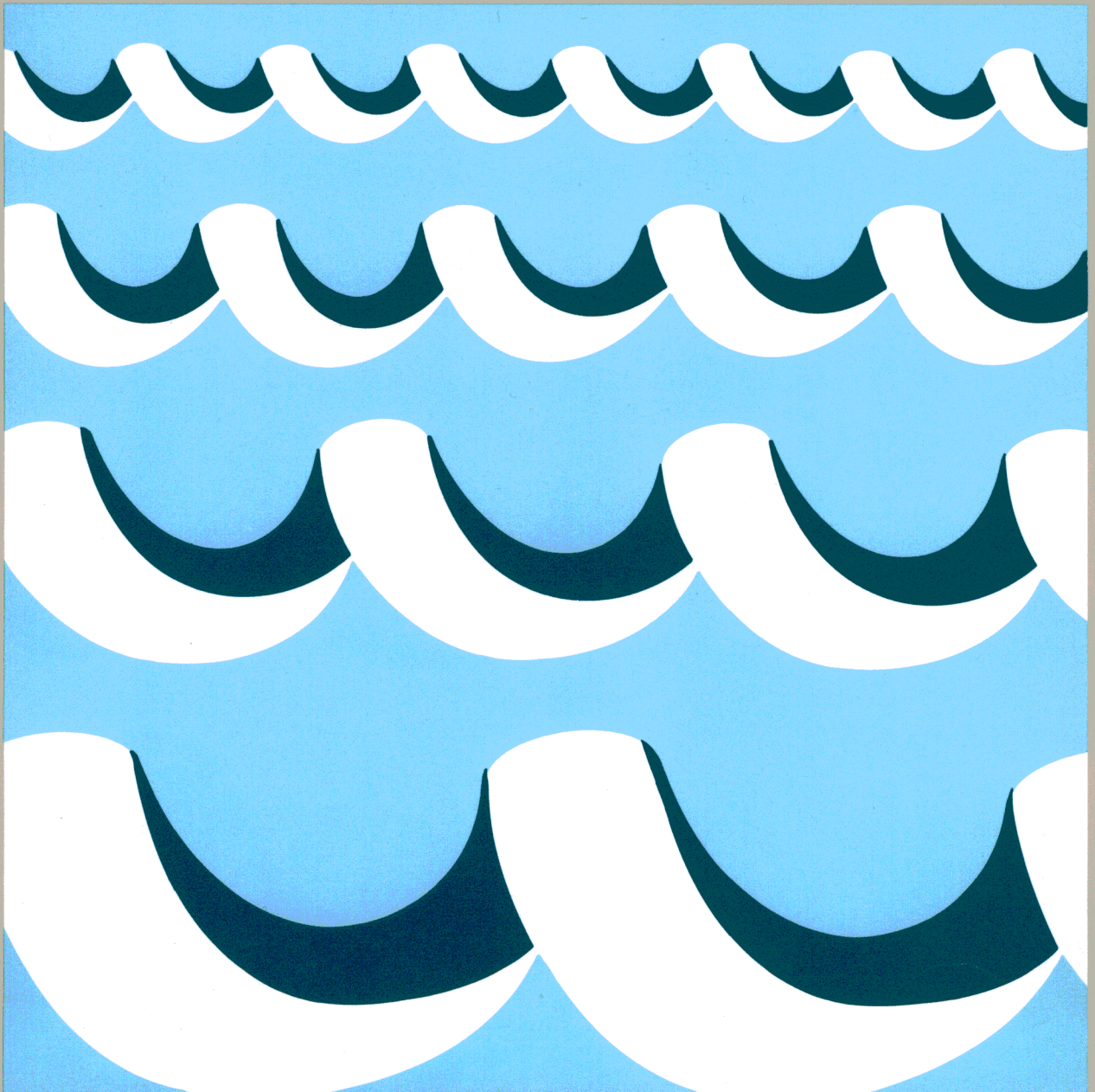


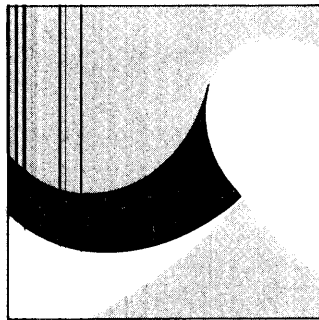


Network Control Program and
System Support Programs
Resource Definition Reference





**Network Control Program and
System Support Programs
Resource Definition Reference**



Advanced Communications Function for Network Control Program

Versions 3 and 4 Program Numbers: 5667-124, 5668-854

Advanced Communications Function for System Support Programs

Version 3 Program Numbers: 5665-338 (MVS), 5666-322 (VSE),
5664-289 (VM)

Advanced Communications Function for Network Control Program

V4 Subset Program Number: 5668-754

Second Edition (May 1986)

This major revision obsoletes SC30-3254-0. See the Summary of Changes page for brief descriptions of changes made by this edition. Significant new material has been added throughout this publications, and existing material has been changed extensively; therefore, no vertical lines appear in the margins, and the publication should be read in its entirety.

This edition applies to:

- Advanced Communications Function for Network Control Program Version 3, Program Product 5667-124
- Advanced Communications Function for Network Control Program Version 4, Program Product 5668-854
- Advanced Communications Function for Network Control Program V4 Subset, Program Product 5668-754
- Advanced Communications Function for System Support Programs Version 3, Program Products:
 - 5665-338 (for MVS)
 - 5666-322 (for VSE)
 - 5664-289 (for VM/SP).

This edition also applies to all subsequent releases and modifications until otherwise indicated in new editions or Technical Newsletters. Changes are made periodically to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30XX and 4300 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM program product in this publication is not intended to state or imply that only IBM's program product may be used. Any functionally equivalent program may be used instead.

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NCP, SSP, and EP Library Overview

The diagrams on the following pages will help you find the NCP, SSP, or EP books that contain the information you need.

Migration and Generation

<i>For Information About:</i>	<i>Look In:</i>	<i>Order Number:</i>
How to generate an NCP/PEP load module How to load an NCP/PEP load module into your communication controller	NCP and SSP Generation and Loading Guide	SC30-3348
How to change, delete, or add definition statements and operands in your NCP generation definition if you are migrating from a previous release of NCP to a new release of NCP	NCP and SSP Migration	SC30-3252
Which NCP definition statements and operands to code for your network	NCP and SSP Resource Definition Guide	SC30-3349
How to code NCP definition statements and operands	NCP and SSP Resource Definition Reference	SC30-3254
Which EP definition statements and operands to code for your network How to code EP definition statements and operands How to generate an EP load module How to load an EP load module into your controller	EP Installation, Resource Definition, and Diagnosis	SC30-3338

Diagnosis and Customization

For Information About:	Look In:	Order Number:
<p>User-written code</p> <p>NCP internal macros</p> <p>Structured coding, timer routines, user exits, block handling routines, machine language coding tips</p> <p>Customizing your NCP for line control</p> <p>Standard attachment facility</p>	<p>NCP Customization</p>	<p>LY30-5571</p>
<p>NCP diagnostic procedures</p> <p>Determining if you have an NCP problem</p> <p>Determining what type of NCP problem you are having</p> <p>Which traces and dumps to gather for an error</p> <p>How to run the SSP utilities or the Configuration Report Program for NCP</p> <p>How to prepare an APAR</p> <p>Determining the correct level of IBM support</p>	<p>NCP and SSP Diagnosis Guide</p>	<p>LY30-5591</p>
<p>The normal functioning and structure of the SSP program and utilities</p>	<p>SSP Diagnosis Reference</p>	<p>LY30-5564</p>
<p>Determining if you have an EP problem</p> <p>Determining what type of EP problem you have</p>	<p>EP Installation, Resource Definition, and Diagnosis</p>	<p>SC30-3338</p>
<p>EP error responses and ABEND codes</p> <p>The normal functioning and structure of the EP program</p> <p>EP, BSC and start stop commands, line control, save areas, line testing, channel responses for EP</p> <p>EP modules: function and entry points</p>	<p>EP Logic</p>	<p>LY30-3195</p>
<p>SSP messages or NCP ABEND codes</p>	<p>NCP and SSP Messages and Codes</p>	<p>SC30-3169</p>
<p>NCP error responses</p> <p>The normal functioning and structure of the NCP program</p> <p>NCP and start-stop commands, line control, save areas, line testing, channel responses</p>	<p>NCP Reference</p>	<p>LY30-5569</p>
<p>Data area relationships</p> <p>NCP control blocks</p> <p>BTU commands and modifiers, NCP channel commands, NCP network commands</p> <p>EP command codes</p> <p>Controller instruction set</p> <p>RECMS, RECFMS, NMVT, and NPM formats</p> <p>SVC codes, line character codes</p> <p>Character mode PCF diagrams</p> <p>NCP exception responses</p>	<p>NCP and EP Reference Summary and Data Areas</p>	<p>LY30-5570</p>



About This Book

The following topics explain:

- Products covered in this book
- Who should read this book
- What you need to know before using this book
- How this book refers to ACF program products
- Where to get information about model definitions
- How this book is organized
- Where to find more information.

Products Covered In This Book

This book provides detailed descriptions of the definition statements and their operands necessary to define any of the following versions of NCP:

- Advanced Communications Function for Network Control Program (NCP) Version 3 for the IBM 3705 Communications Controller
- Advanced Communications Function for Network Control Program (NCP) Version 3 for the IBM 3725 Communication Controller
- Advanced Communication Function for Network Control Program (NCP) Version 4
- Advanced Communication Function for Network Control Program (NCP) V4 Subset.

The detailed descriptions include the requirements for use of each definition statement, and every operand of each definition statement.

The information in this book pertains primarily to an NCP operating in network control mode, or in both network control mode and emulation mode through the Partitioned Emulation Programming (PEP) extension. You can find information on producing an operating emulation program for the IBM 3725 or 3720 Communication Controller in *Emulation Program for the IBM Communication Controllers: Installation, Resource Definition, and Diagnosis*, SC30-3338. You can find information on producing an operating Emulation Program for the IBM 3705 Communications Controller (EP/3705) in *Emulation Program for the IBM 3705: Generation and Utilities Guide and Reference*, SC30-3242 (abbreviated title: *EP/3705 Generation and Utilities Guide and Reference*).

Before using this book, you need to know the possible hardware and software combinations for SSP Version 3. The following table explains these:

NCP	Runs in This Controller	With This EP for PEP	Generated by These Operating Systems	Using This Version and Release of SSP
V3 for 3705	3705	EP/3705	MVS, VSE, VM/SP	V3R1 or V3R2
V3 for 3725	3725	EP/3725 R2	MVS, VM/SP	V3R1 or V3R2
V4R1	3725	EP/3725 R3	MVS, VSE	V3R1 or V3R2
V4R1	3720	Release 3	MVS, VSE	V3R2
V4R2	3725 or 3720	Release 4	MVS, VM/SP	V3R2
V4 Subset	3720	Release 3	VSE	V3R2
V4 Subset	3720	Release 4	VM/SP	V3R2
V4 Subset	3720	Release 4	MVS	V3R2

Note: Throughout the book, all information applies to the MVS, VM/SP, or VSE operating systems, unless otherwise noted.

Who Should Read This Book

This book is directed to system analysts, system programmers, system engineers, and field engineers responsible for defining an NCP for the IBM 3705, 3725, or 3720 Communication Controller.

If you are familiar with the task of defining an NCP, you can use this book by itself. If you are not familiar with this task, you can use this book in conjunction with the *NCP and SSP Resource Definition Guide*. The full title and order number for this guide are given later under “Corequisite Books” on page xv.

What You Need To Know Before Using This Book

Before using this book, ensure that you know which definition statements and operands you need to code to define your particular network configuration and include any optional functions your NCP is to perform. See the *NCP and SSP Resource Definition Guide* for help in making this determination. See the *NCP and SSP Generation and Loading Guide* for information on how to use the Advanced Communications Function for System Support Programs (SSP) to generate and load the NCP.

