXSUBA=63,                                             X
               SUBAREA=45,          * SAD CALLER                       X
               BFRS=124,            * BEST FOR NPSI PERFORMANCE        X
               LTRACE=4,            * ALLOWS LINE TRACE ON TWO MCH'S   X
               OLT=YES,                                                X
               DR3270=NO,                                              X
               BRANCH=8000,                                            X
               TRACE=(YES,100),     * 100 ENTRIES IN ADDRESS TRACE TBL X
               NEWNAME=REMNCPG,     * SAD CALLER                       X
               X25.PREFIX=C,        * ALL NAMES START WITH C           X
               X25.IDNUMH=2,        * X25.IDNUMH MUST MATCH WITH SWITCHX
               TYPSYS=OS,           * MAJOR NODE IDS.(2FIRST DIGITS)   X
               X25.SNAP=YES,        * OPTIONAL DIAGNOSIS SNAP INCLUDED X
               X25.MCHCNT=1,        * NUMBER OF PHYSICAL LINKS         X
               X25.MAXPIU=64K
BAKSYSC SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,            X
               RIMM,NAKLIM,SESSION,SSPAUSE,XMTLMT)
*
SMMFTAB1 SWMMT IDNUM=AAAAA,                                            X
               NETID=FRIBM412,                                         X
               MAXOUT=7
*
MVS6    HOST  INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,      X
               DELAY=0.1,TIMEOUT=30
*
PATH16   PATH   DESTSA=(16),ER0=(16,1),ER1=(46,2),ER2=(46,3)
PATH46   PATH   DESTSA=(46),ER1=(46,2),ER2=(46,3)
*
         LUDRPOOL NUMTYP1=10,       * FOR NON SNA CALLS                X
               NUMTYP2=10           * FOR QLLC OR PSH CALLS
*****************************************************
```

```
         EJECT                        * AT LEAST ONE SDLC LINE
CDLC6    GROUP LNCTL=SDLC,            * MUST BE DEFINED                X
               TYPE=NCP,                                               X
               DIAL=YES,                                               X
               REPLYTO=20
**************************************
CL6      LINE  ADDRESS=6,             *                                X
               CLOCKNG=EXT,           *                                X
               NEWSYNC=NO,                                             X
               DUPLEX=HALF,                                            X
               NRZI=NO,                                                X
               CALL=INOUT,                                             X
               RETRIES=(7,0,0)
CP6       PU   ISTATUS=INACTIVE,                                       X
               PUTYPE=2
******************************************************
CGRNPA   GROUP LNCTL=SDLC,            * FOR NPM RECORDING              X
               TYPE=NCP,                                               X
               DIAL=NO,                                                X
               DISCNT=NO,                                              X
               VIRTUAL=YES,                                            X
               NPARSC=YES,                                             X
               ISTATUS=INACTIVE
CLNNPA   LINE  LINEFVT=NPAVFVT
CPUNPA   PU    PUTYPE=2,PUFVT=NPAPFVT
CLUNPA   LU    MAXCOLL=6,LUFVT=(NPALFVT,NPALFVT),                      X
               VPACING=0,LOCADDR=1
**************************************
         EJECT
***** X25 NPSI INPUT
*     ALLOW 3 VCCPT AND OUFT ENTRIES
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES,RESETINO=NO
*
         X25.VCCPT INDEX=1,                                            X
               MAXPKTL=128,                                            X
               VWINDOW=1,             * PACKET LEVEL WINDOW            X
               INSLOW=(100,50)        * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=2,                                            X
               MAXPKTL=128,                                            X
               VWINDOW=2,                                              X
               INSLOW=(100,50)        * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=3,                                            X
               MAXPKTL=128,                                            X
               VWINDOW=3,                                              X
               INSLOW=(100,50)        * TO PREVENT SLOWDOWN
*
         X25.OUFT  INDEX=1
*
         X25.OUFT  INDEX=2,           * PKT SIZE=128,VWINDOW=2         X
               OPTFACL=420707430202
*
         X25.OUFT  INDEX=3,           * PKT SIZE=128,VWINDOW=3, AND    X
               OPTFACL=03430102420707430303, * REVERSECHARGING REQUEST X
               USRFILD=1234567890
**********************************************************************
*
               EJECT
**********************************************************************
```

```
* FIRST  MCH  CL1: FOR SUBAREA DIAL
***********************************************************************
         X25.MCH ADDRESS=1,            *CONTROLLER LINE ADDR          X
               ANS=CONT,                                              X
               LCGDEF=(0,1),                                          X
               FRMLGTH=131,                                           X
               MWINDOW=7,              *LAP WINDOW                    X
               STATION=DTE,                                           X
               XMONLNK=YES,                                           X
               TPTIMER=3,              *LAPB RECOVERY PARAMETERS      X
               TDTIMER=1,              *                              X
               NPRETRY=7,              *                              X
               NDRETRY=1,              *                              X
               LLCLIST=(LLC3),                                        X
               LCN0=USED,                                             X
               SPAN=X2501,             *FOR NETVIEW                   X
               ITRACE=YES,             * LAP INTERNAL TRACE ACTIVE    X
               SPEED=9600,             *REAL MCH SPEED                X
               T1TIMER=1,              *REAL T1 OF THE DCE            X
               SVCINN=1,               *NB OF SIMULT.SWINN CONNECT.   X
               SDRTCNT=1,              *NB OF RETRIES                 X
               SDRTIME=10              *TIMER BETWEEN RETRIES
*
         X25.LCG LCGN=0
*
********************* (PVC) ************************************
*
CL100    X25.LINE LCN=0,VCCINDX=3,LLC=LLC3,TYPE=P,SPAN=X2501,         X
               DSTNODE=INN,MONLINK=YES,                               X
               IPL=YES
*
CP100    X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE
*
********************* (SVC) ************************************
*
*
CL102    X25.LINE DSTNODE=INN,            *MANDATORY FOR INN          X
               TYPE=S,                                                X
               MONLINK=YES,                                           X
               IPL=YES,                                               X
               SWMMTID=SMMFTAB1           *
*
CP102    X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.VC LCN=(1),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1,        X
               SPAN=X2501
*
               EJECT
****************************************************************
         X25.END
****************************************************************
CHAGRP  GROUP  LNCTL=CA,                                              X
               CA=TYPE6,                                              X
               DELAY=0.0
******************************************************
CHALINE LINE   NCPCA=ACTIVE,                                          X
               ADDRESS=8
**************************************
CHAPU     PU   PUTYPE=5
****************************************************************
```

```
         GENEND
         END
****************************************************************
```

NCP Input Produced by NDF (X.25 NPSI) - Example C3

```
         OPTIONS USERGEN=X25NPSI,      *INDICATE NEO NAME              *
               NEWDEFN=(YES,ECHO)      *INCLUDE NPSI STMTS IN VTAMLST
ATTACHED PCCU DUMPDS=DUMPX25,SUBAREA=16,VFYLM=YES
*
BAKBUILD BUILD NPA=YES,                                                *
               VERSION=V5R3,         * NCP VERSION  FOR 3745           *
               PUNAME=MANETREM,      * NCP NAME                        *
               LOADLIB=LNCP10,                                         *
               TYPGEN=NCP,                                             *
               MODEL=3745,                                             *
               USGTIER=4,                                              *
               X25.USGTIER=4,                                          *
               NETID=FRIBM412,       * HOST ID                         *
               MAXSSCP=8,            * MAX SSCP OWNER                  *
               MAXSUBA=63,                                             *
               SUBAREA=45,           * SAD CALLER                      *
               BFRS=124,             * BEST FOR NPSI PERFORMANCE       *
               LTRACE=4,             * ALLOWS LINE TRACE ON TWO MCH'S  *
               OLT=YES,                                                *
               DR3270=NO,                                              *
               BRANCH=8000,                                            *
               TRACE=(YES,100),      * 100 ENTRIES IN ADDRESS TRACE TBL *
               NEWNAME=REMNCPG,      * SAD CALLER                      *
               X25.PREFIX=C,         * ALL NAMES START WITH C          *
               X25.IDNUMH=2,         * X25.IDNUMH MUST MATCH WITH SWITCH*
               TYPSYS=OS,            * MAJOR NODE IDS.(2FIRST DIGITS)  *
               X25.SNAP=YES,         * OPTIONAL DIAGNOSIS SNAP INCLUDED *
               X25.MCHCNT=1,         * NUMBER OF PHYSICAL LINKS        *
               X25.MAXPIU=64K
BAKSYSC  SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCOND,RECMD,RIMM,NAKLIM*
               ,SESSION,SSPAUSE,XMTLMT)
*
SMMFTAB1 SWMMT IDNUM=AAAAA,                                            *
               NETID=FRIBM412,                                         *
               MAXOUT=7
*
MVS6     HOST INBFRS=7,MAXBFRU=10,UNITSZ=196,BFRPAD=0,SUBAREA=16,      *
               DELAY=0.1,TIMEOUT=30
*
PATH16   PATH DESTSA=(16),ER0=(16,1),ER1=(46,2),ER2=(46,3)
PATH46   PATH DESTSA=(46),ER1=(46,2),ER2=(46,3)
*
         LUDRPOOL NUMTYP1=10,        * FOR NON SNA CALLS               *
               NUMTYP2=10            * FOR QLLC OR PSH CALLS
*****************************************************
CDLC6    GROUP LNCTL=SDLC,           * MUST BE DEFINED                 *
               TYPE=NCP,                                               *
               DIAL=YES,                                               *
               REPLYTO=20
**************************************
CL6      LINE ADDRESS=6,             *                                 *
               CLOCKNG=EXT,          *                                 *
               NEWSYNC=NO,                                             *
               DUPLEX=HALF,                                            *
               NRZI=NO,                                                *
               CALL=INOUT,                                             *
               RETRIES=(7,0,0)
CP6      PU ISTATUS=INACTIVE,                                          *
```

```
              PUTYPE=2
******************************************************
CGRNPA   GROUP LNCTL=SDLC,         * FOR NPM RECORDING              *
              TYPE=NCP,                                             *
              DIAL=NO,                                              *
              DISCNT=NO,                                            *
              VIRTUAL=YES,                                          *
              NPARSC=YES,                                           *
              ISTATUS=INACTIVE
CLNNPA   LINE LINEFVT=NPAVFVT
CPUNPA   PU PUTYPE=2,PUFVT=NPAPFVT
CLUNPA   LU MAXCOLL=6,LUFVT=(NPALFVT,NPALFVT),                      *
              VPACING=0,LOCADDR=1
*************************************
***** X25 NPSI INPUT
*     ALLOW 3 VCCPT AND OUFT ENTRIES