If you are using the NCP V4 Subset, you need to be aware of the following:

- The gateway information (for SNA Network Interconnection) **does not apply** to your configuration.

- The NCP/Token-Ring interconnection (NTRI) information **does not apply** to your configuration.

Before using this book, you also need to have the following:

- A thorough knowledge of Systems Network Architecture (SNA) and of the functions the NCP provides in an SNA network
- An awareness of what your total network configuration looks like
- A complete set of specifications for the resources in your network.

Notes:

1. *Throughout this book, the term **macro** (used in previous releases of the NCP and SSP books) has been replaced by the term **definition statement**; the term **stage** has been replaced by the term **phase**.*
2. *The term **network** has at least two meanings. A **public network** is a network 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 the purpose of data processing or information exchange, which may use services offered by communication common carriers or telecommunication Administrations. **Network**, as used in this book, refers to a user application network.*

How This Book Refers to ACF Program Products

Throughout this book, the following abbreviations are used to refer to the associated Advanced Communications Function (ACF) program products. Where it is necessary to distinguish between an ACF and a non-ACF version of one of these products, the book will make this distinction clear. Otherwise, an abbreviation without an “ACF/” in front of it always should be assumed to be the ACF version.

Program Product	Abbreviation
Advanced Communications Function for Network Control Program	NCP
Advanced Communications Function for Network Control Program V4 Subset	NCP V4 Subset
Advanced Communications Function for System Support Programs	SSP

Program Product	Abbreviation
Advanced Communications Function for Telecommunications Access Method	TCAM
Advanced Communications Function for Virtual Telecommunications Access Method	VTAM

Where To Get Information About Migration

If you are migrating from a previous release of NCP to Version 4 of NCP, you will need to refer to the *NCP and SSP Migration* book. The *NCP and SSP Migration* book summarizes the changes you have to make to existing source programs to migrate to Version 4 of NCP. The full title and order number for this book are given later under “Corequisite Books” on page xv.

Where To Get Information About Model Definitions

SSP Version 3 contains model definitions that help you define your resources to the NCP. The model definitions cover the major building blocks of an NCP and the most commonly used PUs, LUs, cluster controllers, and terminals. For more information concerning the model definitions refer to the *NCP and SSP Resource Definition Guide* and the *NCP/EP Definition Facility Model Statements* document. The *NCP/EP Definition Facility Model Statements* document is on the SSP tape. It is recommended that you print this document and use it as a guide during the resource definition task.

How This Book Is Organized

This book has two chapters, three appendixes, and a glossary.

Chapters and appendixes in this book are titled and organized as follows:

Chapter 1, “How To Use This Manual” : This chapter explains the order of the definition statements in your generation input job stream. This chapter also explains the definition statement coding conventions used in this book, lists the NCP/EP Network Definition Facility (NDF) reserve characters, and discusses NDF syntax validation.

Chapter 2, “Definition Statement and Operand Descriptions” : This chapter contains detailed descriptions of the definition statements used to define an Advanced Communications Function for Network Control Program (NCP) Version 3, an Advanced Communications Function for Network Control Program Version 4, or an Advanced Communications Function for Network Control Program V4 Subset. It is a reference, which

you use like a dictionary to determine *how* to code the operands. You only have to be concerned with those statements and operands you determined you need from reading the *NCP and SSP Resource Definition Guide*.

Appendix A, “Hierarchy of Network Configuration Definition Statements” : This appendix suggests a hierarchy by which you can logically arrange the elements in your configuration.

Appendix B, “Procedure for Determining Line Interrupt Priorities” : This appendix gives a recommended procedure for determining the interrupt priorities for lines serviced by type 2 and type 3 communication scanners. *Use it only if you are defining an NCP for the 3705.*

Appendix C, “Upper Scan Limits, Address Substitution, and High Speed Select Options” : This appendix discusses the use of upper scan limits and the application of the address substitution or high speed select techniques to accommodate higher maximum line speeds. *Use this appendix only if you are defining an NCP for the 3705.*

Where To Find More Information

Before using this book, you must have a thorough knowledge of SNA and of the functions the NCP provides in an SNA network. You also need to have a good understanding of the communication controller your NCP is going to reside in and the access method or access methods it will communicate with. The books listed below can help you get this prerequisite knowledge and understanding.

Prerequisite Knowledge and Books

The books listed below can help you with your prerequisite knowledge and understanding.

For All Users:

Abbreviated Title	Full Title	Order Number
<i>SNA Concepts and Products</i>	<i>Systems Network Architecture: Concepts and Products</i>	GC30-3072
<i>SNA Technical Overview</i>	<i>Systems Network Architecture: Technical Overview</i>	GC30-3073

For Users of NCP V4:

Abbreviated Title	Full Title	Order Number
	<i>Network Program Products General Information</i>	GC30-3350
	<i>Network Program Products Planning</i>	SC30-3351
	<i>Introduction to the IBM 3725 Communication Controller (Model 1 only)</i>	GA33-0010
	<i>Introduction to the IBM 3725 Communication Controller (Model 2 only)</i>	GA33-0021
	<i>IBM 3725 Communication Controller: Operator's Guide</i>	GA33-0014
	<i>IBM 3725 Communication Controller: Problem Determination and Extended Services</i>	GA33-0044
	<i>Introduction to the IBM 3720 Communication Controller</i>	GA33-0060
	<i>IBM 3720 Communication Controller: Operator's Guide</i>	GA33-0065
	<i>IBM 3720 Communication Controller: Problem Determination and Extended Services</i>	GA33-0066

For Users of NCP V3 for the IBM 3725:

Abbreviated Title	Full Title	Order Number
	<i>Introduction to the IBM 3725 Communication Controller</i>	GA33-0010
	<i>IBM 3725 Communication Controller: Principles of Operation</i>	GA33-0013

For Users of NCP V3 for the IBM 3705:

Abbreviated Title	Full Title	Order Numbers
	<i>Introduction to the IBM 3704 and 3705 Communications Controllers</i>	GA27-3051

Abbreviated Title	Full Title	Order Numbers
	<i>IBM 3704 and 3705 Communications Controllers: Principles of Operation</i>	GC30-3004
	<i>Introduction to the IBM 3705-80 Communications Controller</i>	GA27-3304
	<i>IBM 3705-80 Communications Controller: Principles of Operation</i>	GC30-3074

For Users of VTAM V3R1.1:

Abbreviated Title	Full Title	Order Number
	<i>Network Program Products General Information</i>	GC30-3350
	<i>Network Program Products Planning</i>	SC30-3351

For Users of VTAM V3R1:

Abbreviated Title	Full Title	Order Number
	<i>Network Program Products General Information</i>	GC23-0108
	<i>Network Program Products Planning</i>	SC23-0110

For Users of VTAM V2R2:

Abbreviated Title	Full Title	Order Number
	<i>Network Program Products General Information</i>	GC27-0657
	<i>Network Program Products Planning</i>	SC27-0658

For Users of VTAM V2R1:

Abbreviated Title	Full Title	Order Number
<i>VTAM General Information</i>	<i>Advanced Communications Function for VTAM: General Information</i>	GC27-0608

For Users of VTAM V1R3:

Abbreviated Title	Full Title	Order Number
<i>VTAM General Information</i>	<i>Advanced Communications Function for VTAM General Information: Introduction</i>	GC27-0462
<i>VTAM General Information</i>	<i>Advanced Communications Function for VTAM General Information: Concepts</i>	GT27-0463

For Users of TCAM V2R4:

Abbreviated Title	Full Title	Order Number
<i>TCAM General Information</i>	<i>Advanced Communications Function for TCAM General Information: Introduction</i>	GC30-3057
<i>TCAM General Information</i>	<i>Advanced Communications Function for TCAM General Information: Functional Description</i>	GC30-3131

Corequisite Books

While using this book, you will need to refer to the following books:

Abbreviated Title	Full Title	Order Number
<i>NCP and SSP Resource Definition Reference</i>	<i>Advanced Communications Function for Network Control Program Versions 3 and 4, Advanced Communications Function for System Support Programs Version 3: Resource Definition Reference</i>	SC30-3254
<i>NCP and SSP Generation and Loading</i>	<i>Advanced Communications Function for Network Control Program Versions 3 and 4, Advanced Communications Function for System Support Programs Version 3: Generation and Loading Guide</i>	SC30-3348

You also may need to refer to the books listed below.

For All Users:

Abbreviated Title	Full Title	Order Number
<i>NCP and SSP Migration</i>	<i>Advanced Communications Function for Network Control Program Versions 3 and 4, Advanced Communications Function for System Support Program Version 3: Migration</i>	SC30-3252
<i>NCP and SSP Messages and Codes</i>	<i>Advanced Communications Function for Network Control Program, Advanced Communications Function for System Support Programs: Messages and Codes</i>	SC30-3169
<i>NCP and SSP Diagnosis Guide</i>	<i>Advanced Communications Function for Network Control Program Versions 3 and 4, Advanced Communications Function for System Support Programs Version 3: Diagnosis Guide</i>	LY30-5591
<i>SNA Reference Summary</i>	<i>Systems Network Architecture: Reference Summary</i>	GA27-3136
<i>NPA Program Description/Operations</i>	<i>Network Performance Analyzer: Program Description/Operations</i>	SB21-2479

For Users of NCP V4R2 and NCP V4 Subset (for VM/SP and MVS):

Abbreviated Title	Full Title	Order Number
<i>NCP and EP Reference Summary and Data Areas</i>	<i>Advanced Communications Function for Network Control Program Version 4, Emulation Program for the IBM 3725: Reference Summary and Data Areas</i>	LY30-5570
<i>NCP Customization</i>	<i>Advanced Communications Function for Network Control Program Version 4: Customization</i>	LY30-5571

For Users of NCP V4R1 and NCP V4 Subset (for VSE):

Abbreviated Title	Full Title	Order Number
<i>NCP Reference Summary and Data Areas</i>	<i>Advanced Communications Function for Network Control Program Version 4; Emulation Program for the IBM 3725: Reference Summary and Data Areas for the IBM 3725</i>	LT70-5570
<i>NCP Customization</i>	<i>Advanced Communications Function for Network Control Program Version 4: Customization for the IBM 3725</i>	LY30-5571

For Users of NCP V3 for the IBM 3725:

Abbreviated Title	Full Title	Order Number
<i>NCP Reference Summary and Data Areas</i>	<i>Advanced Communications Function for Network Control Program Version 3; Emulation Program for the IBM 3725: Reference Summary and Data Areas for the IBM 3725</i>	LY30-5558
<i>NCP Customization</i>	<i>Advanced Communications Function for Network Control Program Version 3: Customization for the IBM 3725</i>	LY30-5559

For Users of NCP V3 for the IBM 3705:

Abbreviated Title	Full Title	Order Number
<i>Network Program Products Samples</i>	<i>Network Program Products: Samples (when available)</i>	SC27-0659
<i>NCP Reference Summary and Data Areas</i>	<i>Advanced Communications Function for Network Control Program for the IBM 3705; Emulation Program for the IBM 3705: Reference Summary and Data Areas</i>	LY30-5555
<i>NCP Customization</i>	<i>Advanced Communications Function for Network Control Program for the IBM 3705: Customization</i>	LY30-5556
	<i>IBM 3704 and 3705 Communications Controllers Assembler Language</i>	GC30-3003

For Users of VTAM V3:

Abbreviated Title	Full Title	Order Number
<i>VTAM Installation</i>	<i>Advanced Communications Function for VTAM: Installation and Resource Definition</i>	SC23-0111
<i>VTAM Operation</i>	<i>Advanced Communications Function for VTAM: Operation</i>	SC23-0113

For Users of VTAM V2R2:

Abbreviated Title	Full Title	Order Number
<i>VTAM Installation</i>	<i>Advanced Communications Function for VTAM: Installation and Resource Definition</i>	SC27-0610
<i>VTAM Operation</i>	<i>Advanced Communications Function for VTAM: Operation</i>	SC27-0612

For Users of VTAM V2R1:

Abbreviated Title	Full Title	Order Number
<i>VTAM Installation</i>	<i>Advanced Communications Function for VTAM: Planning and Installation Reference</i>	ST27-0610
<i>VTAM Operation</i>	<i>Advanced Communications Function for VTAM: Operation</i>	ST27-0612

For Users of VTAM V1R3:

Abbreviated Title	Full Title	Order Number
<i>VTAM Installation</i>	<i>Advanced Communications Function for VTAM: Planning and Installation Reference</i>	SC27-0584
<i>VTAM Operation</i>	<i>Advanced Communications Function for VTAM: Operation</i>	SC27-0466

For Users of TCAM V2R4:

Abbreviated Title	Full Title	Order Number
<i>TCAM Networking Installation Guide</i>	<i>Advanced Communications Function for TCAM: Networking Installation Guide</i>	SC30-3153
<i>TCAM Base Installation Guide</i>	<i>Advanced Communications Function for TCAM: Base Installation Guide</i>	SC30-3132
<i>TCAM Installation Reference</i>	<i>Advanced Communications Function for TCAM: Installation Reference</i>	SC30-3133

For Users of SSP V3 and the Configuration Control Program (CCP) Facility

Abbreviated Title	Full Title	Order Number
<i>SSP User's Guide for CCP</i>	<i>Advanced Communications Function for System Support Programs Version 3: User's Guide (for Configuration Control Program Facility)</i>	SC30-3261

Abbreviated Title	Full Title	Order Number
<i>SSP Installation and Diagnosis for CCP.</i>	<i>Advanced Communications Function for System Support Programs Version 3: Installation and Diagnosis (for Configuration Control Program Facility)</i>	SC30-3262

For Users of NetView

Abbreviated Title	Full Title	Order Number
	<i>NetView Installation and Administration Guide</i>	SC30-3360

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Summary of Changes

SC30-3254-1 (May 1986)

This book is a major revision and it contains important changes throughout; therefore no revision bars appear in it. Because no revision bars appear in the book, read thoroughly any information that applies to your configuration.

In addition to editorial changes, technical corrections, and general clarifications, this edition contains the following major additions:

- Addition of information pertaining to NCP Version 4 Release 2
- Addition of information pertaining to NCP V4 Subset
- Addition of information pertaining to the NDF standard attachment facility
- Addition of information pertaining to the 3720 Communication Controller
- Addition of information pertaining to the NCP/Token-Ring interconnection (NTRI).

Chapter 1. How To Use This Manual

Note: Before you use this manual, be sure to read “About This Book” at the front of the manual. “About This Book” explains (1) the type of information in this manual, (2) how this information is organized, (3) what knowledge you should have before using this manual, and (4) what other manuals you should read first or should have with you for reference.

Order of Definition Statements

You can use Chapter 2 of this book somewhat like a dictionary because it is in *alphabetical* order. But the entries in Chapter 2 are *layered*, which means:

- The primary entries are definition statements, and they are in alphabetical order.
- Listed first under each definition statement are the required operands, which are in alphabetical order.
- And finally, following the required operands, the conditional operands are listed in alphabetical order.

Note: The definition statements and operands listed in Chapter 2 are the definition statements and operands used to define the following:

- *NCP Version 3 for the IBM 3705*
- *NCP Version 3 for the IBM 3725*
- *NCP Version 4*
- *NCP V4 Subset.*

Figure 1-1, below, lists all the definition statements in the order that they must appear in your generation input job stream. For a complete description of the sequence and usage requirements for all the definition statements, refer to the *NCP and SSP Resource Definition Guide*.

Definition Statement	Line Control		SS	Comments
	SDLC	BSC		
OPTIONS				Can appear anywhere in the input job stream unless USERGEN or NEWDEFN is defined, in which case OPTIONS must be first
PCCU				VTAMs that can activate the NCP (VTAM only)
BUILD	R	R	R	
SYSCNTRL	R	R	R	
NCPNAU	*			User-written code and programmed resources only
GWNAU	I	I	I	SNA network interconnection users only
HOST	R	R	R	Channel attached access methods only
CSB	*	*	*	Valid only for the IBM 3705
IDLIST		*	*	BSC or TWX devices attached to switched data links only
LUPOOL	*			Devices attached to switched data links only
LUDRPOOL	*			Dynamic reconfiguration or switched SDLC data links only
PUDRPOOL	*			Dynamic reconfiguration only
PATH	R			
SDLCST	*			Subarea links only
DIALSET		*	*	Switched data links only
MTALCST			*	Multiple terminal access for switched data links only
MTALIST			*	Multiple terminal access for switched data links only
MTAPOLL			*	Multiple terminal access for switched data links only
MTATABL			*	Multiple terminal access for switched data links only
GROUP	R	R	R	
LINE	R	R	R	

Figure 1-1 (Part 1 of 2). Sequence and Usage of NCP Definition Statements

Definition Statement	Line Control			Comments
	SDLC	BSC	SS	
SERVICE	*	*	*	Nonswitched data links only
CLUSTER		*		Clustered BSC stations only
TERMINAL		*	*	
COMP		*	*	
PU	*			
LU	*			Nonswitched data links only
NETWORK	I	I	I	SNA network interconnection users only
GWNAU	I	I	I	SNA network interconnection users only
PATH	I	I	I	SNA network interconnection users only
STARTBH		*	*	Block-handling routines only
EDIT		*	*	Block-handling routines only
DATETIME		*	*	Block-handling routines only
UBHR		*	*	Block-handling routines only
REMOVCTL			*	Block-handling routines only
ENDBH		*	*	Block-handling routines only
BHSET		*	*	Block-handling routines only
GENEND	R	R	R	

Legend:

R = Required for NCP generation

* = Applicable to specified device or data link type

I = Required for SNA network interconnection

Figure 1-1 (Part 2 of 2). Sequence and Usage of NCP Definition Statements

The ADD definition statement and DELETE definition statement are not listed in the preceding figure because you must code the ADD and DELETE definition statements in a separate generation deck for dynamic reconfiguration. For more information, refer to the descriptions of the ADD and DELETE definition statements in Chapter 2.

Definition Statement Coding Conventions Used in the manual

The descriptions of the definition statements in this manual use the following conventions:

- Capital letters represent values you code directly, without change.
- Small letters represent parameters for which you must supply a value.
- Commas separate operands, and also separate a sequence of values coded in one operand.
- Brackets [] enclose operands or symbols that are either *optional* or *conditional*.

An optional operand is one that you can code or omit, independent of other operands. Omitting certain operands can cause a default value to be used. The default value is always given as one of the choices.

A conditional operand is one that you can code or omit, depending on how you code (or omit) other operands in the same or other definition statements.

- Braces { } indicate that you must choose from the enclosed items.
- 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 operand. That is, the NCP uses that value if you omit the operand.
- Parentheses () must enclose a sequence of values coded in one operand.
- Quotes must enclose a character string if that character string can be confused with a keyword value for an operand. Enclosing the character string in quotes lets you use certain names as symbols that you would be prevented from using otherwise.
- Numbers are written with a space between the numerals denoting the thousands' place. For example, 1 234 is one thousand two hundred and thirty-four.

Within the definition statement formats and descriptions, operands that are always required appear first, in alphabetical order. Then, operands that are conditional or optional follow in alphabetical order. These operands are enclosed in brackets [].

In the syntax lists at the beginning of each definition statement each required operand, with the exception of the last required operand, is followed by a comma. Similarly, each optional operand, after the last

required operand, is preceded by a comma. However, if the lists consist of optional operands only, each optional operand, with the exception of the first operand, is preceded by a comma. These commas are shown to emphasize that you must code a comma between each operand but not after the last operand or before the first operand of each definition statement.

NDF Reserved Characters

The following list describes the NDF reserved characters.

- Data set (file) names must begin with an alphabetic character or \$, @, or #.
- Symbols coded in the name field of a definition statement must not begin with a \$ character. If you do specify symbols, the symbols must be unique.

NDF Syntax Validation

The syntax validation that NDF performs on the generation input deck is slightly different than that which the assemblers perform. In the assembler, column 16 is the continue column for *both* comments and operands. For NDF, if you want to continue an *instruction*, you must do the following:

- Include a comma after the specified operand value.
- Include a 'C' in column 72.
- Specify the next operand starting in column 16.

Comments (that are not full-line comments) can appear between columns 17 and 71, inclusive.

Example:

1		16		72
NCP	BUILD	MAXSUBA = 255,		C
		MODEL = 3725		C
		SUBAREA = 1,		C
		TYPGEN = NCP,...		C

In this example, note that no comma appears after the operand 'MODEL = 3725' and that on the same line a 'C' appears in column 72. In processing the BUILD statement, the assembler assumes that 'MODEL = 3725' is the end of the statement. The assembler assumes also that the 'C' in column 72 indicates a continuation of a comment. The assembler will process the rest of the statement as a comment.

NDF assumes that 'SUBAREA = 1' is *not* a comment because 'SUBAREA = 1' begins in column 16. NDF will produce a warning message because a comma does not appear after 'MODEL = 3725' and 'SUBAREA = 1' begins in column 16. NDF will process the rest of the statement as a comment just as the assembler does.

If the operands following 'MODEL = 3725' are intended to be processed as comments, you must specify them in columns 17 through 71.

Chapter 2. Definition Statement and Operand Descriptions

This chapter gives detailed descriptions of the definition statements used to define the following:

- NCP Version 3 for the IBM 3705
- NCP Version 3 for the IBM 3725
- NCP Version 4 Release 1
- NCP Version 4 Release 2
- NCP V4 Subset.

They also include the limitations of the values that you can specify for each operand. The definition statements are listed in alphabetical order. At the beginning of each definition statement there is a syntax list of the operands. The descriptions of the operands follow the list. The required operands are listed first in alphabetical order. The optional operands appear in alphabetical order after the required operands.

How To Use This Chapter

The definition statements in this chapter are arranged in alphabetical order. For information on the required sequence of these definition statements in a generation input job stream, see Figure 1-1 and the *NCP and SSP Resource Definition Guide*. SSP Version 3 contains model definitions that help you define your resources to the NCP. For information concerning the model definitions, refer to the *NCP and SSP Resource Definition Guide* or the *NCP/EP Definition Facility Model Statements* document located on the SSP tape.

Most of the operands described in Chapter 2 are valid for the versions of NCP and controllers listed at the beginning of the chapter. However, in those cases with differences for particular versions or controllers, throughout Chapter 2, the following conventions are used to identify either version-dependent or controller-dependent information:

- The operands that are valid only for the IBM 3725 Communication Controller are highlighted by the phrase “(3725 only)”.
- Those operands valid for both the IBM 3725 and the IBM 3720 are highlighted by the phrase “(3725 and 3720)”.

-
- Those operands not valid for the NCP V4 Subset are highlighted by the phrase “(not valid for NCP V4 Subset)”.
 - The definition statements and operands that are valid only for the IBM 3705 Communications Controller are highlighted by the phrase “(3705 only)”.
 - If an operand specifies different characteristics dependent on the version of the NCP or type of controller, these differences are highlighted by an introductory phrase in bold letters (for example, **For NCP Version 3 for the IBM 3705:**).
 - Throughout this book, an underlined value for an operand is the default for that operand. In other words, if you omit the operand the underlined value is used.

The information for each definition statement appears in the following order:

- Usage
- Position
- Format and Operands
- Operand Descriptions.

Usage provides information about whether or not you need to code the definition statement, and how often you need to code the definition statement for your particular resource.

Position provides information about where you include the definition statement in your generation input job stream.

Format and Operands provides the coding conventions for the definition statement and its operands.

Operand Descriptions explains the operands in detail. These descriptions include (1) what the operand specifies; (2) if appropriate, the minimum and maximum values that you can specify and the default values; and (3) any other special limitations you must consider.

Sometimes, additional information is given for certain definition statements, such as (1) the lower-level operands that can be specified in higher-level definition statements, (2) special operands for VTAM users only, and (3) special operands for NCP/Token-Ring interconnection (NTRI) configurations.