TRANSPAC X25.NET CPHINDX=3,OUHINDX=3,DM=YES,RESETINO=NO,            *
              DONE=YES
*
         X25.VCCPT INDEX=1,                                         *
              MAXPKTL=128,                                          *
              VWINDOW=1,           * PACKET LEVEL WINDOW            *
              INSLOW=(100,50)      * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=2,                                         *
              MAXPKTL=128,                                          *
              VWINDOW=2,                                            *
              INSLOW=(100,50)      * TO PREVENT SLOWDOWN
*
         X25.VCCPT INDEX=3,                                         *
              MAXPKTL=128,                                          *
              VWINDOW=3,                                            *
              INSLOW=(100,50)      * TO PREVENT SLOWDOWN
*
         X25.OUFT INDEX=1
*
         X25.OUFT INDEX=2,         * PKT SIZE=128,VWINDOW=2         *
              OPTFACL=420707430202
*
         X25.OUFT INDEX=3,         * PKT SIZE=128,VWINDOW=3, AND    *
              OPTFACL=034301024207074303O3, * REVERSECHARGING REQUEST *
              USRFILD=1234567890
*********************************************************************
*
*********************************************************************
* FIRST  MCH  CL1: FOR SUBAREA DIAL
*********************************************************************
         X25.MCH ADDRESS=1,           *CONTROLLER LINE ADDR         *
              ANS=CONT,                                             *
              LCGDEF=(0,1),           *MAX LCN IS 7 ON LCGN 0       *
              FRMLGTH=131,                                          *
              MWINDOW=7,              *LAP WINDOW                   *
              STATION=DTE,                                          *
              XMONLNK=YES,                                          *
              TPTIMER=3,              *LAPB RECOVERY PARAMETERS     *
              TDTIMER=1,              *                             *
              NPRETRY=7,              *                             *
              NDRETRY=1,              *                             *
              LLCLIST=(LLC3),                                       *
              LCN0=USED,                                            *
```

```
                SPAN=X2501,             *FOR NETVIEW                       *
                ITRACE=YES,             * LAP INTERNAL TRACE ACTIVE        *
                SPEED=9600,             *REAL MCH SPEED                    *
                T1TIMER=1,              *REAL T1 OF THE DCE                *
                SVCINN=1,               *NB OF SIMULT.SWINN CONNECT.       *
                SDRTCNT=1,              *NB OF RETRIES                     *
                SDRTIME=10              *TIMER BETWEEN RETRIES
*
         X25.LCG LCGN=0
*
******************** (PVC) ************************************
*
CL100    X25.LINE LCN=0,VCCINDX=3,LLC=LLC3,TYPE=P,SPAN=X2501,          *
                DSTNODE=INN,MONLINK=YES,                               *
                IPL=YES
*
CP100    X25.PU PUTYPE=4,TGN=2,ANS=CONT,PUDR=NO,ISTATUS=INACTIVE
*
******************** (SVC) ************************************
*
*
CL102    X25.LINE DSTNODE=INN,          *MANDATORY FOR INN             *
                TYPE=S,                                                *
                MONLINK=YES,                                           *
                IPL=YES,                                               *
                SWMMTID=SMMFTAB1        *
*
CP102    X25.PU PUTYPE=4,ISTATUS=INACTIVE
*
         X25.VC LCN=(1),VCCINDX=3,TYPE=S,CALL=INOUT,OUFINDX=1,         *
                SPAN=X2501
*
****************************************************************
         X25.END
* GENERATED BY X25NPSI
C25P1A   GROUP DIAL=NO,                                                *
                LEVEL2=BALNAVL2,                                       *
                LEVEL3=BALNAVL3,                                       *
                LEVEL5=NCP,                                            *
                LINEADD=NONE,                                          *
                COMPTAD=NO,                                            *
                COMPOWN=YES,                                           *
                COMPSWP=NO,                                            *
                COMPACB=NO,                                            *
                LNCTL=SDLC,                                            *
                NPACOLL=NO,                                            *
                TIMER=(BALNATER,,BALNATST,BALNATLS),                   *
                TYPE=NCP,                                              *
                USERID=(5688035,BALPBDT,NORECMS),                      *
                XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
CL100    LINE IPL=YES,                                                 *
                SPAN=X2501,                                            *
                MONLINK=YES,                                           *
                UACB=XA1000
* GENERATED BY X25NPSI
CC1000   SERVICE
* GENERATED BY X25NPSI
CP100    PU ANS=CONT,                                                  *
                TGN=2,                                                 *
```

```
               ISTATUS=INACTIVE,                                         *
               PUTYPE=4,                                                 *
               PUDR=NO
* GENERATED BY X25NPSI
C25S1B   GROUP DIAL=YES,                                                 *
               LEVEL2=BALNAVL2,                                          *
               LEVEL3=BALNAVL3,                                          *
               LEVEL5=NCP,                                               *
               LINEADD=NONE,                                             *
               COMPTAD=NO,                                               *
               COMPOWN=YES,                                              *
               COMPSWP=NO,                                               *
               COMPACB=NO,                                               *
               LNCTL=SDLC,                                               *
               NPACOLL=NO,                                               *
               TIMER=(BALNATER,,BALNATST,BALNATLS),                      *
               TYPE=NCP,                                                 *
               USERID=(5688035,BALIBDT,NORECMS),                         *
               PUTYPE=4,                                                 *
               SHM=YES,                                                  *
               ACTIVTO=0.0,                                              *
               BRKCON=NONE,                                              *
               XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
CL102    LINE IPL=YES,                                                   *
               SWMMTID=SMMFTAB1,                                         *
               CALL=INOUT,                                               *
               MONLINK=YES,                                              *
               UACB=XA1GGH
* GENERATED BY X25NPSI
CP102    PU ISTATUS=INACTIVE,                                            *
               PUTYPE=4
* GENERATED BY X25NPSI
CNET11   GROUP DIAL=NO,                                                  *
               BERPROC=BALNMBER,                                         *
               COMPACB=YES,                                              *
               COMPTAD=YES,                                              *
               COMPOWN=YES,                                              *
               COMPSWP=YES,                                              *
               LEVEL2=BALNAML2,                                          *
               LEVEL3=BALNAML3,                                          *
               LEVEL5=NCP,                                               *
               LNCTL=SDLC,                                               *
               NPACOLL=NO,                                               *
               TIMER=(BALLAP4,,BALLAP4,BALLAP4),                         *
               TYPE=NCP,                                                 *
               USERID=(5688035,BALMBDT,NORECMS,P),                       *
               XIO=(BALNAMXL,BALNAMXS,BALNAMXI,BALNAMXK)
* GENERATED BY X25NPSI
CL1      LINE ADDRESS=(1,FULL),                                          *
               SPAN=X2501,                                               *
               XMONLNK=YES,                                              *
               UACB=(X25A1X,X25A1R)
* GENERATED BY X25NPSI
CC1      SERVICE
* GENERATED BY X25NPSI
CP1      PU ADDR=01,                                                     *
               ANS=CONT,                                                 *
               SPAN=X2501,                                               *
               MAXDATA=261,                                              *
```

```
               PUDR=NO,                                               *
               XID=NO,                                                *
               PUTYPE=1
* GENERATED BY X25NPSI
CU1      LU LOCADDR=0,SPAN=X2501,VPACING=(2,1),ISTATUS=INACTIVE
*****************************************************************
CHAGRP   GROUP LNCTL=CA,                                              *
               CA=TYPE6,                                              *
               DELAY=0.0
*******************************************************
CHALINE  LINE NCPCA=ACTIVE,                                           *
               ADDRESS=8
**************************************
CHAPU    PU PUTYPE=5
*****************************************************************
         GENEND INIT=BALINIMD,                                        *
               TMRTICK=BALTICK,                                       *
               UGLOBAL=BALNMGOP
*****************************************************************
```

Appendix C. Statement and Keyword Changes

Appendix C. Statement and Keyword Changes

This appendix is comprised of Table 18 through Table 31 that list X.25 NPSI statements and statement keywords.

All of the keywords for each statement are listed in alphabetical order. The values specified for several of the higher-level definition statements will sift down to the lower-level definition statements if they are not explicitly overridden.

This sifting is indicated in the following tables by placing the lower-level statement name in parenthesis. For example, (MCH) is mentioned for MWINDOW in the BUILD statement. This indicates that you can code MWINDOW in the BUILD statement, and that it will sift down to the X25.MCH statement.

Note: When *No longer valid* is specified in the disposition, it represents a keyword that was valid for X.25 NPSI Version 1 but is not valid for X.25 NPSI Version 3.

BUILD

Table 18. BUILD Changes

Keyword	Disposition
-------	Use NCP BUILD
DDNAME	No longer valid
IDNUMH	Code on NCP BUILD with prefix
JOBCARD	No longer valid
MACLIB	No longer valid
MAXPIU	Code on NCP BUILD with prefix
MCHCNT	Code on NCP BUILD with prefix
MODEL	Code on NCP BUILD
MWINDOW	Code on NCP BUILD with prefix (MCH)
OUTPUT	No longer valid
PAHINDX	Code on NCP BUILD with prefix (For V3R3 only)
PREFIX	Code on NCP BUILD with prefix
QUALIFY	No longer valid
SNAP	Code on NCP BUILD with prefix
SRCHI	No longer valid
SRCLO	No longer valid
SRCPRFX	No longer valid
SSPV2	No longer valid
TYPSYS	Code on NCP BUILD
USGTIER	Code on NCP BUILD with prefix
VERSION	Code on NCP BUILD

X25.END

Table 19. X25.END Changes

Keyword	Disposition
-------	Code as X25.END
symbol	Optional
INCHI	No longer valid
INCINIT	No longer valid
INCL2HI	No longer valid
INCL2LO	No longer valid
INCPRFX	No longer valid
LSTUACB	No longer valid
NCPSTAG1	No longer valid
ORDHI	No longer valid
ORDINIT	No longer valid
ORDL2HI	No longer valid
ORDL2LO	No longer valid
SRCHI	No longer valid
SRCLO	No longer valid
X25VTAM	No longer valid

X25.FCG

Table 20 (Page 1 of 2). X25.FCG Changes

Keyword	Disposition
-------	Code as X25.FCG
symbol	Optional
ANS	Passed to NCP as is
CTCPNO	Required
DISCNT	Passed to VTAM as is