Summary of Definition Statements and Operands

Figure 2-1 on page 2-4 lists all of the operands of the network configuration definition statements. The asterisk (*) indicates the definition statement where the description of the operand appears. The bullet (●) indicates other definition statements in which the operand can be coded.

Note: This summary does not indicate the conditions (for example, type of line control, or type of device) under which use of the operand is appropriate. For this information, see the individual definition statement descriptions later on in the chapter.

VTAM Operands

Some operands convey no information to the NCP generation process but must nonetheless appear in the NCP generation input definition that serves as input to the VTAM initialization procedure. Such operands are called *VTAM* operands. The generation validation step of NDF permits each VTAM operand to appear in the definition statements indicated by a V in the table of Figure 2-1. The generation procedure does not check these operands for proper syntax or verify that any related operands are present or absent. For the meanings of the VTAM operands, see the appropriate *VTAM Installation* manual.

Definition Statement									
	For Network Control Mode							For Emulation Mode	
	GROUP	LINE	CLUSTER	PU	LU	TERMINAL	COMP	GROUP	LINE
ACTIVTO	X								
ADDR				X		X	•		
ADDRESS									X
ANS	•	•		X					
ANSTONE	•								
ANSWER									
ATTACH	•	X							
ATTN	•	•				X			
AUTO		X							X
AUTODL	•	X							
AUTOGEN	X								
AUTUACB	•	X							
AVGPB	•	X		X					
BATCH	•	•		•	X				
BERPROC	X								
BFRDLAY	•	•	•			X			
BHEXEC	•	•	X			X	•		
BHSET	•	•	X			X			
BNNSUP	•	•		X					
BUFETTE								•	X
BUFSIZE								•	X
CAEXIT	X								
CALINE	•	X							
CALL	•	X							
CHANLA		X							
CHANLNK	X								
CHAREC	X							X	
CHECK									X
CHNLZ	•	X							
CHNPRI									X
CLINES		X							
CLOCKNG	•	X						•	
CODE	•	X						•	X
COMPACB	X								
CONFIG	•	X							
CONV	•	•				X	•		
CORNUM	•	X							
CRDLAY	•	•				X	•		
CRETRY	X								
CRITSIT	•	•	•			X			
CRRATE									
CTERM						X			
CU									X
CUIDLEN	•	•				X			
CUTOFF	•	X							
CUTYPE	•	•	X					•	X

X indicates the definition statement where the description of the operand appears.
• indicates other definition statements in which the operand can be coded.
V indicates the definition statements in which the VTAM-only operand at the left can be coded. See the appropriate ACF/VTAM Installation manual for a description of this operand.

Figure 2-1 (Part 1 of 5). Summary of Operands for Configuration Definition Statements

Definition Statement									
	For Network Control Mode							For Emulation Mode	
	GROUP	LINE	CLUSTER	PU	LU	TERMINAL	COMP	GROUP	LINE
DATMODE	●	●		X				●	
DATRATE	●	X						X	X
DELAY								X	
DIAL	X							X	
DIALALT	●	X							
DIALNO						X			
DIALSET	●	X				X			
DISABLE								●	X
DISCNT	V	V		V	V				
DLOGMOD	V	V	V	V	V	V			
DUALCOM									X
DUPLEX	●	X						●	X
ECLTYPE	X								
ENCR				V	V				
ENDTRNS	●	●				X	●		
EOB								X	
EOT								X	
ETRATIO	●	X							
EXEC	●	●	●			X	●		
FANOUT						X			
FEATURE	●	X ¹	X ²			X		●	X
FEATUR2	V	V	V	V	V	X			
FRAMING	X					V			
GPOLL			X						
HDXSP	●	X							
HISPEED	●	X							
IDSEQ	●	●				X			
INHIBIT	●	●	●			X	●		
IPL	●	X						●	X
IRETRY	●	●							
ISTATUS	V	V	V	X	V	V			
ITBMODE	●	●	●	V		X	●		
KDBLOCK	X								
LCST	●	●				X			
LEVEL2	X								
LEVEL3	X								
LEVEL5	X								

1 The LINE definition statement is the lowest level definition statement where IMEND or NOIMEND parameters can be specified.

2 The CLUSTER definition statement is the lowest level definition statement where the BATCH, NOBATCH, GPLKUP, or NOGPLKUP parameters can be specified.

X indicates the definition statement where the description of the operand appears.

● indicates other definition statements in which the operand can be coded.

V indicates the definition statement in which the VTAM-only operand at the left can be coded. See the appropriate ACF/VTAM Installation manual for a description of this operand.

Figure 2-1 (Part 2 of 5). Summary of Operands for Configuration Definition Statements

Definition Statement									
	For Network Control Mode							For Emulation Mode	
	GROUP	LINE	CLUSTER	PU	LU	TERMINAL	COMP	GROUP	LINE
LGRAPHS	●	●	X			X	●		
LIC		X							
LINEADD	X								
LINEAUT	X								
LINECB	●	X							
LINEFVT	●	X							
LINESIZ	●	X							
LNCTL	X							X	
LNKOWNER	X								
LNQTCNT	●	X							
LOCADD		X							
LOCADDR					X				
LOGAPPL	V	V	V	V	V	V			
LOGTAB	V	V	V	V	V	V			
LPDA					X				
LPDATS	●	X							
LTRUNC	●	X							
LUCB	●			●	X				
LUDR	●	●		●	X				
LUFVT	●	●		●	X				
LUNTFY	●	●		●	X				
MAXCOLL	●	●		●	X				
MAXDATA	●	●		X					
MAXLU	●	●		X					
MAXOUT	●	●		X					
MAXPU	●	X							
MAXTSL	●	X							
MODE	X								
MODEM								●	X
MODETAB	V		V	V	V	V			
MODULO	●	X							
MONITOR	●	X							
MONLINK	●	X							
MPTALT	●	X							
MTALIST	●	X							
NEGPOLP	●	X							
NETID	●			X					
NEWSYNC	●	X				X		●	X
NPACOLL	●	X	X	X	X				
NPARSC	X								
NRZI	●	X							
NUMSESS	●	●		●	X				
OWNER	V	V							
PACING	●	●	●	●	X			●	X
PAD									
PADCNT	X								
PARCHK	●	X							
PARGEN	●	X							

X indicates the definition statement where the description of the operand appears.

● indicates other definition statements in which the operand can be coded.

V indicates the definition statement in which the VTAM-only operand at the left can be coded. See the appropriate ACF/VTAM Installation manual for a description of this operand.

Figure 2-1 (Part 3 of 5). Summary of Operands for Configuration Definition Statements

Definition Statement									
	For Network Control Mode							For Emulation Mode	
	GROUP	LINE	CLUSTER	PU	LU	TERMINAL	COMP	GROUP	LINE
PASSLIM	●	●		X					
PAUSE	●	X							
PECHAR	X								
PHYPORT	X								
POLIMIT	●	X							
POLL						X	●		
POLLED	●	X							
POLLTO	●	X							
PORTADD		X							
PROMPT	●	X							
PR3EXEC	●	●	X			X	●		
PU	V	V							
PUCB	●	●		X					
PUDR	●	●		X					
PUFVT	●	●		X					
PUNTFY	●	●		X					
PUTYPE	●	●		X					
QUIET								●	X
QUIETCT								X	
RCVBUFC	●	X							
REDIAL	●	X							
REPLYTO	X							X	
RETRIES		X		X					
RETRYTO	X								
RING	●	X							
SDLCST	●	X							
SECNET		V		V					
SECURE	●	X							
SERVLIM	●	X							
SERVPRI	●	X							
SESSION	●	X							
SPAN	V	V	V	V	V	V			
SPDSEL	●	X							
SPEED	●	X							
SRT	●	●		X		X	●	●	X
SSCPFM	V	V		V	V				
SUBAREA				X					
TADDR	●	X						●	X
TAILING	●	X							
TERM	●	X	●	V	V	X		●	X
TEXTTO	X							X	

X indicates the definition statement where the description of the operand appears.

● indicates the other definition statements in which the operand can be coded.

V indicates the definition statement in which the VTAM-only operand at the left can be coded. See the appropriate ACF/VTAM Installation manual for a description of this operand. (See the NCCF Installation manual for a description of the SPAN operand.)

Figure 2-1 (Part 4 of 5). Summary of Operands for Configuration Definition Statements

Definition Statement									
	For Network Control Mode							For Emulation Mode	
	GROUP	LINE	CLUSTER	PU	LU	TERMINAL	COMP	GROUP	LINE
TGN	●	●		X					
TI	●	X							
TIMER	X								
TRANSFR	●	X							
TTDCNT	X								
TYPE	X	X							
UACB	●	X							
UCCB					X				
UNITXC								●	X
USE	●	X							
USERID	X								
USSTAB	V	V	V	V	V	V			
UTERM						V			
VIDSEQ	V	V							
VIROWNER	X								
VIRTUAL	X								
VPACING	V	V	V	V	V				
VPRINT	●	●	●			X			
WACKCNT	X								
WAKDLAY	X								
WTTYEOB	X								
WTTYEOT	X								
XIO	X								
XTWXID	●	●							
X21SW	X					X			
YIELD	●	X							

X indicates the definition statement where the description of the operand appears.

● indicates other definition statements in which the operand can be coded.

V indicates the definition statement in which the VTAM-only operand at the left can be coded. See the appropriate ACF/VTAM Installation manual for a description of this operand.

Figure 2-1 (Part 5 of 5). Summary of Operands for Configuration Definition Statements

ADD Definition Statement

USAGE: Used for dynamic reconfiguration. One for each PU or LU you want to add to an existing link or PU, respectively.

POSITION: In a separate generation input deck, before a PU definition statement or an LU definition statement. If you specify the name of a link in this ADD definition statement, the ADD definition statement must precede a PU definition statement. If you specify a PU in this ADD definition statement, the ADD definition statement must precede an LU definition statement.

FORMAT AND OPERANDS: The format of the ADD definition statement is:

```
[symbol]    ADD    [operand]
```

Operand

TO=symbol

Operand Description

symbol

Provides a name for the ADD definition statement. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

TO=symbol

If you want to add a PU dynamically, specifies the name of the link defined in the NCP generation to which the new PU will be added. If you want to add an LU dynamically, specifies the name of the PU defined in the NCP generation to which the new LU will be added.

If you want to add a PU to a link, you must code the PU definition statement as described in the PU definition statement description in this manual. However, for dynamic reconfiguration, the DATMODE, MAXLU, and SUBAREA operands are ignored. If you omit the RETRIES operand, the default is 7 for both the *t* and *n* parameters.

If you want to add an LU to a PU, you must code the LU definition statement as described in the LU definition statement description in this manual. You must specify 1 for the *m* parameter or omit the *m* of the PACING operand. For an example of coding the ADD definition statement for dynamic reconfiguration, refer to the *NCP and SSP Resource Definition Guide*.

BHSET Definition Statement

USAGE: BSC or SS devices only. One for each block-handler set needed.

POSITION: Must follow all block-handler definition statements of a block-handler set.

FORMAT AND OPERANDS: The format of the BHSET definition statement is:

```
symbol    BHSET    [operands]
```

Operands

```
[EXEC={YES}]
      {NO }
```

```
[ ,PT1=bhname]
```

```
[ ,PT2=bhname]
```

```
[ ,PT3=bhname]
```

Operand Descriptions

symbol

Provides a name for the set of block handlers and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$. (*symbol* is referred to by the BHSET operand of the CLUSTER, TERMINAL, and COMP definition statements.)

```
[EXEC={YES}]
      {NO }
```

Specifies whether the block-handler set can be run when it is associated with a device by command from the host processor.

Do not confuse this operand with the EXEC operand of the TERMINAL definition statement which specifies whether the block-handler set is run *initially*.

```
[PT1=bhname]
```

Specifies the name of the block handler that runs when a request for the device is received from the host processor but before the line is available.

```
[PT2=bhname]
```

Specifies the name of the block handler that runs when a request for the device is received from the host processor but after the line is available.

BHSET

[PT3=bhname]

Specifies the name of the block handler that runs at PT3. This block handler runs when an input operation on a telecommunication line ends and after the line is released for use with another station.