DLOGMOD	Passed to VTAM as is
ENCR	Passed to VTAM as is
FEATUR2	Passed to VTAM as is
HEXNAME	Optional (For V3R2 and later releases)
ISTATUS	Passed to VTAM as is
LOGTAB	Passed to VTAM as is
MAXDATA	Passed to NCP as is
NCPGRP	Optional
OWNER	Passed to VTAM as is
PRFLINE	Optional
PRFLU	Optional

Table 20 (Page 2 of 2). X25.FCG Changes

Keyword	Disposition
PRFPU	Optional
QTY	Required
SPAN	Passed to NetView as is
SSCPFM	Passed to VTAM as is
STATOPT	Passed to NetView as is
SUFFIX	Optional
TERM	Passed to VTAM as is
USSTAB	Passed to VTAM as is
VPACING	Optional (For V3R2 and later releases)

X25.LCG

Table 21. X25.LCG Changes

Keyword	Disposition
-------	Code as X25.LCG
symbol	Optional
LCGN	Required

X25.LINE

Table 22. X25.LINE Changes

Keyword	Disposition
-------	Code as X25.LINE
symbol	Optional
CALL	Optional
COMMITO	Optional
DSTNODE	Optional
ID	Optional (For V3R3 only)
IDNUMT	Optional (For V3R3 only)
IPL	Passed to NCP as is (For V3R3 only)
ISTATUS	Passed to VTAM as is
LCN	Optional
LLC	Required if TYPE=PERMANENT; otherwise it is invalid
MODE	Optional (For V3R3 only)
MONLINK	Passed to NCP as is
NCPGRP	Optional
OSITYPE	Optional
OUFINDX	Required if TYPE=SWITCHED; otherwise it is invalid
OWNER	Passed to VTAM as is
RETVCCT	Optional
RETVCTO	Optional
SDLCST	Passed to NCP as is
SPAN	Passed to NetView as is
STATOPT	Passed to NetView as is
SWIMMTID	Passed to NCP as is
TADDR	Passed to NCP as is
TRANSFR	Passed to NCP as is
TYPE	Required
VCCINDX	Optional

X25.LU

Table 23. X25.LU Changes

Keyword	Disposition
-------	Code as X25.LU
symbol	Optional
BATCH	Passed to VTAM as is
BUFLIM	Not valid
DATASW	Not valid
DLOGMOD	Passed to VTAM as is
ENCR	Passed to VTAM as is
FEATUR2	Passed to VTAM as is
ISTATUS	Passed to VTAM as is
LOCADDR	Passed to NCP as is
LOGAPPL	Passed to VTAM as is
LOGTAB	Passed to VTAM as is
LUCB	Not valid
LUDR	Forced to a value of NO
LUFVT	Not valid
LUNTFY	Not valid
LUTYPE	Not valid
MAXCOLL	Not valid
MODETAB	Passed to VTAM as is
NPACOLL	Forced to a value of NO
NUMSESS	Not valid
PACING	Passed to NCP as is
SPAN	Passed to NetView as is
SSCPFM	Passed to VTAM as is
STATOPT	Passed to NetView as is
TERM	Passed to VTAM as is
UCCB	Not valid
USSTAB	Passed to VTAM as is
VPACING	Passed to VTAM as is

X25.MCH

Table 24 (Page 1 of 5). X25.MCH Changes

Keyword	Disposition
-------	Code as X25.MCH
symbol	Optional
ACTIVTO	Optional (For V3R2 and later releases)

Table 24 (Page 2 of 5). X25.MCH Changes

Keyword	Disposition
ADDRESS	Required
ANS	Passed to NCP as is
BRKCON	Optional (For V3R2 and later releases)
CCXDELAY	Optional (For V3R3 only)
CONNECT	Optional
CTCP	Optional
CUD0	Optional
DBIT	Optional
DIRECT	Optional
DSABLTO	Optional
DSTNODE	Optional (LINE)
ENABLTO	Optional
FRMLGTH	Required
GATE	Optional
IDBLKC	Optional (For V3R3 only)
IDBLKG	Optional (For V3R3 only)
IDBLKP	Optional (For V3R3 only)
INTFAC	Optional (For V3R3 only)
ISTATUS	Passed to VTAM as is
ITRACE	Optional
LCGDEF	Required
LCN0	Optional
LLC	Optional (LINE)
LLC0	Optional
LLC2	Optional
LLC3	Optional
LLC4	Optional
LLC5	Optional
LLCI	Optional (For V3R2 and later releases)
LLCLIST	Optional
LOGAPPL	Passed to VTAM as is
LUNAME	Optional
LSPRI	Optional (For V3R3 only)
MACB	Optional
MBITCHN	Optional (For V3R3 only)
MODETAB	Passed to VTAM as is
MWINDOW	Required
NCPGRP	Optional

Table 24 (Page 3 of 5). X25.MCH Changes

Keyword	Disposition
NDRETRY	Optional
NETID	Optional (For V3R2 and later releases)
NPRETRY	Optional
OUFINDX	Optional (LINE)
OWNER	Passed to VTAM as is
PAD	Optional
PADBRKCD	Optional (For V3R3 only)
PADINDX	Optional (For V3R3 only)
PKTMODL	Optional
PWPROT	Optional
PUNAME	Optional
ROLE	Passed to NCP as is
SDRTCNT	Optional (For V3R2 and later releases)
SDRTIME	Optional (For V3R2 and later releases)
SHM	Optional (For V3R2 and later releases)
SHUTD	Optional
SPAN	Passed to NetView as is
SPEED	Optional
SPNQLLC	Optional
STATION	Optional
STATOPT	Passed to NetView as is
SUBADDR	Optional
SUBD	Optional
SVCINN	Optional (For V3R2 and later releases)
TAXUNIT	Optional
TDTIMER	Optional
TPTIMER	Optional
T1TIMER	Optional
TRAN	Optional
T4	Optional (For V3R3 only)
VCCINDX	Optional (LINE)
VCID	Optional
VMODTAB	Passed to VTAM as is
VPACING	Passed to VTAM as is (For V3R2 and later releases)
XMONLNK	Optional (For V3R2 and later releases)
X21INACT	Optional (For V3R3 only)
X21NTWK	Optional (For V3R3 only)
X21RTYCT	Optional (For V3R3 only)

Table 24 (Page 4 of 5). X25.MCH Changes

Keyword	Disposition
X21RTYTO	Optional (For V3R3 only)
X21SW	Optional (For V3R3 only)

X25.NET

Table 25. X25.NET Changes

Keyword	Disposition
-------	Code as X25.NET
symbol	Optional
CAUSE	Optional (For V3R2 and later releases)
CPHINDX	Optional
CRAFTRC	Optional (For V3R2 only)
DDXP	No longer valid
DM	Required
DSTNODE	Optional (LINE)
FRMLGTH	Optional (MCH)
INACTO	Optional (For V3R3 only)
LLC	Optional (LINE)
LLCLIST	Optional (MCH)
MWINDOW	Optional (MCH)
NETTYPE	Optional
NSTDFAC	Optional (For V3R2 and later releases)
OUHINDX	Optional
PKTMODL	Optional (MCH)
RESETINO	Optional (For V3R3 only)
RFAC	Optional (For V3R2 and later releases)
R20	Optional (For V3R2 and later releases)
R22	Optional (For V3R2 and later releases)
R23	Optional (For V3R2 and later releases)
STATION	Optional (MCH)
T20	Optional (For V3R2 and later releases)
T21	Optional (For V3R2 and later releases)
T22	Optional (For V3R2 and later releases)
T23	Optional (For V3R2 and later releases)
T26	Optional (For V3R3 only)

X25.OUFT

Table 26. X25.OUFT Changes

Keyword	Disposition
-------	Code as X25.OUFT
symbol	Optional
INDEX	Required
OPTFACL	Optional
USRFILD	Optional
USRFIL2	Optional

X25.PAD (For V3R3 Only)

Table 27. X25.PAD Changes

Keyword	Disposition
-------	Code as X25.PAD
symbol	Optional
INDEX	Required
PADPARM	Required

X25.PU

Table 28 (Page 1 of 2). X25.PU

Keyword	Disposition
-------	Code as X25.PU
symbol	Optional
ADDR	Passed to NCP as is
ANS	Passed to NCP as is
AVGPB	Passed to NCP as is
BATCH	No longer valid
BRKCON	Passed to NCP as is
BUFLIM	Not valid
BNNSUP	Passed to NCP as is
DATMODE	Passed to NCP as is
DISCNT	Passed to VTAM as is
DLOGMOD	Passed to VTAM as is
ENCR	Passed to VTAM as is
FEATUR2	Passed to VTAM as is
IRETRY	Passed to NCP as is
ISTATUS	Passed to VTAM as is
LOGAPPL	Passed to VTAM as is
LOGTAB	Passed to VTAM as is
LPDA	Not valid
LUCB	Not valid
LUFVT	Not valid
LUNTFY	Not valid
LUTYPE	Not valid
MAXDATA	Passed to NCP as is
MAXLU	Passed to NCP as is
MAXOUT	Passed to NCP as is
MODETAB	Passed to VTAM as is
NETID	Passed to NCP as is
NPACOLL	Forced to a value of NO
PACING	Passed to NCP as is
PASSLIM	Passed to NCP as is
PUCB	Not valid
PUDR	Forced to a value of NO
PUFVT	Not valid
PUNTFY	Not valid
PUTYPE	Passed to NCP as is

Table 28 (Page 2 of 2). X25.PU

Keyword	Disposition
RETRIES	Passed to NCP as is
SECNET	Passed to VTAM as is
SPAN	Passed to NetView as is
SRT	Not valid
SSCPFM	Passed to VTAM as is
STATOPT	Passed to VTAM as is
SUBAREA	Passed to NCP as is
TERM	Passed to VTAM as is
TGN	Passed to NCP as is
USSTAB	Passed to VTAM as is
VPACING	Passed to VTAM as is
XID	Passed to NCP as is (For V3R2 and later releases)

X25.TRAN (For V3R3 Only)

Table 29. X25.TRAN Changes

Keyword	Disposition
-------	Code as X25.TRAN
symbol	Optional
USER	Required
DCIN0	Required
DCIN1	Required
DCIN2	Required
DCIN3	Required
DCIN4	Required
DCIN5	Required
DCIN6	Required
DCIN7	Required
DCIN8	Required
DCIN9	Required
DCINA	Required
DCINB	Required
DCINC	Required
DCIND	Required
DCINE	Required
DCINF	Required
DCOT0	Required
DCOT1	Required
DCOT2	Required
DCOT3	Required
DCOT4	Required
DCOT5	Required
DCOT6	Required
DCOT7	Required
DCOT8	Required
DCOT9	Required
DCOTA	Required
DCOTB	Required
DCOTC	Required
DCOTD	Required
DCOTE	Required
DCOTF	Required

X25.VC

Table 30 (Page 1 of 2). X25.VC Changes

Keyword	Disposition
-------	Code as X25.VC
symbol	Optional
ANS	Passed to NCP as is
CALL	Optional
COMMITO	Optional
DISCNT	Passed to VTAM as is
DLOGMOD	Passed to VTAM as is
ENCR	Passed to VTAM as is
FEATUR2	Passed to VTAM as is
HEXNAME	Optional (For V3R2 and later releases)
ID	Optional (For V3R3 only)
IDNUMT	Optional (For V3R3 only)
ISTATUS	Passed to VTAM as is
LLC	Required if TYPE=PERMANENT; otherwise it is invalid
LCN	Required
LOGAPPL	Passed to VTAM as is
LOGTAB	Passed to VTAM as is
MAXDATA	Passed to NCP as is
MAXOUT	Optional (For V3R2 and later releases)
MODETAB	Passed to VTAM as is
NCPGRP	Optional
OSITYPE	Optional
OUFINDX	Required if TYPE=SWITCHED; otherwise it is invalid
OWNER	Passed to VTAM as is
PRFLINE	Optional (For V3R2 and later releases)
PRFLU	Optional (For V3R2 and later releases)
PRFPU	Optional (For V3R2 and later releases)
RETVCCT	Optional
RETVCTO	Optional
SPAN	Passed to NetView as is
SSCPFM	Passed to VTAM as is
STATOPT	Passed to NetView as is
SUFFIX	Optional (For V3R2 and later releases)
TERM	Passed to VTAM as is
TYPE	Required
USSTAB	Passed to VTAM as is

Table 30 (Page 2 of 2). X25.VC Changes

Keyword	Disposition
VCCINDX	Required
VPACING	Passed to VTAM as is

X25.VCCPT

Table 31. X25.VCCPT Changes

Keyword	Disposition
-------	Code as X25.VCCPT
symbol	Optional
INDEX	Required
INSLOW	Optional
MAXPKTL	Required
VWINDOW	Optional

Glossary, Bibliography, and Index

Glossary

This glossary contains terms and abbreviations related to X.25, X.25 NPSI, SNA, and telecommunications. It includes information from:

- The *American National Dictionary of Information Processing Systems*, copyright 1982 by the Computer and Business Equipment Manufacturers Association (CBEMA). Copies can be purchased from the American National Standards Institute at 1430 Broadway, New York, New York 10018. These definitions are identified by an asterisk (*).
- The *ISO Vocabulary—Information Processing*, developed by the International Organization for Standardization, Technical Committee 97, Subcommittee 1. Definitions from published sections of this vocabulary are identified by the symbol "(ISO)" following the definition. Definitions from draft international standards, draft proposals, and working papers in development by the ISO/TC97/SC1 vocabulary subcommittee are identified by the symbol "(TC97)," indicating that final agreement has not yet been reached among participating members.
- The *CCITT Eighth Plenary Assembly Red Book, Terms and Definitions*, and working documents published by the International Telegraph and Telephone Consultative Committee of the International Telecommunication Union, Geneva, I985. These are identified by the symbol "(CCITT/ITU)" following the definition.

For abbreviations, the definition usually consists only of the words represented by the letters; for complete definitions, see the entries for the words.

A

ABM. Asynchronous balanced mode.

ACB. (1) Application control block. (2) In VTAM, access method control block. (3) In NCP, adapter control block.

access barred. In data communication, a condition in which a data terminal equipment (DTE) cannot call the DTE identified by the selection signals.

access method. A technique for moving data between main storage and input/output devices.

adapter control block (ACB). In NCP, a control block that contains line control information and the states of I/O operations for BSC lines, SS lines, or SDLC links.

alert. (1) In SNA, a record sent to a system problem management focal point to communicate the existence of an alert condition. (2) In the NetView program, a high priority event that warrants immediate attention. This data base record is generated for certain event types that are defined by user-constructed filters.

API. Application program interface.

application program interface (API). (1) The formally defined programming language interface between an IBM system control program or licensed program and its user. (2) The interface through which an application program interacts with an access method. In VTAM, it is the language structure used in control blocks so that application programs can reference them and be identified to VTAM.

ASCII. American National Standard Code for Information Interchange.

asynchronous balanced mode (ABM). An operational mode of a balanced data link in which either combined station can send commands at any time and can initiate transmission of response frames without explicit permission from the other combined station. See also *normal response mode (NRM), asynchronous response mode (ARM)*.

asynchronous response mode (ARM). An operational mode of an unbalanced data link in which a secondary station may initiate transmission without explicit permission from the primary station. See also *asynchronous balanced mode (ABM), normal response mode (NRM)*.