BUILD Definition Statement

USAGE: Required.

POSITION: First in NCP definition statement stream, unless you specify OPTIONS definition statement first.

FORMAT AND OPERANDS: The format of the BUILD definition statement is:

[symbol] BUILD operands[,operands]

NTRI Users Only: Appearing in the list of operands below, under the 'NTRI' column, are the operands that you code in this definition statement if you want NCP/Token-Ring interconnection (NTRI) resources included in your generation. The descriptions for these operands are included in alphabetical order along with the NCP operands.

VTAM Users Only: Appearing after the list of operands below are the VTAM operands that can be coded in this definition statement. These operands provide information only to the VTAM initialization process and are not required in the generation definition used as input to the NCP generation procedure. See the appropriate *VTAM Installation* manual for the descriptions of these operands and for information on the VTAM initialization process.

In the chart you see on the next pages, use the following guidelines:

- Most of the operands are valid for the IBM 3705, the IBM 3725, and the IBM 3720. However, if an operand is valid only for the IBM 3705, '3705' appears in the 'Controller Type' column. Likewise, if an operand is valid only for the IBM 3725 or IBM 3720, either '3725' or '3720' appears in the 'Controller Type' column. If an operand is valid for both the IBM 3725 and the IBM 3720, '3725/3720' appears in the 'Controller Type' column. If the operand is valid for all three controllers, *no* controller type appears in the 'Controller Type' column.
- An R in one of the columns means that the operand is required; a bullet (●) in one of the columns means that the operand can be specified.
- **For NTRI Users:** For the optional operands listed under the 'NTRI' column, if you do not specify the operand, NDF adds the operand and a value appropriate for NTRI to the generation definition.
- An underlined value is the default for that operand. In other words, if you omit the operand the underlined value is used. This standard is used throughout the book.

BUILD

Operands	Controller Type	Pgm Type		Line Control			NTRI
		NCP	PEP	SDLC	BSC	SS	
MAXSUBA=n,	3705	R	R	R	R	R	
MEMSIZE=size,	3705	R	R	R	R	R	
MODEL=3725,	3725	R	R	R	R	R	R
MODEL=3705-2,	3705	R	R	R	R	R	
MODEL=3720,	3720	R	R	R	R	R	
NEWNAME=symbol, (Req'd for V4 Subset)	3720	•	•	•	•	•	
SUBAREA=n,		R	R	R	R	R	
{NCP }		R	R	R	R	R	
TYPGEN={NCP-R }		R	R				R
{PEP }		R	R				
{SNCP }	3720						
{SNCP-R}	3720						
{SPEP }	3720						
[,BACKUP={n}]	3725/3720	•		•			
{Q}							
[,BFRS={({88 }},{100 })]	3725/3720	•	•	•	•	•	
{size} {count}							
[,BFRS={88 }]	3705	•	•	•	•	•	
{size}							
[,BRANCH={count}]	3725/3720	•	•	•	•	•	
{100 }							
[,CA=(ca0,[ca1],[ca2],	3725	•	•	•	•	•	
..., [ca5])]							
[,CA=(ca0,[ca1])]	3720	•	•	•	•	•	
[,CA=(ca0,[ca1],	3705	•	•	•	•	•	
[ca2],[ca3])]							
[,CANETID=(id0,[id1],[id2],	3725	•	•	•	•	•	
..., [id5])]							
[,CANETID=(id0,[id1])]	3720	•	•	•	•	•	
[,CANETID=(id0,[id1],	3705	•	•	•	•	•	
[id2],[id3])]							
{NO }		•	•	•	•	•	
[,CATRACE={({YES[, {count}]})]							
{10 }							
[,CSMHDR=chars]		•	•		•		

Operands	Controller Type	Pgm Type		Line Control			NTRI
		NCP	PEP	SDLC	BSC	SS	
[,CSMHDRC=chars]		•	•		•		
[,CSMSG=chars]		•	•		•	•	
[,CSMSGC=chars]		•	•		•	•	
[,CUID=chars]		•	•		•		
[,CWALL={ <u>26</u> }] {count}		•	•	•	•	•	
[,DELAY=([ca0cnt], [calcnt], [ca2cnt], ..., [ca5cnt])]	3725	•	•	•	•	•	
[,DELAY=([ca0cnt], [calcnt])]	3720	•	•	•	•	•	
[,DELAY=([ca0cnt], [calcnt], [calcnt2], [ca3cnt])]	3705	•	•	•	•	•	
[,DIALTO={ <u>60.0</u> }] {count}		•	•	•	•	•	
[,DR3270={YES}] {NO }		•	•	•			
[,DSABLTO={ <u>3.0</u> }] {count}		•	•	•	•	•	
{NO } } [,DYNADMP={{(YES[, {adr0}]..[, {adr5}])}}] {NONE} ... {NONE}	3725		•		•	•	
{NO } } [,DYNADMP={{(YES[, {adr0}][, {adr1}])}}] {NONE} {NONE}	3720		•		•	•	
{adr1} {adr2} [,DYNADMP={{(YES[, {NSC }][, {NSC }])}}] { {NONE} {NONE} } {NO } }	3705		•		•	•	
[,ENABLTO={ <u>2.2</u> }] {count}		•	•	•	•	•	
[,GWAEXIT=name]		•	•	•	•	•	
[,HICHAN=([addr0], [addr1], ..., [addr5])]	3725		R		•	•	
[,HICHAN=([addr0], [addr1])]	3720		R		•	•	
[,HICHAN=([addr1], [addr2])]	3705		R		•	•	
[,HSBPOOL=n]		•	•	•	•	•	

BUILD

Operands	Controller Type	Pgm Type		Line Control			NTRI
		NCP	PEP	SDLC	BSC	SS	
[,ITEXTTO={NONE }] {count}		•	•		•	•	
[,LENAME={symbol }] {INLINKED}		•	•	•	•	•	
{NO } [,LINETRC={{(YES[,{4}][,{4 }])}}] {n } {blocks}	3725/3720		•		•	•	
[,LINETRC={YES}[,lines][,entries]]	3705		•		•	•	
[,LOCALTO=n]	3725	•	•	•			•
[,LOCHAN=([addr0],[addr1], ...,[addr5])]	3725		R		•	•	
[,LOCHAN=([addr1],[addr2])]	3720		R		•	•	
[,LOCHAN=([addr1],[addr2])]	3705		R		•	•	
[,LTRACE={2 }] {count}		•	•	•	•	•	
[,MAXSSCP=count]		•	•	•	•	•	
[,MAXSUBA=n]	3725/3720	•	•	•	•	•	
[,MEMSIZE=size]	3725	•	•	•	•	•	
[,MTARTO={1.0 }] {count}		•	•			•	
[,MTARTRY={0 }] {count}		•	•			•	
[,MXRLINE=n]	3725	•	•	•			R
[,MXVLINE=n]	3725	•	•	•			R
[,NCPCA=([status0],[status1], ...,[status5])]	3725	•	•	•	•	•	
[,NCPCA=([status0],[status1])]	3720	•	•	•	•	•	
[,NCPCA=([status0],[status1], [status2],[status3])]	3705	•	•	•	•	•	
[,NETID=n]		•	•	•	•	•	
[,NETLIM=n]		•	•	•	•	•	

Operands	Controller Type	Pgm Type NCP PEP	Line Control SDLC BSC SS			NTRI
<pre> {symbol} [,NEWNAME={NCP001}] {PEP001} </pre>	3705/3725	• •	•	•	•	
<pre> [,NPA={NO } {YES} </pre>		• •	•	•		
<pre> [,NUMHSAS=n] </pre>		• •	•	•	•	
<pre> [,OLT={YES} {NO } </pre>		• •	•	•	•	
<pre> [,OPCSB2={YES} {NO } </pre>	3705	•		•	•	
<pre> [,PRTGEN={GEN } {NOGEN} </pre>		• •	•	•	•	
<pre> [,PWROFF={NO } {YES} </pre>		• •	•			
<pre> [,REMLOAD={YES} {NO } </pre>	3705	• •	•			
<pre> [,REMOTTO=n] </pre>	3725	• •	•			•
<pre> [,RESOEXT={0 } {count} </pre>		• •	•			
<pre> [,SESSLIM={n } {255} </pre>		• •	•	•	•	
<pre> {12} [,SLODOWN={25} {50} </pre>		• •	•	•	•	
<pre> [,TIMEOUT=([ca0cnt],[calcnt], ..., [ca5cnt]) </pre>	3725	•	•	•	•	
<pre> [,TIMEOUT=([ca0cnt],[calcnt]) </pre>	3720	•	•	•	•	
<pre> [,TIMEOUT=([ca0cnt],[calcnt], [ca2cnt],[ca3cnt]) </pre>	3705	• •	•	•	•	
<pre> {NO } [,TRACE={(YES[, {size}])} {10 } </pre>		• •	•	•	•	
<pre> [,TRANSFR=count] </pre>		• •	•	•	•	
<pre> [,TWXID=({inchars},{outchars}) {xon } {xon } </pre>		• •			•	

BUILD

Operands	Controller Type	Pgm Type		Line Control			NTRI
		NCP	PEP	SDLC	BSC	SS	
[,TYP SYS={OS }] {MVS} {DOS} {VSE} {VM }		•	•	•	•	•	
[,UCHAN={NO }] {YES}		•	•	•	•	•	
[,VERSION={V3 }] {V4 } {V4R2}		•	•	•	•	•	R
[,VRACT={YES}] {NO }		•	•	•	•	•	
[,VRPOOL=n]		•	•	•			
[,XBREAK={integer}] {NONE }		•	•		•		
[,XITB={NO }] {YES}	3705	•	•			•	

VTAM Operands

[,COSTAB=class-of-service table name]
 [,LOADLIB=ddname of NCP load module]
 [,QUALIFY=loadlib name qualifier]

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

MAXSUBA=n

(required for NCP Version 3)

Specifies the upper limit of the range of subarea addresses used within the *network* you are defining.

Note: The value you specify in this operand must match the values specified in the MAXSUBA specifications for all other NCPs and access methods in the same network.

The maximum subarea address value is always a power of 2 minus 1, within the range of 3 through 255 (3,7,15,31,63,127,255). If you specify a value that is not one of those listed, the generation procedure rounds the specified value to the next higher value. (For example, any value between 16 and 30 is rounded to 31.)

For NCP Version 3:

The total number of resources that can be associated with any subarea address depends on the value of MAXSUBA, as follows:

Value of MAXSUBA	Maximum number of Resources Possible
3	16 382
7	8 190
15	4 094
31	2 046
63	1 022
127	510
255	254

For example, assume that the network includes one host access method, assigned subarea address 1; two channel-attached communication controllers, assigned subarea addresses 2 and 3; and four link-attached controllers, assigned addresses 4 through 7. The highest address being 7, you specify an upper limit of at least 7. If you want to allow for adding more access methods or controllers to the network, you specify a value greater than 7. A value of 31 permits up to 30 access methods and controllers (addresses 2 through 31) to be included in the network.

Note: For a description of the MAXSUBA operand for NCP Version 4, refer to the description of the MAXSUBA operand in the list of optional operands on page 2-37.

MEMSIZE=size

(required for the 3705 only)

For the IBM 3705:

Specifies the maximum amount of storage (in K (1024) bytes) in the controller that the NCP uses, including the NCP load module and buffers created after loading the NCP.

BUILD

The value of *size* must be one of the following:

For 3705-II (MODEL=3705-2): 128, 160, 192, 224, 256,
320, 384, 448, or 512

For 3705-80 (MODEL=3705-2): 256

Notes:

1. *The loaded NCP uses the value you specify in this operand or the installed storage size of the controller, whichever is less.*
2. *For a description of the MEMSIZE operand for NCP Version 3 for the IBM 3725 or NCP Version 4 refer to the description of the MEMSIZE operand in the list of optional operands on page 2-38.*

MODEL=3725

(required for NCP and NTRI generation)

For the IBM 3725:

Specifies that the NCP is loaded into and runs in an IBM 3725 Communication Controller.