B

balanced data link. In data communication, a data link between two participating combined stations; for transmissions it originates, each station can transmit both command frames and response frames, organize its data flow, and perform error recovery operations at the data link level. Contrast with *unbalanced data link*.

balanced station. Synonym for *combined station*.

basic information unit (BIU). In SNA, the unit of data and control information that is passed between half-sessions. It consists of a request/response header (RH) followed by a request/response unit (RU).

begin bracket. In SNA, the value (binary 1) of the begin-bracket indicator in the request header (RH) of the first request in the first chain of a bracket; the value denotes the start of a bracket. Contrast with *end bracket*. See also *bracket*.

bidder. In SNA, the LU-LU half-session defined at session activation as having to request and receive permission from the other LU-LU half-session to begin a bracket. Contrast with *first speaker*. See also *bracket protocol*.

billing function. An optional function of X.25 NPSI GATE Fast Connect that provides the CTCP with billing information.

binary synchronous communication (BSC). (1) Communication using binary synchronous line discipline. (2) A uniform procedure, using a standardized set of control characters and control character sequences, for synchronous transmission of binary-coded data between stations.

bind. In SNA, a request to activate a session between two logical units (LUs).

BIU. Basic information unit.

boundary function. (1) A capability of a subarea node to provide protocol support for attached peripheral nodes, such as: (a) interconnecting subarea path control and peripheral path control elements, (b) performing session sequence numbering for low-function peripheral nodes, and (c) providing session-level pacing support. (2) The component that provides these capabilities. See also *boundary node, intermediate routing function, subarea node*.

boundary node. (1) A subarea node with boundary function. See also *boundary function*. (2) The programming component that performs FID2 (format identification type 2) conversion, channel data link control, pacing, and channel or device error recovery procedures for a locally attached station. These functions are similar to those performed by a network control program for an NCP-attached station.

bracket. In SNA, one or more chains of request units (RUs) and their responses that are exchanged between the two LU-LU half-sessions and that represent a transaction between them. A bracket must be completed before another bracket can be started. Examples of brackets are data base inquiries/replies, update transactions, and remote job entry output sequences to work stations. See also *begin bracket, end bracket*.

bracket protocol. In SNA, a data flow control protocol in which exchanges between the two LU-LU half-sessions are achieved through the use of brackets, with one LU designated at session activation as the first speaker and the other as the bidder. The bracket protocol involves bracket initiation and termination rules. See also *bidder, first speaker*.

BSC. Binary synchronous communication.

C

call. (1) A transmission for the purpose of identifying the transmitting station for which the transmission is intended. (2) An attempt to reach a user, whether or not successful. (CCITT/ITU)

call accepted packet. A call supervision packet transmitted by a called data terminal equipment (DTE) to inform the data circuit-terminating equipment (DCE) of the acceptance of the call. (CCITT/ITU)

call accepted signal. A call control signal that is sent by the called data terminal equipment (DTE) to indicate that it accepts the incoming call. (TC97)

call collision. A condition that occurs when a data terminal equipment (DTE) transmits a call request signal and a data circuit-terminating equipment (DCE) simultaneously transmits an incoming call signal; neither the DTE nor the DCE receives the expected response. See also *clear collision, reset collision*.

call connected packet. A call supervision packet transmitted by a data circuit-terminating equipment (DCE) to inform a calling data terminal equipment (DTE) of the complete establishment of a call. (CCITT/ITU)

called party. On a switched line, the location to which a connection is established.

call establishment. The sequence of events for the establishment of a data connection. (CCITT/ITU)

calling. The process of transmitting selection signals in order to establish a connection between data stations. (TC97)

calling party. On a switched line the location that originates a connection.

call-not-accepted signal. A call control signal sent by the called data terminal equipment (DTE) to indicate that it does not accept the incoming call. (TC97)

call request packet. A call supervision packet transmitted by a data terminal equipment (DTE) to ask for a call establishment through the network. (CCITT/ITU)

call request signal. A signal in the call establishment phase which alerts the data circuit-terminating equipment (DCE) that the data terminal equipment (DTE) wishes to make a call. (CCITT/ITU)

call supervision packet. A packet used for the establishment or the clearing of a call at the DTE/DCE interface. (CCITT/ITU)

Casual Connection. Two VTAMs, a VTAM and an NCP, or two NCPs connected as SNA type 2.1 nodes.

CCITT. International Telegraph and Telephone Consultative Committee.

CCU. Central control unit.

central control unit (CCU). The communication controller hardware unit that contains the circuits and data flow paths needed to execute instructions and to control controller storage and the attached adapters.

CPU. Central processing unit.

central processing unit (CPU). The part of a computer that includes the circuits that control the interpretation and execution of instructions.

chaining. (1) A method of storing records in which each record belongs to a list or group of records and has a linking field for tracing the chain. (2) In VSE, a logical connection of sublibraries to be searched by the system for members of the same type, for example, phase or object modules.

channel. See *data communication channel*.

CICS. Customer Information Control System.

circuit. See *data circuit*.

circuit switched data network (CSDN). A process that, on demand, connects two or more data terminal equipment (DTE) and permits the exclusive use of a data circuit between them until the connection is released. Synonymous with *line switching*. See also *message switching, packet switching*.

circuit switched data transmission service. A service using circuit switching to establish and maintain a connection before data can be transferred between data terminal equipments (DTEs). (TC97) See also *packet switched data transmission service*.

circuit switching. A process that, on demand, connects two or more data terminal equipments (DTEs) and permits the exclusive use of a data circuit between them until the connection is released. * (ISO) Synonymous with *line switching*. See also *message switching, packet switching*.

class of service (COS). In SNA, a designation of the path control network characteristics, such as path security, transmission priority, and bandwidth, that apply to a particular session. The end user designates class of service at session initiation by using a symbolic name that is mapped into a list of virtual routes, any one of which can be selected for the session to provide the requested level of service. See also *user class of service*.

clear collision. A condition that occurs when a data terminal equipment (DTE) and a data circuit-terminating equipment (DCE) simultaneously transmit a clear request packet and a clear indication packet over the same logical channel. See also *call collision, reset collision*.

clear indication packet. A call supervision packet transmitted by a data circuit-terminating equipment (DCE) to inform a data terminal equipment (DTE) of the clearing of a call. (CCITT/ITU)

clear request packet. A call supervision packet transmitted by a data terminal equipment (DTE) to ask for clearing a call. (CCITT/ITU)

closed user group. In a group of users, a subgroup that is assigned a facility that enables a member of one subgroup to communicate only with other members of the subgroup. (TC97) A data terminal equipment (DTE) can belong to more than one closed user group.

closed user group with outgoing access. A closed user group that has a user assigned facility which enables that user to communicate with other users of a public data network transmission service, where appropriate, or with users having a data terminal equipment (DTE) connected to any other public switched network to which interworking facilities are available. (CCITT/ITU)

CNM. Communication network management.

combined station. (1) In high-level data link control (HDLC), the part of a data station that supports the combined control functions of the data link, generates commands and responses for transmission, and interprets received commands and responses. (ISO)

Note: Specific responsibilities assigned to a combined station include initialization of control signal interchange, organization of data flow, interpretation of received commands, and generation of appropriate responses and actions regarding error control and error recovery functions at the data link level. (2) A data station that generates commands and responses for transmission over a data link and interprets received commands and responses. (3) Synonymous with *balanced station*. See also *primary station, secondary station*.

command frame. A frame transmitted by a primary station or a frame transmitted by a combined station that contains the address of the other combined stations. (TC97)

command list (CLIST). A list of commands and statements designed to perform a specific function for the user. Command lists can be written in REXX or in NetView Command List Language.

communication and transmission control program (CTCP). A user-written or IBM-supplied program used in conjunction with the DATE or GATE function of X.25 NPSI to manage virtual circuits. It executes in the host processor. See also *DATE CTCP, fast connect GATE CTCP, GATE CTCP*.

communication common carrier. In the USA and Canada, a public data transmission service that provides the general public with transmission service facilities; for example, a telephone or telegraph company. See also *Post Telephone and Telegraph Administration, public network*.

communication controller. A type of communication control unit whose operations are controlled by one or more programs stored and executed in the unit; for example, the IBM 3725 Communication Controller. It manages the details of line control and the routing of data through a network.

communication line. Deprecated term for *telecommunication line*.

communication network management (CNM). The process of designing, installing, operating, and managing the distribution of information and controls among end users of communication systems.

communication scanner processor (CSP). A processor in the 3725 Communication Controller that contains a microprocessor with control code. The code controls transmission of data over links attached to the CSP.

contention mode. In data communication, a mode of transmission in which any station may transmit whenever the line is available. If stations transmit simultaneously, protocols determine who wins the contention.

complete packet sequence (CPS). A complete packet sequence contains contiguous full data packets, with the M bit set to 1 and the D bit set to 0, followed by any other data packet.

control block. (ISO) A storage area used by a computer program to hold control information.

control point (CP). (1) A system services control point (SSCP) that provides hierarchical control of a group of nodes in a network. (2) A control point (CP) local to a specific node that provides control of that node, either in the absence of SSCP control (for type 2.1 nodes engaged in peer to peer communication) or to supplement SSCP control.

COS. Class of service.

CP. (1) Control program. (2) Control point.

CPS. Complete packet sequence.

cross-domain. In SNA, pertaining to control of resources involving more than one domain.

cross-network. In SNA, pertaining to control or resources involving more than one SNA network.

cross-network session. AN LU-LU or SSCP-SSCP session whose path traverses more than one SNA network.

cryptographic. Pertaining to transformation of data to conceal meaning.

CSDN. Circuit-switched data network.

CSP. Communication scanner processor.

CTCP. Communication and transmission control program.

CUD. Call user data field.

CUG. Closed user group.

Customer Information Control System (CICS). An IBM licensed program that enables transactions entered at remote terminals to be processed concurrently by user-written application programs. It also includes facilities for building, using, and maintaining data bases.

CV. Control vector.

CWALL. An NCP threshold of buffer availability, below which the NCP will accept only high-priority path information units (PIUs).

D

data channel. A device that connects a processor and main storage with I/O control units. Synonymous with *input/output channel*. Contrast with *data communication channel*.

data circuit. (1) Associated transmit and receive channels that provide a means of two-way data communication. (ISO) (2) See also *physical circuit, virtual circuit*.

Notes:

1. Between data switching exchanges (DSEs), the data circuit may or may not include data circuit-terminating equipment (DCE), depending on the type of interface used at the data switching exchange.
2. Between a data station and a data switching exchange or data concentrator, the data circuit includes the data circuit-terminating equipment at the data station end, and may also include equipment similar to a DCE at the data switching exchange or data concentrator location.

data circuit-terminating equipment (DCE). The equipment installed at the user's premises that provides all the functions required to establish, maintain, and terminate a connection, and the signal conversion and coding between the data terminal equipment (DTE) and the line. (TC97) The DCE may be separate equipment or an integral part of other equipment.

data communication channel. (1) A means of one-way transmission. * (ISO) (2) Contrast with *data channel.* A channel may be provided by frequency- or time-division multiplexing. In CCITT terminology, a channel (data communication channel) provides one-way (simplex) transmission; data circuits and "logical channels" provide two-way (duplex) transmission. In data processing terminology, a channel (an I/O channel or data channel), provides two-way transfers of data. This distinction must be kept in mind when documenting the interface.

data flow control (DFC). In SNA, a request/response unit (RU) category used for requests and responses exchanged between the data flow control layer in one half-session and the data flow control layer in the session partner.

datagram. A self-contained, independent entity of data carrying sufficient information to be routed from the source data terminal equipment (DTE) to the destination DTE without relying on earlier exchanges between the source or destination DTE and the transporting network. (CCITT/ITU)

data link. (1) The assembly of parts of two data terminal equipments that are controlled by a link protocol, and the interconnecting data circuit, that enable data to be transferred from a data source to a data sink. (ISO) (2) The interconnecting data circuit and the link protocol between two or more equipments; it does not include the data source or the data sink. (3) In SNA, synonym for *link*. (4) Contrast with *telecommunication line*.

data link level. The conceptual level of control or processing logic existing in the hierarchical structure of a data station (primary, secondary, or combined station) that is responsible for maintaining control of the data link. The data link level functions provide an interface between the data station high level logic and the data link. These functions include transmit bit insertion and receive bit deletion; address/control field interpretation; command/response generation, transmission, and interpretation; and frame check sequence computation and interpretation. See also *packet level* and *physical level.* (TC97)

data packet. A packet used for the transmission of user data on a virtual circuit at the DTE/DCE interface. (CCITT/ITU)

data station. The data terminal equipment (DTE), the data circuit-terminating equipment (DCE), and any intermediate equipment. * (ISO) Synonymous with *data terminal installation*.

data switching exchange (DSE). The equipment installed at a single location to provide switching functions, such as circuit switching, message switching, and packet switching. (ISO)

data terminal equipment (DTE). That part of a data station that serves as a data source, data sink, or both, and provides for the data communication control function according to protocols. (TC97)

data terminal installation. Synonym for *data station.*

data transfer. The movement, or copying, of data from one location and the storage of the data at another location.

data transfer phase. The phase of a data call during which data signals can be transferred between data terminal equipments (DTEs) connected through the network. See also *network control phase*.

data transfer rate. The average number of bits, characters, or blocks per unit time passing between corresponding equipment in a data transmission system.

data transmission line. Synonym for *telecommunication line*.

DATE. Dedicated Access to X.25 Transport Extension.

DATE CTCP. A CTCP that is used in conjunction with the DATE function of X.25 NPSI to manage virtual circuits.

D bit. Delivery confirmation bit.

DCE. Data circuit-terminating equipment.

DCE clear confirmation packet. A call supervision packet transmitted by a data circuit-terminating equipment (DCE) to confirm the clearing of a call. (CCITT/ITU)

DCE/DTE interface. See *DTE/DCE interface*.

deadlock. (1) Unresolved contention for use of a resource. (2) An error condition in which processing cannot continue because each of two elements of the process is waiting for an action by or a response from the other. (3) An impasse that occurs when multiple processes are waiting for the availability of a resource that will not become available because it is being held by another process that is in a similar wait state.

Dedicated Access to X.25 Transport Extension (DATE). A function of X.25 NPSI that allows a communication and transmission control program (CTCP) to manage virtual circuits to SNA and non-SNA DTEs by processing qualified data, Interrupt, Call, Clear, and Reset packets. The contents of nonqualified data packets are transferred on the LU-LU session between the application program LU and the virtual circuit LU. Control and qualified data packets are transferred on the LU-LU session between the CTCP LU that manages virtual circuits and the multichannel link (MCH) LU.

dedicated channel. A channel that is not switched.

dedicated circuit. A circuit that is not switched.

definite response (DR). In SNA, a value in the form-of-response-requested field of the request header. The value directs the receiver of the request to return a response unconditionally, whether positive or negative, to that request. Contrast with *exception response, no response*.

definite response mode. A mode of operation in which an LU requires a response to its request.

definition statement. (1) In VTAM, the statement that describes an element of the network. (2) In NCP, a type of instruction that defines a resource to the NCP.

DFC. Data flow control.

dial-in. Refers to the direction in which a switched connection is requested by any node or terminal other than the receiving host or an NCP.

dial-out. Refers to the direction in which a switched connection is requested by a host or an NCP.

direct call. A facility which enables the establishment of a call without the need to convey address signals to the network. (CCITT/ITU)

discarded packet. A packet which is destroyed intentionally or by default while being transmitted through the network. (CCITT/ITU)

disconnected mode. Synonym for *disconnected phase*.

disconnected phase. A phase entered by a data circuit-terminating equipment (DCE) when it detects error conditions, recovers from a temporary internal malfunction, or receives a DISC command from a data terminal equipment (DTE). In the disconnected phase, the DCE can initiate link setup but can transmit only DM responses to received frames. See also *information transfer phase*.

DR. (1) In NCP and CCP, dynamic reconfiguration. (2) In SNA, definite response.

DSE. Data switching exchange.

DTE. Data terminal equipment.

DTE busy. Status of a DTE which is unavailable because it cannot accept an additional call. (ISO)

DTE clear confirmation packet. A call supervision packet transmitted by data terminal equipment (DTE) to confirm the clearing of a call. (CCITT/ITU)

DTE/DCE interface. The physical interface elements and the link access procedures between data terminal equipment (DTE) and data circuit-terminating equipment (DCE). (CCITT/ITU)

duplex. In data communication, pertaining to a simultaneous two-way independent transmission in both directions. * Synonymous with *full-duplex*.

E

EBCDIC. Extended binary-coded decimal interchange code.

echoplex mode. In data communication, a mode in which characters are automatically returned to the transmitting data terminal equipment (DTE).

Emulation Program. An IBM control program that allows a channel-attached 3705 or 3725 communication controller to emulate the functions of an IBM 2701 Data Adapter Unit, an IBM 2702 Transmission Control, or an IBM 2703 Transmission Control. See also *network control program*.

ENA. Extended network addressing.

enable presentation (ENP) character. A control character that enables presentation of the following characters to resume after having been stopped by an inhibit presentation (INP) character.

end bracket. In SNA, the value (binary 1) of the end bracket indicator in the request header (RH) of the first request of the last chain of a bracket; the value denotes the end of the bracket. Contrast with *begin bracket*. See also *bracket*.

end-to-end control. A means whereby during the data phase of a call, interconnected data terminal equipment (DTE) may exchange control signals without loss of data bit sequence independence. (CCITT/ITU)

ENP. Enable presentation character.

EP. Emulation Program.

ER. (1) Explicit route. (2) Exception response.

exception request (EXR). In SNA, a request that replaces another message unit in which an error has been detected.

exception response (ER). In SNA, a value in the form-of-response-requested field of a request header (RH). An exception response is sent only if a request is unacceptable as received or cannot be processed. Contrast with *definite response (DR), no response*.

EXR. Exception request.

extended binary-coded decimal interchange code (EBCDIC). A set of 256 characters, each represented by eight bits.

extended network addressing. The network addressing system that splits the address into an 8-bit subarea and a 15-bit element portion. The subarea portion of the address is used to address host processors or communication controllers. The element portion is used to permit processors or controllers to address resources.

F

fallback. On an IBM 3745 with twin CCUs, the action of switching the lines attached to one CCU to the other CCU.

fast connect. An optional extension of the X.25 NPSI GATE function that preestablishes the SNA sessions between the host logical unit (LU) and the simulated LUs in X.25 NPSI.

fast connect GATE CTCP. A CTCP that is used in conjunction with the fast connect GATE function of X.25 NPSI to manage virtual circuits. See also *GATE CTCP*.

fast select. An option of a virtual call facility that allows inclusion of data in call-setup and call-clearing packets. (ISO)

FCS. Frame check sequence.

FIC. first-in-chain.

FID. Format identification.

first-in-chain (FIC). A request unit (RU) whose request header (RH) begin chain indicator is on and whose RH end chain indicator is off. See also *RU chain*.

first speaker. In SNA, the LU-LU half-session defined at session activation as: (1) able to begin a bracket without requesting permission from the other LU-LU half-session to do so, and (2) winning contention if both half-sessions attempt to begin a bracket simultaneously. Contrast with *bidder*. See also *bracket protocol*.

flag (F) sequence. The unique sequence of eight bits (01111110) employed to delimit the opening and closing of a frame. (TC97)

flow control. (1) The procedure for controlling the data transfer rate. (TC97) (2) In SNA, the process of managing the rate at which data traffic passes between components of the network. The purpose of flow control is to optimize the rate of flow of message units with minimum congestion in the network; that is, to neither overflow the buffers at the receiver or at intermediate routing nodes, nor leave the receiver waiting for more message units.

FMD. Function management data.

format identification (FID) field. In SNA, a field in each transmission header (TH) that indicates the format of the TH; that is, the presence or absence of certain fields. TH formats differ in accordance with the types of nodes between which they pass.

The six FID types are:

- FID0, used for traffic involving non-SNA devices between adjacent subarea nodes when either or both nodes do not support explicit route and virtual route protocols.
- FID1, used for transmission between the host, local NCP, and remote NCP.
- FID2, used for traffic between a subarea node and an adjacent type 2 peripheral node.
- FID3, used for traffic between a subarea note and an adjacent type 1 peripheral node.
- FID4, used for traffic between adjacent subarea nodes when both nodes support explicit route and virtual route protocols.
- FIDF, used for certain commands (for example, for transmission group control) sent between adjacent subarea nodes when both nodes when both nodes support explicit route and virtual route protocols.

formatted system services (FSS). A facility that provides certain system services as a result of receiving a field-formatted command, such as an INITIATE or TERMINATE command. Contrast with *unformatted system services (USS)*.

frame. (1) In high-level data link control (HDLC), the sequence of contiguous bits bracketed by and including opening and closing flag (01111110) sequences. (2) A set of consecutive digit time slots in which the position of each digit time slot can be identified by reference to a frame alignment signal. (CCITT/ITU)

frame check sequence (FCS). (1) A field immediately preceding the closing flag sequence of a frame that contains a bit sequence checked by the receiver to detect transmission errors. (2) In SDLC, 16 bits in a frame that contain transmission-checking information.

frame-level interface. The level of the DTE/DCE interface in packet mode operation relating to the exchange of packets with local error control, where packets are contained in frames. (CCITT/ITU) See also *packet level interface*.

FSS. Formatted system services.

FTAM. File transfer access method.

function management data (FMD). In SNA, a request unit (RU) category used for end-user data exchanged between logical units (LUs) and for requests and responses exchanged between network services components of LUs, physical units (PUs), and system services control points (SSCPs).

full-duplex. Synonym for *duplex*.

G

GATE. General Access to X.25 Transport Extension.

GATE CTCP. A CTCP that is used in conjunction with the GATE function of X.25 NPSI to manage virtual circuits. In addition to managing virtual circuits, a GATE CTCP can be used to relay user data to and from subsystems such as CICS, IMS, and TSO.

gateway. The combination of machines and programs that provide address translation, name translation, and system services control point (SSCP) rerouting between independent SNA networks to allow those networks to communicate. A gateway consists of one gateway NCP and at least one gateway SSCP.

General Access to X.25 Transport Extension (GATE). A function of X.25 NPSI that allows a communication and transmission control program (CTCP) to manage virtual circuits to non-SNA DTEs by processing data, qualified data, Interrupt, Call, Clear, and Reset packets.

H

half-duplex. In data communication, pertaining to an alternate, one way at a time, independent transmission. Contrast with *duplex*.

HDLC. High-level data link control.

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. (CCITT/ITU)

host node. A node providing an application program interface (API) and a common application interface. See *boundary node, node, peripheral node, subarea node*. See also *boundary function, node type*.

I

ICA. integrated communication adapter.

I format. Information format.

I frame. Information frame.

IMS. Information Management System.

incoming call packet. A call supervision packet transmitted by a data circuit-terminating equipment (DCE) to inform a called data terminal equipment (DTE) of a call requested by another DTE. (CCITT/ITU)

information (I) format. A format used for information transfer.

information (I) frame. A frame in I format used for numbered information transfer. See also *supervisory frame, unnumbered frame*.

Information Management System (IMS). A general purpose system whose full name is Information Management System/Virtual Storage (IMS/VS). It enhances the capabilities of OS/VS for batch processing and telecommunication and allows users to access a computer-maintained data base through remote terminals.

information transfer phase. A phase in which a data circuit-terminating equipment (DCE) can accept and transmit information (I) frames and supervisory (S) frames. See also *disconnected phase*.

inhibit presentation (INP) character. A control character that causes presentation of the following characters to be stopped.