For NTRI Users: In order to generate NTRI resources, you must code MODEL=3725.

MODEL=3705-2

(required)

For the IBM 3705:

Specifies that the NCP is loaded into and runs in a 3705-II or a 3705-80. Specify MODEL=3705-2 for either controller.

MODEL=3720

(required)

For the 3720:

Specifies that the NCP or NCP V4 Subset is loaded into and runs in a 3720 Communication Controller.

NEWNAME=symbol

(required for NCP V4 Subset generation)

Note: For a description of the NEWNAME operand for full function NCP, refer to the description of the NEWNAME operand in the list of optional operands on page 2-41.

Specifies the name to be given to the generated NCP load module.

Code NEWNAME=symbol, where *symbol* is any valid symbol that does not exceed 7 characters. The generation procedure automatically assigns the name you specify, followed by the letter R, to the resource resolution table load module that corresponds to the NCP load module. If a block-handler set-resolution-table load module is generated, its name is the name you specified as *symbol*, followed by the letter B.

If you are operating with VSE and you do not specify 7 characters, the first phase is named with the value you specify for NEWNAME. The other phase names are derived from this NEWNAME value. For example, if you specify NEWNAME=NCPA, the phases are named NCPA, NCPA0002, NCPA0003, NCPA0004, NCPA0005, and NCPA0006. For more information on how phases are named for use, see the *NCP and SSP Generation and Loading Guide*.

This operand is required for an NCP V4 Subset generation. If you omit the operand, no default is assumed.

SUBAREA=n

(required)

Specifies the subarea address assigned to the NCP you are defining.

The minimum subarea address is SUBAREA = 1. For NCP Version 3 for the IBM 3725, the maximum address is the value specified in the MAXSUBA operand of this definition statement (not to exceed 255). For NCP Version 4 the maximum address is 255.

TYPGEN={NCP }
 {NCP-R }
 {PEP }
 {SNCP }
 {SNCP-R }
 {SPEP }

(required)

(NCP V4 Subset)

(NCP V4 Subset)

(NCP V4 Subset)

Specifies (1) whether the program you are defining operates the communication controller as a channel-attached or as a link-attached communication controller, (2) whether the program includes PEP functions in addition to NCP functions, and (3) whether the program is an NCP V4 Subset. Select the appropriate parameter from the following:

Parameter	Emulation functions included?	The controller operates as
NCP, SNCP	No	Channel-attached and link-attached
NCP-R, SNCP-R	No	Link-attached
PEP, SPEP	Yes	Channel-attached

This operand is required for an NCP or PEP generation.

If you omit the TYPGEN operand be aware that:

- If USERGEN is specified, TYPGEN defaults to NCP.
- If USERGEN is not specified, TYPGEN defaults to the emulation program. (If your network contains only emulation program resources, see the *Emulation Program for IBM Communication Controllers: Installation, Resource Definition, and Diagnosis* manual, SC30-3338.)

BUILD

For NTRI Users: In order to generate NTRI resources, you must code either TYPGEN=NCP or TYPGEN=PEP.

[BACKUP={n}]
 {0}

(for XRF support)

Specifies the total number of logical units (LUs) that will use the Extended Recovery Facility (XRF). The range is from 0 through 65 535. You must specify a number greater than zero in order to get XRF support. Do not specify too large a number, or you will use up excessive storage. If you omit this operand, the default is 0.

[BFRS={({88 }},{100 })]
 {size} {count}

For the IBM 3725:

Specifies the size of the NCP buffers and the number of emulation program buffers to be allocated.

size

Specifies the size, in bytes, of the buffers in the NCP buffer pool.

Specify *size* as a multiple of 4 bytes. The minimum size is 72 bytes. If you include the online testing facility in the NCP (OLT=YES) the minimum size is 76 bytes. The maximum is 240. The generation procedure rounds the size specified to the next higher multiple of 4 bytes if the value is not a multiple of 4.

The generation procedure adds 12 bytes to each buffer for control use. These 12 bytes are never used to contain message data. If you omit the BFRS operand, the buffer size is 100 (88 + 12 bytes for control use).

count

Specifies the number of buffers to be allocated to the emulation program free buffer pool. This value can range from 100 to 500. If you omit this operand, the default value for the parameter is 100.

[BFRS={88 }]
 {size}

For the IBM 3705:

Specifies the size, in bytes, of the buffers in the NCP buffer pool.

Specify *size* as a multiple of 4 bytes. The minimum size is 72 bytes. If you include the online testing facility in the NCP (OLT=YES) the minimum size is 76 bytes. The maximum is 240. The generation procedure rounds the size specified to the next higher multiple of 4 bytes if the value is not a multiple of 4.

The generation procedure adds 12 bytes to each buffer for control use. These 12 bytes are never used to contain message data. If you omit the BFRS operand, the buffer length is 100 (88 + 12 bytes for control use).

Code BFRS = 128 for optimum line usage when SDLC terminals are supported using segmentation with MAXDATA = 261 for a PU type 1 or MAXDATA = 265 for a PU type 2.

[BRANCH={count}] (3725 only)
 {100 }

Specify this operand only if you are defining an NCP for the 3725.

Specifies the number of entries in the branch trace table. The value of *count* can range from 100 to 8 000. If you omit this operand, the default is 100.

[CA=(ca0,[ca1],[ca2],...,[ca5])] (channel-attached NCP only)

[CA=(ca0,[ca1])] (channel-attached 3720 only)

For the IBM 3725 and 3720:

Specifies characteristics of the channel adapters installed in the communication controller in which the NCP resides. These characteristics include the number of channel adapters installed, whether they have a two-processor switch, and in which positions they are installed (ca0 through ca5 for the 3725, or ca0 and ca1 for the 3720).

The parameters specify which type of channel adapter is installed in each channel adapter position indicated. Only one type of channel adapter (type 5) can be installed in the IBM 3725 and IBM 3720. Therefore, you must specify TYPE5 for each channel adapter installed. For example, if your controller is a 3725 and has three channel adapters installed in channel adapter positions 1, 2, and 3, specify CA=(TYPE5,TYPE5,TYPE5). You can specify a maximum of six channel adapters for the IBM 3725 or a maximum of two channel adapters for the IBM 3720.

The first four channel channel adapter positions of an IBM 3725 or the two adapter positions of an IBM 3720 can accommodate channel adapters with a two-processor switch. These adapters are specified as TYPE5-TPS. For example, if you have an IBM 3725 and four channel adapters are installed in the controller and the second and third adapters each have a processor switch, specify:

CA=(TYPE5,TYPE5-TPS,TYPE5-TPS,TYPE5)

[CA=(ca0,[ca1][,ca2],[ca3])] (channel-attached NCP only)

For the IBM 3705:

Specifies the types of channel adapters installed in the communication controller in which the NCP being defined runs.

ca0

Specifies the type of adapter in channel adapter position 0. You can specify *adapter0* as TYPE1, TYPE2, TYPE3, or TYPE4.

Note: If you specify TYPGEN=PEP, TYPE1 is not a valid value for this parameter.

Channel adapter position 0 is located in the base module of the controller.

ca1

Specifies the type of adapter in channel adapter position 1 and indicates whether the adapter is installed in the base module or the first expansion module of the controller.

A type 2 or type 4 channel adapter in position 1 can be installed in either the base module or the first expansion module. A type 3 adapter in position 1 always is installed in the first expansion module.

TYPE2-0 or TYPE4-0 specifies that the adapter is installed in the base module. TYPE2-1 or TYPE4-1 specifies that it is installed in the first expansion module. TYPE2 or TYPE4 specifies the type of adapter but does not indicate the module in which it is installed. If more than one adapter is installed, the generation procedure assumes that the second adapter is in the base module.

ca2

Specifies the type of adapter in channel adapter position 2. You can specify *adapter2* only as TYPE4. Code this parameter only if the first two channel adapter positions contain type 4 adapters.

ca3

Specifies the type of adapter in channel adapter position 3. You can specify *adapter3* only as TYPE4. Code this parameter only if the first three channel adapter positions also contain type 4 adapters.

If you omit this operand and the NCPA operand, CA = TYPE2 is the default.

To specify that a link-attached 3705-II is equipped with one or more channel adapters, you must code the CA operand. Omitting the operand causes the program generation procedure to assume that the link-attached 3705-II has no channel adapters.

If you are defining an NCP to run in a 3705-80 with a single channel adapter, you must specify CA = TYPE1 or CA = TYPE4 depending on the channel adapter type in the 3705-80. If you are defining an NCP to run in a 3705-80 with two channel adapters, you must specify CA = (TYPE4,TYPE4-0).

[CANETID=(id0,[id1],[id2],...,[id5])] (for the 3725)

[CANETID=(id0,[id1])] (for the 3720)

[CANETID=(id0[,id1][,id2][,id3])] (for the 3705)

Specify this operand only if you are defining a channel-attached gateway NCP. Specifies the association of each channel adapter to a network. This operand defines by position the network to which each installed channel adapter attaches. Each *id* specified corresponds to the appropriate NETID that is specified by the NETID operand of the BUILD definition statement or the NETID operand of the NETWORK definition statement.

{ NO }
[CATRACE={ (YES[, {count}]) }] (channel-attached NCP only)
{ 10 }

Specifies whether the NCP includes the channel adapter trace facility.

count specifies the number of 32-byte entries the channel adapter trace table includes. The minimum is 1; the maximum is 255.

If you omit this operand or specify CATRACE = YES without the *count* parameter, the channel adapter trace option is included and the trace table contains ten 32-byte entries.

[CSMHDR=chars] (BSC 3270 only)

Specifies the header of the critical situation message sent to any IBM 3270 terminals in the network controlled by this NCP. You must specify a header for these terminals if the program sends critical situation messages. The header must contain the appropriate device control characters and also can include any other valid characters desired. (See the *IBM 3270 Component Description* manual, GA27-2749, for the required device control characters.) The header specified by this operand is sent only to 3270 terminals.

Code *chars* as the hexadecimal representation of the EBCDIC characters sent.

You can specify up to 127 EBCDIC characters in this operand. If the header required exceeds this length, code a CSMHDRC operand for the remaining characters, up to a combined total of 238 characters.

Note: Although CSMHDR and CSMHDRC together can specify up to 238 characters of header, and CSMSG and CSMSGC together can specify up to 238 characters of text, the combined total of header and text specified in these four operands cannot exceed 238 characters.

[CSMHDRC=chars] (BSC 3270 only)

Specifies up to 111 additional characters of header for the critical situation message specified by the CSMHDR operand. This operand is valid only if you specified CSMHDR. See the note on total header and text length under the CSMHDR operand.

BUILD

[CSMSG=chars]

(SS and BSC devices only)

Specifies the text of the critical situation message sent to the active SS and BSC stations on lines in network control mode before automatic network shutdown occurs. The message is sent to each active station whose TERMINAL definition statement specifies CRITSIT = YES. Code *chars* as the hexadecimal representation of the EBCDIC characters desired.

If you omit this operand, the NCP does not notify stations before automatic network shutdown occurs.

You can specify up to 127 EBCDIC characters in this operand. If the message required exceeds this length, code a CSMSGC operand for the remaining characters, up to combined total of 238 characters.

Note: Although CSMSG and CSGMSGC together can specify up to 238 characters of text, and CSMHDR and CSMHDRC together can specify up to 238 characters of header, the combined total of header and text specified in these four operands cannot exceed 238 characters.

[CSMSGC=chars]

(SS and BSC devices only)

Specifies up to 111 additional characters of text for the critical situation message specified by the CSMSG operand. This operand is valid only if you specified CSMSG. See the note on total header and text length under the CSMSG operand.

[CUID=chars]

(switched BSC and TWX devices only)

Specifies the identification characters the NCP sends to BSC stations on switched lines operating in network control mode. Code *chars* as the hexadecimal representation of the EBCDIC characters to be sent. You can specify a maximum of 20 EBCDIC characters. The NCP sends these characters to each station with the CUIDLEN operand coded in the TERMINAL or COMP definition statement. The NCP sends the characters each time it calls the station or answers a call from the station.