INP. Inhibit presentation character.

input/output channel. Synonymous with *data channel*.

integrated communication adapter. An integrated adapter that allows connection of one or more telecommunication lines to a processing unit.

integrated services digital network (ISDN). A digital end-to-end telecommunication network that supports multiple services including, but not limited to, voice and data.

Note: ISDNs are used in public and private network architectures.

intermediate routing function. In SNA, a path control capability in a subarea node that receives and routes path information units (PIUs) that neither originate in nor are destined for network addressable units (NAUs) in that subarea node. See also *boundary function*.

intermediate routing node. In SNA, a subarea node with an intermediate routing function. A subarea node may be a boundary node, intermediate routing node, both, or neither, depending on how it is used in a network.

International Organization for Standardization (ISO). An organization of national standards bodies from various countries established to promote development of standards to facilitate international exchange of goods and services, and develop cooperation in intellectual, scientific, technological and economic activity.

ISDN. Integrated services digital network.

ISO. International Organization for Standardization.

ITU. International Telecommunication Union.

K

keyword. (1) (TC97) A lexical unit that, in certain contexts, characterizes some language construction. (2) * One of the predefined words of an artificial language. (3) One of the significant and informative words in a title or document that describes the content of that document. (4) A name or symbol that identifies a parameter. (5) A part of a command operand that consists of a specific character string (such as DSNAME=). See also *definition statement*.

L

LAP. Link access procedure.

LAPB. Link access procedure balanced. See *link access procedures (LAP, LAPB)*.

last-in-chain (LIC). A request unit (RU) whose request header (RH) end chain indicator is on and whose RH begin chain indicator is off. See also *RU chain*.

leased line. Synonym for *nonswitched line*.

LIC. (1) Last-in-chain (2) In NCP, line interface coupler.

line speed. The number of binary digits that can be sent over a telecommunication line in one second, expressed in bits per second (bps).

line switching. Synonym for *circuit switching*.

link access procedures (LAP, LAPB). The link level elements used for data interchange between a data circuit-terminating equipment (DCE) and a data terminal equipment (DTE) operating in user classes of service 8 to 11, as specified in CCITT Recommendation X.1.

link level. (1) 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. (2) See *data link level*.

link station. (1) In SNA, the combination of hardware and software that allows a node to attach to and provide control for a link. (2) In VTAM, a named resource within a subarea node that represents another subarea node that is attached by a subarea link. In the resource hierarchy, the link station is subordinate to the subarea link.

LLC. Logical link control.

LLU. Logical link unit.

load module. A program unit that is suitable for loading into main storage for execution; it is usually the output of a linkage editor. (ISO)

logical channel. In packet mode operation, a means of two-way simultaneous transmission across a data link, comprising associated send and receive channels. A logical channel can represent the path that data travels from its origin to the network or from the network to its destination. (CCITT/ITU)

logical circuits. In packet mode operation, a means of duplex transmission across a data link comprising associated send and receive channels. A number of logical circuits can be derived from a data link by packet interleaving. Several logical circuits can exist on the same data link.

Logical unit (LU). In SNA, a port through which an end user accesses the SNA network and the functions provided by system services control points (SSCPs). An LU can support at least two sessions—one with an SSCP and one with another LU—and may be capable of supporting many sessions with other LUs. See also *peripheral LU, physical unit (PU), primary logical unit (PLU), secondary logical unit (SLU), system services control point (SSCP)*.

lower window edge. The lowest sequence number in a window. (CCITT/ITU)

LU. Logical unit.

LUSIM. LU simulator.

LU simulator (LUSIM). A function of X.25 NPSI that simulates a logical unit (LU) for a non-SNA DTE so that the application LU or CTCP LU acts as though it is in session with an SNA DTE rather than with a non-SNA DTE. The LU-LU session between the application or CTCP LU and the simulated LU uses LU type 1 protocols.

M

maintenance and operator subsystem (MOSS). A subsystem of an IBM communication controller, such as the 3725 or the 3720, that contains a processor and operates independently of the rest of the controller. It loads and supervises the controller, runs problem determination procedures, and assists in maintaining both hardware and software.

M bit. More data bit.

MBS. A series of complete packet sequences where each packet has the M bit set to 1 except the last packet of the last complete packet sequence.

MCH. Multichannel link.

message switching. (1) In a data network, the process of routing messages by receiving, storing, and forwarding complete messages. (2) The technique of receiving a complete message, storing, and then forwarding it to its destination unaltered. (TC97)

MIC. middle-in-chain.

middle-in-chain (MIC). A request unit (RU) whose request header (RH) begin chain indicator and RH end chain indicator are both off. See also *RU chain.*

migration. Installing a new version or release of a program when an earlier version or release is already in place.

MOSS. Maintenance and operator subsystem.

multichannel link (MCH). A means of enabling a data terminal equipment (DTE) to have several access channels to the data network over a single circuit. Three likely methods have been identified: packet interleaving, byte interleaving, and bit interleaving. (CCITT/ITU)

multilink procedure. A procedure for controlling the operation of an MCH that consists of several physical links running in parallel.

Multiple Virtual Storage (MVS). An IBM licensed program whose full name is the Operating System/Virtual Storage (OS/VS) with Multiple Virtual Storage/System Product for System/370. It is a software operating system controlling the execution of programs.

MVS. Multiple Virtual Storage operating system.

N

NAS. Network Action Scheduler.

NAU. Network addressable unit.

NCP. Network Control Program.

NCP/EP definition facility (NDF). A program that is part of System Support Programs (SSP) and is used to generate a partitioned emulation program (PEP) load module or a load module for a Network Control Program (NCP) or for an Emulation Program (EP).

NDF. NCP/EP definition facility.

NDM. Normal disconnected mode.

NEO. Network expansion option.

NetView program. A System/370-based IBM licensed program used to monitor a network, manage it, and diagnose its problems.

NPM. Netview Performance Monitor.

Netview Performance Monitor (NPM). An IBM licensed program that collects, monitors, analyzes, and displays data relevant to the performance of a VTAM telecommunication network. It runs as an online VTAM application program.

network addressable unit (NAU). In SNA, a logical unit, a physical unit, or a system services control point. The NAU is the origin or the destination of information transmitted by the path control network. See also *logical unit (LU), path control (PC) network, physical unit (PU), system services control point (SSCP).*

network control phase. That phase of a data call during which network control signals are exchanged between a DTE and the network for the purpose of call establishment, call disconnection, or for control signaling during the data phase. (ISO)

Network Control Program (NCP). An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability. Its full name is Advanced Communications Function for the Network Control Program.

network failure. In a network, any condition that makes a service unavailable because the network or one of its essential components is not functioning correctly.

Network Routing Facility (NRF). An IBM licensed program that resides in the NCP, which provides a path for messages between terminals, and routes messages over this path without going through the host processor.

Network Terminal Option (NTO). An IBM licensed program used in conjunction with NCP that allows certain non-SNA devices to participate in sessions with SNA application programs in the host processor. NTO converts non-SNA protocol to SNA protocol when data is sent to the host from a non-SNA device and reconverts SNA protocol to non-SNA protocol when data is sent back to the device.

NIA. IBM 5973-LO2 Network Interface Adapter.

node. (1) In a network, a point at which one or more functional units connect channels or data circuits. (ISO) (2) In SNA, an endpoint of a link or a junction common to two or more links in a network. Nodes can be distributed to host processors, communication controllers, cluster controllers, or terminals. Nodes can vary in routing and other functional capabilities. (3) In ACF/VTAM, a point in a network defined by a symbolic name.

node type. In SNA, a designation of a node according to the protocols it supports and the network addressable units (NAUs) that it can contain. Five types are defined: 1, 2.0, 2.1, 4, and 5. Type 1, type 2.0, and type 2.1 nodes are peripheral nodes; type 4 and type 5 nodes are subarea nodes.

nonqualified data packet. A data packet in which the Q-bit is set off.

Non-SNA Interconnect (NSI). An IBM licensed program that provides format identification (FID1/4) support for selected non-SNA facilities. Thus, it allows SNA and non-SNA facilities to share SDLC links. It also allows the remote concentration of selected non-SNA devices along with SNA devices.

nonswitched connection. A connection that does not have to be established by dialing. Contrast with *switched connection*.

nonswitched line. A telecommunication line on which connections do not have to be established by dialing. Contrast with *switched line*. Synonymous with *leased line*.

no response. In SNA, a value in the form-of-response-requested field of the request header (RH) indicating that no response is to be returned to the request, whether or not the request is received and processed successfully. Contrast with *definite response (DR), exception response (ER)*.

normal response mode (NRM). An operational mode of an unbalanced data link in which the secondary station initiates transmission only as the result of receiving explicit permission from the primary station. See also *asynchronous balanced mode (ABM), asynchronous response mode (ARM)*.

NPSI. X.25 NCP Packet Switching Interface.

NRF. Network routing facility.

NRM. normal response mode.

NSI. Non-SNA Interconnection.

NTO. Network terminal option.

O

octet. A byte composed of eight binary elements.

OIC. only-in-chain.

only-in-chain. A request unit for which the request header (RH) begin chain indicator and RH end chain indicator are both on. See also *RU chain*.

Open Systems Interconnection (OSI). (1) The interconnection of open systems in accordance with specific ISO standards. (2) The use of standardized procedures to enable the interconnection of data processing systems.

operating system (OS). Software that controls the execution of programs. An operating system may provide services such as resource allocation, scheduling, input/output control, and data management.

Note: Although operating systems are predominantly software, partial or complete hardware implementations are possible.

optional network facilities. Facilities that a user of a packet switching data network can request when establishing a virtual circuit. See also *closed user group and throughput class negotiation*.

OS. Operating system.

OSI. Open Systems Interconnection.

OSICS. Open systems interconnection communication system.

OUFT. Optional user facility table.

P

pacing. In SNA, a technique by which a receiving component controls the rate of transmission of a sending component to prevent overrun or congestion. See also *session-level pacing, virtual route (VR) pacing*.

packet. A sequence of binary digits, including data and call control signals, that is transmitted and switched as a composite whole. (ISO) The data, call control signals, and error control information are arranged in a specific format. See also *call accepted packet, call connected packet, call request packet, call supervision packet, clear indication packet, clear request packet, data packet, DCE clear confirmation packet, discarded packet, DTE clear confirmation packet, incoming call packet, nonqualified data packet, permit packet, qualified data packet, reset packet, RNR packet, RR packet.*

packet assembler/disassembler (PAD). A user facility which permits non-packet mode terminals to exchange data in the packet mode. (CCITT/ITU)

packet level. The packet format and control procedures for the exchange of packets containing control information and user data between the data terminal equipment (DTE) and the data circuit-terminating equipment (DCE). See also *data link level, physical level.*

packet level interface. The level of the DTE/DCE interface in packet mode operation relating to the exchange of data and signaling, where this information is contained in packets. (CCITT/ITU) See also *frame-level interface.*

packet level processor (PLP).. The part of X.25 NPSI that handles X.25 level 3.

packet mode operation. Synonym for *packet switching.*

packet mode terminal. Data terminal equipment that can control, format, transmit, and receive packets. (TC97)

packet sequencing. A process of ensuring that packets are delivered to the receiving data terminal equipment (DTE) in the same sequence as they were transmitted by the sending DTE. (TC97)

packet switched data network (PSDN). A network that uses packet switching as a means of transmitting data.

packet switched data transmission service. A user service involving the transmission and, if necessary, the assembly and disassembly of data in the form of packets. (CCITT/ITU)

packet switching. (1) The process of routing and transferring data by means of addressed packets so that a channel is occupied only during the transmission of a packet. On completion of the transmission, the channel is made available for transfer of other packets. (ISO) (2) Synonymous with *packet mode operation.* Contrast with *circuit switching.*

packet window. The maximum number of consecutive data packets that are allowed to flow between a data terminal equipment (DTE) and a data circuit-terminating equipment (DCE) before an acknowledgment is received for a given logical channel.

PAD. Packet assembler/disassembler.

path control (PC) network. In SNA, the part of the SNA network that includes the data link control and path control layers. See *SNA network, user-application network*. See also *boundary function.*

path information unit (PIU). In SNA, a message unit consisting of a transmission header (TH) alone, or of a TH followed by a basic information unit (BIU) or a BIU segment. See also *transmission header.*

PCNE. Protocol converter for non-SNA equipment.

PDN. Public data network.

peripheral link. In SNA, a link that connects a peripheral node to a subarea node. See also *subarea link.*

peripheral LU. In SNA, a logical unit representing a peripheral node.

peripheral node. In SNA, a node that uses local addresses for routing and therefore is not affected by changes in network addresses. A peripheral node requires boundary function assistance from an adjacent subarea node. See also *intermediate routing node, node type, peripheral link, subarea node.*

permanent virtual circuit (PVC). A virtual circuit that has a logical channel permanently assigned to it at each data terminal equipment (DTE). A call establishment protocol is not required.

permit packet. A packet used for the transmission of permits for a virtual circuit at the DTE/DCE interface. (CCITT/ITU)

PH. packet header.

physical circuit. A circuit created with hardware rather than by multiplexing. See also *data circuit.* Contrast with *virtual circuit.*

physical level. The mechanical, electrical, functional, and procedural media used to activate, maintain, and deactivate the physical link between the data terminal equipment (DTE) and the data circuit-terminating equipment (DCE). See also *data link level, packet level.*

physical unit (PU). In SNA, a type of network addressable unit (NAU). A physical unit (PU) manages and monitors the resources (such as attached links) of a node, as requested by a system services control point (SSCP) through an SSCP-PU session. An SSCP activates a session with the physical unit in order to indirectly manage, through the PU, resources of the node such as attached links.

piggybacking. Act of acknowledging a received frame or packet within the next transmittal.

PIU. Path information unit.

PLP. Packet level processor.

PLU. Primary logical unit.

port. An access point for data entry or exit.

port swap. A function of NCP/X.25 NPSI that allows you to install spare ports to be used as backup in case of failure of the original port.

Post Telephone and Telegraph Administration (PTT). A generic term for the government-operated common carriers in countries other than the USA and Canada. Examples of the PTT are the Post Office in the United Kingdom, the Bundespost in Germany, and the Nippon Telephone and Telegraph Public Corporation in Japan.

primary logical unit (PLU). In SNA, the logical unit (LU) that contains the primary half-session for a particular LU-LU session. Each session must have a PLU and secondary logical unit (SLU). The PLU is the unit responsible for the bind and is the controlling LU for the session. A particular LU can contain both primary and secondary half-sessions for different active LU-LU sessions. Contrast with *secondary logical unit (SLU)*.

primary station. (1) In high-level data link control (HDLC), the part of a data station that supports the primary control functions of the data link, generates commands for transmission, and interprets received responses. (ISO) (2) In SNA, the station on an SDLC data link that is responsible for the control of the data link. There must be only one primary station on a data link. All traffic over the data link is between a primary station and a secondary station. (3) Contrast with *secondary station*. See also *combined station*.

Note: Specific responsibilities assigned to the primary station include initialization of control signal interchange, organization of data flow, and actions regarding error control and error recovery functions at the data link level.

problem determination. The process of identifying the source of a problem; for example, a program component, a machine failure, telecommunication facilities, user or contractor-installed programs or equipment, an environment failure such as a power loss, or a user error.

program temporary fix (PTF). A temporary solution or bypass of a problem diagnosed by IBM in a current unaltered release of the program.

protocol. (1) A specification for the format and relative timing of information exchanged between communicating parties. (CCITT/ITU) (2) The set of rules governing the operation of functional units of a communication system that must be followed if communication is to be achieved. (TC97) (3) In SNA, the meanings of, and the sequencing rules for, requests and responses used for managing the network, transferring data, and synchronizing the states of network components. See also *bracket protocol*.

protocol converter for non-SNA equipment (PCNE). A function of X.25 NPSI that allows attachment of non-SNA X.25 DTEs without the use of a packet assembler/disassembler (PAD). PCNE replaces the packet headers used to receive data from non-SNA X.25 DTEs with the SNA headers used to pass the data to an application LU, and vice versa. The PCNE function uses an LU simulator.

PSDN. Packet switched data network.

PTF. Program temporary fix.

PTT. Post Telephone and Telegraph Administration.

PU. Physical unit.

public data network (PDN). See *public network*.

public network. A network established and operated by an administration for the specific purpose of providing data transmission services to the public. Circuit switched, packet switched, and leased-circuit services are feasible. Contrast with *user-application network*.

PVC. Permanent virtual circuit.

Q

Q bit. Qualified data bit.

qualified data packet. A data packet in which the Q bit is set on.

QLLC. Qualified logical link control.

R

receive leg. The side of a duplex line that is receiving. Contrast with *transmit leg*.

receive not ready packet. See *RNR packet*.

receive ready packet. See *RR packet*.

RECFMS. Record formatted maintenance statistics. See also *packet switching*.

Recommendation X.21 (Geneva 1980). A Consultative Committee on International Telegraph and Telephone (CCITT) recommendation for a general purpose interface between data terminal equipment and data circuit-terminating equipment for synchronous operations on a public data network.

Recommendation X.25 (Geneva 1980). A Consultative Committee on International Telegraph and Telephone (CCITT) recommendation for the interface between data terminal equipment and packet-switched data networks. See also *packet switching*.

Recommendation X.28. A Consultative Committee on International Telegraph and Telephone (CCITT) recommendation for the DTE/DCE interface for a start-stop mode data terminal equipment (DTE) accessing the packet assembly/disassembly (PAD) facility in a public data network situated in the same country.

Recommendation X.29. A Consultative Committee on International Telegraph and Telephone (CCITT) recommendation for procedures for the exchange of control information and user data between a packet assembly/disassembly (PAD) facility and a packet mode data terminal equipment (DTE) or another PAD facility.

Recommendation X.3. A Consultative Committee on International Telegraph and Telephone (CCITT) recommendation for packet assembly/disassembly (PAD) in a public data network.

record formatted maintenance statistics (RECFMS). A statistical record built by an SNA controller and usually solicited by the host.

REJ. Rejected message.

request header (RH). In SNA, control information preceding a request unit (RU). See also *request/response header (RH)*.

request/response header (RH). In SNA, control information, preceding a request/response unit (RU), that specifies the type of RU (request unit or response unit) and contains control information associated with that RU.

request/response unit (RU). In SNA, a generic term for a request unit or a response unit. See also *request unit (RU), response unit (RU)*.

request unit (RU). In SNA, a message unit that contains control information, end-user data, or both.

reset collision. A condition that occurs when a data terminal equipment (DTE) and a data circuit-terminating equipment (DCE) simultaneously transmit a reset request packet and a reset indication packet over the same logical channel. See also *call collision, clear collision*.

reset (of a virtual circuit). Reinitializing of flow control on a virtual circuit, which eliminates all data that may be in transit for the virtual circuit at the time of resetting. (CCITT/ITU)

reset packet. A packet used for the resetting of a virtual circuit at the DTE/DCE interface. (CCITT/ITU)

response. In data communication, a reply represented in the control field of a response frame. It advises the primary/combined station with respect to the action taken by the secondary/combined station to one or more commands. (TC97)

response frame. A frame transmitted by a secondary station or a frame transmitted by a combined station that contains the address of the transmitting combined station. (TC97)

response unit (RU). In SNA, a message unit that acknowledges a request unit; it may contain prefix information received in a request unit. If positive, the response unit may contain additional information (such as session parameters in response to Bind Session), or if negative, contains sense data defining the exception condition.

reverse charging acceptance. A facility that enables a data terminal equipment (DTE) to receive incoming packets that request reverse charging.

RH. Request/response header.

RNR. Receive not ready.

RNR packet. A packet used by a data terminal equipment (DTE) or by a data circuit-terminating equipment (DCE) to indicate a temporary inability to accept additional packets for a given virtual call or permanent virtual circuit.

RPOA. Recognized private operating authority.

RR. Receive ready.

RR packet. A packet used by a data terminal equipment (DTE) or by a data circuit-terminating equipment (DCE) to indicate that it is ready to receive data packets within the window.

RU. Request/response unit.

RU chain. In SNA, a set of related request/response units (RUs) consecutively transmitted on a particular normal or expedited data flow. The request RU chain is the unit of recovery. If one RU in the chain cannot be processed, the entire chain must be discarded.

Note: Each request unit belongs to only one chain, which has a beginning and an end indicated through control bits in request/response headers within the RU chain. Each RU can be designated as first-in-chain (FIC), last-in-chain (LIC), middle-in-chain (MIC), or only-in-chain (OIC). Response units and expedited-flow request units are always sent as only-in-chain.

S

SDLC. Synchronous Data Link Control.

SDT. Start data traffic.

secondary logical unit (SLU). In SNA, the logical unit (LU) that contains the secondary half-session for a particular LU-LU session. Contrast with *primary logical unit (PLU)*.

secondary station. (1) In high-level data link control (HDLC), the part of a data station that executes data link control functions as instructed by the primary station and that interprets received commands and generates responses for transmission. (ISO) (2) A data station that executes data link control functions as instructed by the primary station. A secondary station interprets received commands and generates responses for transmission. Contrast with *primary station*. See also *combined station*.

sequence number. A number assigned to a particular frame or packet to control the transmission flow and receipt of data.

session-level pacing. In SNA, a flow control technique that permits a receiving session to control the data transfer rate (the rate which it receives request units) on the normal flow. It is used to prevent overloading a receiver with unprocessed requests when the sender can generate requests faster than the receiver can process them. See also *pacing, virtual route (VR) pacing*.

S frame. Supervisory frame

SHM. Short hold mode.

short hold mode (SHM). A function of X.25 NPSI that allows a virtual connection to be cleared if no traffic is present on the connection for a time interval specified by the user. When traffic resumes, the connection is automatically reestablished.

shutdown. The process of ending operation of a system or a subsystem, following a defined procedure.

SLU. Secondary logical unit.

SMN. Switched major node.

SNA. Systems Network Architecture.

SNA network. The part of a user-application network that conforms to the formats and protocols of Systems Network Architecture. It enables reliable transfer of data among end users and provides protocols for controlling the resources of various network configurations. The SNA network consists of network addressable units (NAUs), boundary function components, and the path control network.

SNA network interconnect (SNI). A facility that allows users to connect an SNA network with other SNA or non-SNA networks.

SNA network interconnection. The connection, by gateways, of two or more independent SNA networks to allow communication between logical units in those networks. The individual SNA networks retain their independence.

SNI. SNA network interconnect.

SSCP. System services control point.

SSP. System Support Programs (IBM licensed program.) Its full name is Advanced Communications Function for System Support Programs. Synonymous with *ACF/SSP*.

subaddressing. The mechanism by which the X.25 NPSI logical link control (LLC) or the communication and transmission control program (CTCP) is selected by the value of the last digit of the called DTE address in the incoming call packet.

subarea. A portion of the SNA network consisting of a subarea node, any attached peripheral nodes, and their associated resources. Within a subarea node, all network addressable units, links, and adjacent link stations (in attached peripheral or subarea nodes) that are addressable within the subarea share a common subarea address and have distinct element addresses.

subarea link. In SNA, a link that connects two subarea nodes. See also *peripheral link*.

subarea node. In SNA, a node that uses network addresses for routing and whose routing tables are therefore affected by changes in the configuration of the network. Subarea nodes can provide gateway function, and boundary function support for peripheral nodes. Type 4 and type 5 nodes are subarea nodes. See *boundary node, host node, node, peripheral node*. See also *boundary function, node type*.

supervisory (S) format. A format used to perform data link supervisory control functions, such as acknowledge I frames, request retransmission of I frames, and request temporary suspension of transmission of I frames. See also *information format, unnumbered format*.