If you omit this operand, the NCP can verify station ID sequences it receives, but does not send a controller ID sequence in return.

```
[CWall={26  }]  
      {count}
```

Specifies a number of buffers that the NCP reserves to complete the flow of data through the NCP. When the NCP buffers are depleted to this threshold, no more data is accepted by the program until additional buffers are available. The range of this operand is 26 to 255. The default value is 26.

```
[DELAY=([ca0cnt],[ca1cnt],[ca2cnt],...,[ca5cnt])] (for the 3725)
```

```
[DELAY=([ca0cnt],[ca1cnt])] (for the 3720)
```

```
[DELAY=([ca0cnt],[ca1cnt],[ca2cnt],[ca3cnt])] (for the 3705)
```

Specifies the interval that the NCP delays between the time data is available for the host and the time the attention signal is presented to the channel. The delay intervals are coded to the nearest tenth of a second between 0 and 6553.5. The default values are 0 and specify that the attention signal is presented across the corresponding channel adapter as soon as data is available.

The parameters correspond to the active channel adapters and they are positional. Therefore, the commas are required even if all parameters are not specified.

Note: If the amount of data is sufficient to fill the buffers allocated by the host, the attention signal is presented to the channel before the delay count is reached.

```
[DIALTO={60.0  }]  
      {count}
```

(switched lines only)

Specifies the time-out used by the NCP in detecting the failure of an automatic calling unit's abandon call and retry (ACR) signal. Specify the time-out either as an integral number of seconds (DIALTO = 30) or to tenths of a second (DIALTO = 40.4).

The default value (60 seconds) is recommended unless the system designer recommends a different one.

The maximum time-out you can specify is 1632 seconds.

This time-out is used also to monitor for "clear-to-send" (CTS) after raising "request-to-send" when starting transmit operations. This interval may take longer for switched lines. Consult your modem specifications for more information.

Note: See the topic "Restriction on Number of Time Intervals Specified" at the end of the description of the GROUP definition statement.

```
[DR3270={YES}]  
      {NO }
```

(dynamic reconfiguration only)

Specifies whether the NCP includes SDLC 3270 Model 11 and 12 terminal

support when dynamic reconfiguration is supported and no 3270 terminals of this type are defined in this NCP.

Support for this type of 3270 terminal is always included if you specify `BNNSUP=3270` on the PU definition statement.

Specify `DR3270=YES` if SDLC 3270 Model 11 and 12 terminals are to be added through the use of the dynamic reconfiguration function. The default for this operand is YES if you code a PUDRPOOL definition statement, and the operand is ignored if you do not code the PUDRPOOL definition statement.

```
[DSABLTO={3.0 }]  
         {count}
```

(network control mode only)

Specifies the time-out used by the NCP in detecting failure of the data-set-ready signal line of a modem. This modem is turned off when the line attached to the modem is disabled. Specify the time-out either as an integral number of seconds (`DSABLTO=5`) or to tenths of a second (`DSABLTO=7.5`).

The maximum time-out you can specify is 1632 seconds.

Note: See the topic "Restriction on Number of Time Intervals Specified" at the end of the description of the GROUP definition statement.

```
         {NO }  
[DYNADMP={{YES[, {adr0}]...[, {adr5}]}}]  
         {NONE} ... {NONE}
```

(PEP only; for the 3725)

```
         {NO }  
[DYNADMP={{YES[, {adr0}][, {adr1}]}}]  
         {NONE} {NONE}
```

(PEP only; for the 3720)

For the IBM 3725 and the IBM 3720:

Specifies whether the dynamic dump facility is included in the NCP. The dynamic dump permits the storage contents of the communication controller to be transferred to the host processor without interrupting operation of the program. This operand also specifies one or more subchannels to be used by the NCP to transfer the dynamic dump data to the access method.

```
adr0, . . . ,adr5  
adr0,adr1
```

Specifies the addresses of the emulation subchannels, in the channel adapters in adapter positions 1 through 6 for the 3725 or 1 through 2 for the 3720, over which dynamic dump data can be transferred to the host processor.

NONE

Specifies that no subchannel of the channel adapter is used for dump data transfer.

Examples:

1. If you want to transfer dynamic dump data over the emulation subchannel of the first channel adapter, code DYNADMP = (YES,adr0).
2. If the controller has two channel adapters, code DYNADMP = (YES,adr0,adr1) to permit dump data transfer over a specified emulation subchannel of each of the channel adapters. Code DYNADMP = (YES,NONE,adr1) to permit transfer over only the specified subchannel of the second channel adapter.

Figure 2-2 shows how the DYNADMP operand specifies subchannels used for transfer of dynamic dump data to the host processor.

If CA =	Then to allow dynamic dump data transfer over these subchannels*:	Code DYNADMP =
TYPE5	ESC ¹	(YES,adr1)
	ESC ¹	(YES,adr0)
(TYPE5,TYPE5)	ESC ²	(YES,NONE,adr1)
	ESC ¹ and ESC ²	(YES,adr0,adr1)

* ESC - Emulation subchannel

Superscripts indicate channel adapter position:

¹Adapter address 0, position 1

²Adapter address 1, position 2

Figure 2-2. Subchannel Address Specification for Dynamic Dump Data Transfer

```
[DYNADMP={ (YES [ , {NSC } ] [ , {NSC } ] ) } ]
          {   {NONE}   {NONE}   }
          {NO          }
```

(PEP only; for the 3705)

For the IBM 3705:

Specifies whether the dynamic dump facility is included in the NCP. The dynamic dump permits the storage contents of the communication controller to be transferred to the host processor without interrupting operation of the program. This operand also specifies one or more subchannels to be used by the NCP to transfer the dynamic dump data to the access method.

addr1 is the address of an emulation subchannel in the channel adapter in adapter position 0 over which dynamic dump data can be transferred to the host processor.

adr2 is the address of an emulation subchannel in the channel adapter in adapter position 1 over which dynamic dump data can be transferred to the host processor.

NSC specifies that the native subchannel of the channel adapter is used for dump data transfer. NSC in the first and second address positions refers to the native subchannel of channel adapter positions 0 and 1, respectively.

NONE specifies that no subchannel of the channel adapter is used for dump data transfer. NONE in the first and second address positions refers to channel adapter positions 0 and 1, respectively.

Examples:

1. If you want to transfer dynamic dump data over the emulation subchannel of a single type 4 channel adapter, code `DYNADMP=(YES,adr)`.
2. If the controller has a type 4 channel adapter in adapter position 0 and a type 2 or type 3 adapter in adapter position 1, code `DYNADMP=(YES,NSC)` to permit dump data transfer over the native subchannel of the type 4 channel adapter. Code `DYNADMP=(YES,adr1)` to permit dump data transfer over an emulation subchannel of the type 4 adapter.
3. If the controller has two type 4 channel adapters, code `DYNADMP=(YES,adr1,adr2)` to permit dump data transfer over a specified emulation subchannel of each of the channel adapters. Code `DYNADMP=(YES,NONE,adr2)` to permit transfer over only the specified subchannel of the second channel adapter.

The following rules govern which type of subchannel (native or emulation) can be used to transfer dynamic dump data:

For type 1 channel adapter: (1) If the native subchannel of the adapter is used for NCP operations, an emulation subchannel of this adapter can be used for dynamic dump data transfer. The native subchannel cannot be used for this purpose. (2) If the native subchannel of the adapter is *not* for network control operations, it can be used for dynamic dump data transfer.

For type 2 and type 3 channel adapters: These types of channel adapters cannot be used for dynamic dump data transfer.

For type 4 channel adapter: (1) An emulation subchannel can be used for dynamic dump data transfer regardless of whether the native subchannel is used for NCP operations. (2) The native subchannel can be used for dynamic dump data transfer if it is not used for NCP operations.

Figure 2-3 shows how the DYNADMP operand specifies subchannels used for transfer of dynamic dump data to the host processor.

If CA =	Then to allow dynamic dump data transfer over these subchannels*:	Code DYNADMP =
TYPE1	ESC ¹	(YES,adr1)
(TYPE1,TYPE2)	ESC ¹ NSC ¹	(YES,adr1) (YES,NSC)
(TYPE1,TYPE3)	ESC ¹ NSC ¹	(YES,adr1) (YES,NSC)
TYPE4	ESC ¹	(YES,adr1)
(TYPE4,TYPE4)	ESC ¹	(YES,adr1)
or (TYPE4,TYPE4-0)	ESC ²	(YES,NONE,adr2)
or (TYPE4,TYPE4-1)	ESC ¹ and ESC ²	(YES,adr1,adr2)
(TYPE4,TYPE2)	ESC ¹	(YES,adr1)
or (TYPE4,TYPE2-0)	NSC ¹	(YES,NSC)
or (TYPE4,TYPE2-1)	ESC ¹	(YES,adr1)
or (TYPE4,TYPE3)	NSC ¹	(YES,NSC)

* ESC - Emulation subchannel
NSC - Native subchannel

Superscripts indicate channel adapter position:
¹Adapter position 0
²Adapter position 1.

Figure 2-3. Subchannel Address Specification for Dynamic Dump Data Transfer

[ENABLTO={2.2 }]
{count}

(network control mode only)

Specifies the time-out used by the NCP in detecting if the data-set-ready signal line of the modem is activated (1) after the communication line attached to the modem is enabled (for nonswitched lines) or (2) after a dialing operation is completed (the automatic calling/answering unit has signalled a connection for switched lines). Specify the time-out either as an integral number of seconds (ENABLTO = 3) or to tenths of a second (ENABLTO = 3.2).

The maximum time-out you can specify is 1632 seconds.

For a nonswitched line or for a switched line where calls are made by an automatic calling unit (ACU), the default value of 2.2 seconds is usually appropriate. Generally, 2.2 seconds is also appropriate for switched lines with automatic answer. However, the data-set-ready line can take longer to activate for lines with the ring indicator mode option (consult your modem specification). The default value of 2.2 seconds is not appropriate if the channel-attached NCP being defined includes any switched backup SDLC links to a link-attached controller. Such a link requires an enable time-out long enough to allow the system operator to dial the telephone number, receive an answer, and place the modem (data set) in data mode. Typically this process can take from 30 seconds to more than a minute. On the other hand, the time-out value should be no greater than necessary. Otherwise, the time required to shut down the NCP is longer than necessary, if shutdown is initiated while a line is being activated by command from the access method. (The NCP does not shut down until all lines are deactivated.)

Note: See the topic "Restriction on Number of Time Intervals Specified" at the end of the description of the GROUP definition statement.

[GWAEXIT=name]

*(gateway NCP only)
(not valid for NCP V4 Subset)
(user-written code only)*

Specifies the entry point in the module that contains the user written accounting exit routine for cross network sessions. *name* is the name of the entry point in the module identified by the INCHI and ORDHI operands of the GENEND definition statement.

[HICHAN=([addr0], [addr1], ..., [addr5])]

(for the 3725)

[HICHAN=([addr0], [addr1])]

(for the 3720)

[HICHAN=([addr1] [,addr2])]

*(for the 3705)
(required for emulation mode only)*

For the IBM 3705, the IBM 3725, and the IBM 3720:

Specifies the highest subchannel address on each channel adapter associated with any line operating in emulation mode (or the address of the subchannel used for the dynamic dump operation). The address must equal or exceed the highest emulation subchannel address specified in the ADDRESS operand of any LINE definition statement (or the address specified in the DYNADMP operand of the BUILD definition statement).

The value of each *addrn* must be one of the following hexadecimal addresses:

03	07	0B	0F	13	17	1B	1F
23	27	2B	2F	33	37	3B	3F
43	47	4B	4F	53	57	5B	5F
63	67	6B	6F	73	77	7B	7F
83	87	8B	8F	93	97	9B	9F
A3	A7	AB	AF	B3	B7	BB	BF
C3	C7	CB	CF	D3	D7	DB	DF
E3	E7	EB	EF	F3	F7	FB	FF

The range of subchannel addresses specified by HICHAN and LOCHAN must not include any addresses associated with shared unit control words (UCWs) in the host processor.