supervisory (S) frame. A frame in supervisory format used to transmit supervisory control functions.

SVC. Switched virtual circuit.

SVCSC. Switched virtual circuit subarea communication.

switchback. On an IBM 3745 with twin CCUs, the action of switching the lines currently attached to a CCU, as the result of a fallback, back to the original CCU.

switched connection. (1) A mode of operating a data link in which a circuit or channel is established to switching facilities as, for example, in a public switched network. (ISO) (2) A connection established by dialing. (3) Contrast with *nonswitched connection*.

switched line. A telecommunication line in which the connection is established by dialing. Contrast with *nonswitched line*.

switched major node. In VTAM, a major node whose minor nodes are physical units and logical units attached by switched SDLC links.

switched network. Any network in which connections are established by closing switches, for example, by dialing.

switched virtual circuit (SVC). A virtual circuit that is requested by a virtual call. It is released when the virtual circuit is cleared.

switched virtual circuit (SVC) short hold mode. See *short hold mode (SHM)*.

switched virtual circuit subarea communication (SVCSC). A function of X.25 NPSI that, together with appropriate VTAM functions, allows communication over a switched virtual circuit (SVC) between (1) two communication controllers or (2) a communication controller and certain host processors equipped with appropriate hardware and software.

Synchronous Data Link Control (SDLC). A discipline conforming to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute (ANSI) and High-level Data Link Control (HDLC) of the International Organization for Standardization (ISO), for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. See also *binary synchronous communications*.

system services control point (SSCP). In SNA, the focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network. Multiple SSCPs, cooperating as peers, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units and logical units within its domain.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

System Support Programs (SSP). An IBM licensed program, made up of a collection of utilities and small programs, that supports the operation of the NCP.

T

TAP. Trace analysis program. Synonymous with *ACF/TAP*.

telecommunication line. (1) The portion of a data circuit external to a data-circuit terminating equipment (DCE) that connects the DCE to a data switching exchange (DSE), that connects a DCE to one or more other DCEs, or that connects a DSE to another DSE. (TC97) (2) Any physical medium, such as a wire or microwave beam, that is used to transmit data. (3) Synonymous with *data transmission line, transmission line*. (4) Contrast with *data link*.

Note: A telecommunication line is the physical medium; for example, a telephone wire or a microwave beam. A data link includes the physical medium of transmission, the protocol, and associated devices and programs—it is both logical and physical.

TH. Transmission header.

time-out. (1) An event that occurs at the end of a predetermined period of time that began at the occurrence of another specified event. (ISO) (2) A time interval allotted for certain operations to occur; for example, response to polling or addressing before system operation is interrupted and must be restarted.

time sharing control task (TSC). In TSO, a system task that handles system initialization, allocation of time shared regions, swapping, and general control of the time sharing operation.

Time Sharing Option (TSO). An optional configuration of the operating system that provides conversational time sharing from remote stations.

trace analysis program (TAP). An SSP program service aid that assists in analyzing trace data produced by VTAM, TCAM, and NCP and provides network data traffic and network error reports.

transmission header (TH). In SNA, control information, optionally followed by a basic information unit (BIU) or a BIU segment, that is created and used by path control to route message units and to control their flow within the network. See also *path information unit (PIU).*

transmission line. Synonym for *telecommunication line.*

transmission subsystem (TSS). The part of the controller that controls the data transfers over low- and medium-speed, switched and nonswitched transmission interfaces.

The TSS consists of:

- Up to 32 low-speed scanners (LSSs) associated with
- LIC units (LIUs), through
- Serial links (SLs).

transmission subsystem component (TSC). The component of VTAM that comprises the transmission control, path control, and data link control layers of SNA.

transmit leg. The side of a duplex line that is transmitting. Contrast with *receive leg.*

TSC. Transmission subsystem component.

TSO. Time Sharing Option.

type 2.1 node (T2.1 node). A node that can attach to an SNA network as a peripheral node using the same protocols as type 2.1 nodes. Type 2.1 nodes can be directly attached to one another using peer to peer protocols. See *end node, node*, and *subarea node*. See also *node type.*

U

U frame. Unnumbered frame.

unbalanced data link. A data link between a primary station and one or more participating secondary stations. The primary station assumes responsibility for the organization of data flow and for data link level error recovery operations and transmits command frames to the secondary stations. The secondary stations transmit response frames. Contrast with *balanced data link.* (TC97)

UNBIND. In SNA, a request to deactivate a session between two logical units (LUs). See also *session deactivation request.* Contrast with *BIND.*

unformatted system services (USS). In SNA products, a system services control point (SSCP) facility that translates a character-coded request, such as a logon or logoff request into a field-formatted request for processing by formatted system services and translates field-formatted replies and responses into character-coded requests for processing by a logical unit. Contrast with *formatted system services.*

unnumbered (U) format. A format used to provide additional data link control functions and unnumbered information transfer. See also *information format, supervisory format.*

unnumbered (U) frame. A frame in unnumbered format, used to transfer unnumbered control functions. See also *information frame, supervisory frame.*

USA. Upstream address.

user-application network. A configuration of data processing products, such as processors, controllers, and terminals, established and operated by users for the purpose of data processing or information exchange, which may use services offered by communication common carriers or telecommunication administrations. Contrast with *public network.*

user class of service. A category of data transmission service provided by a data network in which the data signaling rate, the data terminal equipment operating mode, and the code structure, if any, are standardized. (TC97) See also *class of service (COS).*

USS. Unformatted system services.

V

VC. Virtual circuit.

VCCPT. Virtual circuit control parameter table.

VCM. Virtual circuit manager.

virtual call. See *virtual call facility.*

virtual call facility. A user facility in which a call setup procedure and a call clearing procedure will determine a period of communication between two data terminal equipments (DTEs) in which user's data will be transferred in the network in the packet mode of operation. All the user's data is delivered from the network in the same order in which it is received by the network. (CCITT/ITU)

virtual circuit. In packet switching, those facilities provided by a network that give the appearance to the user of an actual connection. (TC97) See also *data circuit.* Contrast with *physical circuit.*

virtual circuit LU. An LU that controls the flow of data over a virtual circuit between X.25 NPSI and a remote DTE. If the DTE is an SNA DTE, the virtual circuit LU is in that DTE. If the DTE is a non-SNA DTE, the virtual circuit LU is in the communication controller that runs X.25 NPSI; it is a simulated LU. See also *LU simulator (LUSIM).*

Virtual Machine/System Product (VM/SP). An IBM-licensed program that manages the resources of a single computer so that multiple computing systems appear to exist. Each virtual machine is the functional equivalent of a "real" machine.

virtual route (VR) pacing. In SNA, a flow control technique used by the virtual route control component of path control at each end of a virtual route to control the rate at which path information units (PIUs) flow over the virtual route. VR pacing can be adjusted according to traffic congestion in any of the nodes along the route. See also *pacing, session-level pacing*.

Virtual Telecommunications Access Method (VTAM). An IBM licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability.

VM. Virtual machine.

VSE. Virtual Storage Extended operating system. Synonymous with *VSE/AF*.

W

window. An ordered set of consecutive packet send sequence numbers of the data packets authorized to cross a DTE/DCE interface on a logical channel used for a virtual call or as a permanent virtual circuit.

window edge. The lowest sequence number in a window.

window size. The specified number of frames of information that can be sent before receiving an acknowledgment response.

X

XI. X.25 SNA Interconnection.

Bibliography

X.25 NCP Packet Switching Interface Publications

The following paragraphs briefly describe the library of books associated with *X.25 NCP Packet Switching Interface* Version 3.

X.25 NCP Packet Switching Interface General Information Version 3 (GC30-3469)

This book introduces managers, system designers, programmers, and other data processing personnel to the basic concepts of packet-switching, X.25, and IBM's X.25 NCP Packet Switching Interface licensed program.

X.25 NCP Packet Switching Interface Planning and Installation Version 3 (SC30-3470)

This book provides system programmers and analysts with the information required to plan and implement the installation of NPSI. The topics include hardware/software requirements, preinstallation system performance considerations, instructions for defining and generating NPSI, and installation examples.

X.25 NCP Packet Switching Interface Host Programming Version 3 (SC30-3502)

This book is written for application and system programmers to assist them in writing application programs that use the X.25 NCP Packet Switching Interface. Application programmers should have some knowledge of DATE and GATE functions and the operating systems that support them. System programmers should be knowledgeable in SNA architecture.

X.25 NCP Packet Switching Interface Diagnosis, Customization, and Tuning Version 3 (LY30-5610)

This book is written for system programmers to assist them in trouble-shooting and diagnosing problems with the X.25 NCP Packet Switching Interface. It helps programmers to diagnose problems, resolve common errors, and describe problems to and interface with the IBM Support Center.

NCP and Related Products Directory of Programming Interfaces for Customers (GC31-6202)

This book provides a directory to other documents, or sections of documents, that contain the detailed descriptions of programming interfaces. It specifies files or data sets created by NCP and related products and indicates which macros are intended to be used as, or as part of, a programming interface.

Other Network Program Products Publications

For more information about the books listed in this section, see *Network Program Products Bibliography and Master Index for NetView, NCP, and VTAM.*

Network Program Products Bibliography and Master Index for NetView, NCP, and VTAM (GC31-6815)

Planning and Reference for NetView, NCP, and VTAM (SC31-6811)

Network Program Products Samples (SC30-3352)

Network Program Products Storage Estimates (SC30-3403)

VTAM Publications

The following list shows the publications for VTAM V3R2.

VTAM Installation and Resource Definition (SC23-0111)

VTAM Customization (LY30-5614)

VTAM Operation (SC23-0113)

VTAM Messages and Codes (SC23-0114)

VTAM Programming (SC23-0115)

VTAM Programming for LU 6.2 (SC30-3400)

VTAM Diagnosis (LY30-5601)

VTAM Data Areas for MVS (LY30-5592)

VTAM Data Areas for VM (LY30-5593)

VTAM Data Areas for VSE (LY30-5594)

VTAM Reference Summary (LY30-5600)

VTAM Directory of Programming Interfaces for Customers (GC31-6403)

SNA Publications

The following publications contain information on SNA:

Systems Network Architecture Concepts and Products (GC30-3072)

Systems Network Architecture Technical Overview (GC30-3073)

Systems Network Architecture Format and Protocol Reference Manual: Management Services (SC30-3346)

Systems Network Architecture Formats (GA27-3136)

NCP Publications

The following publications apply to the libraries of NCP, SSP, and EP.

NCP and EP Reference Summary and Data Areas (LY30-5603)

SSP Customization Guide (LY43-0021)

NCP, SSP, and EP Diagnosis Guide (LY30-5591)

NCP, SSP, and EP Generation and Loading Guide (SC30-3348)

NCP, SSP, and EP Messages and Codes (SC30-3169)

NCP, SSP, and EP Resource Definition Guide (SC30-3447)

NCP, SSP, and EP Resource Definition Reference (SC30-3448)

NCP Migration Guide (SC30-3440)

NCP and EP Reference (LY30-5605)

NCP Customization Guide (LY30-5606)

NCP Customization Reference (LY30-5607)

3174 Publications

The following list shows a selected publication for the IBM 3174.

3174 Subsystem Control Unit; Customizing Guide (GA23-0214)

3745 Publications

The following list shows the publications for the IBM 3745.

IBM 3745 Communication Controller Introduction (GA33-0092)

IBM 3745 Communication Controller Configuration Program (GA33-0093)

IBM 3745 Principles of Operation (SA33-0102)

372x Publications

The following list shows selected publications for the IBM 3720.

3720/3721 Communication Controllers Introduction (GA33-0060)

3720/3721 Communication Controllers Configuration Guide (GA33-0063)

3720/3725 Communication Controllers Principles of Operation (GA33-0013)

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