This operand is required if the program includes emulation functions.

The subchannel address is the same address specified in the unit channel block (UCB) for MVS or in the physical channel block (PCB) for VSE.

Note: See the description of the LOCHAN operand.

For the IBM 3705:

If the controller has a single type 1 or type 4 channel adapter, specify HICHAN=addr1; for example, HICHAN=2B. If the controller has two type 4 adapters, specify HICHAN=(addr1,addr2), where *addr1* is the highest subchannel address associated with the first type 4 channel adapter and *addr2* is the highest subchannel address associated with the second type 4 adapter.

[HSBPOOL=n]

(gateway NCP only)
(not valid for NCP V4 Subset)

Specifies the number of half-session control blocks (HSCBs) you want the gateway NCP to have available for SSCPs and LUs in any network that can participate in cross-network sessions. These SSCPs and LUs include those in the native network and in all other networks that the gateway NCP joins.

You must specify this operand if this NCP includes the SNA network interconnection function (if you specify NETID in this definition statement).

For NCP V3, the value can range between 0 and 5000. For NCP V4, the value can range between 0 and 64 000. The value of HSBPOOL plus all NUMSESS values of the GWNAU definition statement for the native network can range from 0 to 64 000. This operand has no default value.

[ITEXTTO={NONE }]
{count}

(SS and BSC devices in network control mode only)

Specifies the text time-out interval used by the NCP for any terminal or

BUILD

component for which you specified INHIBIT = TEXTTO in the TERMINAL or COMP definition statement.

The maximum time-out you can specify is 1632 seconds.

ITEXTTO = NONE specifies that no time-out is to occur.

Note: See the topic "Restriction on Number of Time Intervals Specified" at the end of the description of the GROUP definition statement.

[LENAME={symbol }]
{INLINKED} (VSE only)

Specifies the name of the member containing the link-edit control statements. The member is created by the first step in the NCP generation process and cataloged by the LIBRARIAN to be used in the link-edit step.

You can specify LENAME only if you specify TYPYSYS = DOS. You can specify any valid *symbol* up to eight characters long. If you omit LENAME and specify TYPYSYS = DOS, the default is INLINKED.

The name on the link-edit step INCLUDE statement must match the value you specify for LENAME. Specify this operand only when a unique name is required for this member. A unique name is required only when NDF jobs concurrently catalog link edit cards to the same sublibrary.

{NO }
[LINETRC={{YES[, {4}][, {4 }]}}]
{n} {blocks} (emulation mode only)

For the IBM 3725:

Specifies whether the line trace and scanner interface trace (SIT) are included for the data links (operating in emulation mode) attached to the communication controller. If you omit this operand, the default is NO.

Line trace functions can be started from the operator's console of the communication controller. The *IBM 3725 Operator's Guide* explains the use of the line trace option.

n

Specifies the number of scanner interface traces that can be active at one time. The minimum value is 1; the maximum is 16. If you omit this parameter, the default is 4. The communication scanner processor (CSP) of the 3725 imposes a limit of 4 traces per CSP.

blocks

Specifies the number of 512-byte blocks in the line trace table. Each block has 63 entries. The minimum value for this parameter is 2; the maximum is 400. If you omit this parameter, 4 is the default (252 entries).

[LINETRC=([YES] [,lines] [,entries])]

(emulation mode only)

For the IBM 3705:

Specifies the maximum number of lines in emulation mode that can be traced concurrently and the number of trace table entries provided. The line trace functions can be started from the control panel of the communication controller. The *Control Panel Guide* explains the use of the line trace option.

lines

Specifies the maximum number of lines traced concurrently. If you omit this parameter, all lines currently operating in emulation mode can be traced at once. The minimum value of *lines* is 1; the maximum is 352.

entries

Specifies the number of 8-byte entries in the trace table. The minimum is 12 entries; the maximum is 23680.

If you omit this parameter, the trace table will contain 200 eight-byte entries.

[LOCALTO=n]

(NTRI generation only)

Specifies the NTRI acknowledgment timer value, when a logical connection is established with a terminal connected to a local token ring. The value can range from 0.6 to 2.0, but it must not be greater than the value specified for the REMOTTO operand.

This operand is valid only when you have coded MXRLINE and MXVLINE.

If you omit this operand, the default value is either 1.5 or the remote time-out value (REMOFF), whichever is less.

[LOCHAN=([addr0] , [addr1] , . . . , [addr5])]

(for the 3725)

[LOCHAN=([addr1] , [addr2])]

(for the 3720)

[LOCHAN=([addr1] [,addr2])]

(for the 3705)

(required for emulation mode only)

For the IBM 3705, the IBM 3725, and the IBM 3720:

Specifies the lowest subchannel address on each channel adapter associated with any line operating in emulation mode.

The value of each *addrn* must be one of the following hexadecimal addresses:

00	10	20	30
40	50	60	70
80	90	A0	B0
C0	D0	E0	F0

Note: Specifying an address that is not listed causes a warning message to appear in the assembly listing.

The subchannel address is the same address specified in the unit channel block (UCB) for MVS or in the physical channel block (PCB) for VSE.

The range of subchannel addresses specified by HICHAN and LOCHAN must not include any addresses associated with shared unit control words (UCWs) in the host processor. Optimum storage utilization is achieved by sequential addressing of all emulation subchannels. Each unassigned subchannel address between the values specified by the LOCHAN and HICHAN operands adds 70 bytes to the NCP storage requirements.

For the IBM 3705:

If the controller has a single type 1 or type 4 channel adapter, specify LOCHAN = *addr1*. If the controller has two adapters, specify LOCHAN = (*addr1,addr2*), where *addr1* is the lowest subchannel address associated with the first channel adapter, and *addr2* is the lowest subchannel address associated with the second adapter.

[LTRACE={2 }]
 {count}

(network control mode only)

For the IBM 3725 and the IBM 3720:

Specifies the maximum number of line traces and scanner interface traces (SITs) that the NCP runs concurrently. The minimum is two lines; the maximum is eight.

Note: NCP does not support line trace for communication lines controlled by user-written line control code that includes such products as X.25 NCP Packet Switching Interface (NPSI). The request to start or stop the line trace (or scanner interface trace) is passed to the user-written I/O code. It then becomes the responsibility of the user-written code to support the trace.

For the IBM 3705:

Specifies the maximum number of lines that the NCP traces concurrently. The minimum is two lines; the maximum is eight.

For the IBM 3705, the IBM 3725, and the IBM 3720:

If you omit this operand, the NCP permits only one or two lines at a time to be traced. (Line traces are requested from the host processor.)

The line trace facility is a service aid always included in the NCP.

When using line trace with 230.4-kbps lines, a maximum of one duplex or two half-duplex lines can be traced simultaneously. Also you may need to let some system traffic decrease when tracing 230.4-kbps lines.

Note: The performance of a line being traced can diminish somewhat because of the additional processing required each time a character-service or buffer-service interrupt occurs for the line. The performance of the NCP can be affected similarly, but to a lesser extent. In both cases, the amount of decrease in performance depends upon the type of scanner servicing the line and the degree to which the communication controller is currently loaded.

[MAXSSCP=count]

(network control mode only)

Specifies the maximum number of system service control points (SSCP) the NCP can be in session with concurrently. These sessions can be conducted over channel adapters or over SDLC communication links, or a combination of the two.

An NCP can be in session with as many as eight SSCPs concurrently. The maximum value of *count* is 8. The NCP can be in session with as few as one SSCP. However, the minimum value of *count* is the number of channel adapters you have specified in the NCPA operand as active. If you do not code the NCPA operand, the minimum value of *count* is 1.

For example, if the controller has three channel adapters and you specify that two channel adapters are to be currently active in network control mode, the minimum value for *count* is 2.

If you omit this operand, the default value for MAXSSCP is the number of concurrently active channel adapters as specified in the NCPA operand. In this case, no SSCP sessions can take place over SDLC links. The default value for this operand is 1 if you specify TYPGEN=NCP-R.

[MAXSUBA=n]

(optional for NCP Version 4)

Specifies the upper limit of the range of subarea addresses used within the *network* you are defining.

Note: The value you specify in this operand must match the values specified in the MAXSUBA specifications for all other NCPs and access methods in the same network.

The maximum subarea address value is always a power of 2 minus 1, within the range of 3 through 255 (3,7,15,31,63,127,255). If you specify a value that is not one of those listed, the generation procedure rounds the specified value to the next higher value. (For example, any value between 16 and 30 is rounded to 31.)

For NCP Version 4:

The value of MAXSUBA does *not* affect the maximum number of resources that can be associated with a subarea address in the network. No matter

what value you specify for the MAXSUBA operand, the maximum number of resources that can be associated with a subarea in the network is 32 768.

Notes:

1. *Until all the nodes in your network are extended network addressing capable, MAXSUBA is required.*
2. *For a description of the MAXSUBA operand for NCP Version 3, refer to the description of the MAXSUBA operand in the list of required operands on page 2-19.*

[MEMSIZE=size]

(optional for the 3725)

For the IBM 3725:

Specifies the maximum amount of controller storage (in K bytes) that the NCP uses, including the NCP load module and buffers created after loading the NCP.

The value of *size* can range from 512 to 3072 in multiples of 128K.

Notes:

1. *If you omit the MEMSIZE operand, the NCP uses the installed storage size of the controller.*
2. *For the 3725, the loaded NCP uses the value you specify in this operand or the installed storage size of the controller, whichever is less.*
3. *For a description of the MEMSIZE operand for the 3705, refer to the description of the MEMSIZE operand in the list of required operands on page 2-19.*

For the IBM 3720:

The NCP always uses the installed storage size of the controller. The MEMSIZE operand is ignored.

[MTARTO={1.0 }]
{count}

(multiple-terminal-access lines only)

Specifies the reply time-out used when a start-stop terminal on a switched multiple-terminal-access line calls the controller. Specify the time-out either as an integral number of seconds (MTARTO=5) or to tenths of a second (MTARTO=5.5).

This operand is valid only if the network includes lines defined as multiple-terminal-access lines. (See the MTALIST operand of the LINE definition statement.)

Note: See the topic, "Restriction on Number of Time Intervals Specified" at the end of the description of the GROUP definition statement.

[MTARTRY={Q }]
 {count}

(multiple-terminal-access lines only)

Specifies the number of times the NCP retries the start-stop multiple-terminal-access sign-on procedure after identifying the type of MTA terminal that called this controller.

The maximum number of retries is 255.

This operand is valid only if the network includes lines defined as multiple-terminal-access lines (see the MTALIST operand of the LINE definition statement).

[MXRLINE=n]

(required for NTRI generation only)

Specifies the number of NTRI physical connections that you want included in this generation definition.

The value can range from 1 to 8; the operand has no default.

If you code this operand, you also must code MXVLINE on this BUILD definition statement and NEWDEFN = YES on the OPTIONS definition statement.

[MXVLINE=n]

(required for NTRI generation only)

Specifies the number of NTRI logical connections that you want included in this generation definition. The value you specify on MXVLINE must be exactly equal to the total number of logical lines specified in the generation source plus the total number of lines generated by the AUTOGEN facility. The value can range from 1 to 1500. This operand has no default.

If you code this operand, you also must code MXRLINE on this BUILD definition statement and NEWDEFN = YES on the OPTIONS definition statement.

[NCPA=([status0] , [status1] , . . . , [status5])]

(for the 3725)

[NCPA=([status0] , [status1])]

(for the 3720)

[NCPA=([status0] , [status1] , [status2] , [status3])]

(for the 3705)

For the IBM 3705, the IBM 3725, and the IBM 3720:

Specifies the active or inactive status of each channel adapter that operates in network control mode. *status0*, *status1*, through *statusn* are positional parameters and correspond to the channel adapter positions as specified in the CA operand.

If the adapter is active, code ACTIVE as the corresponding *status* parameter. A comma can be substituted for each ACTIVE parameter; for example, NCPA = (,INACTIVE,,INACTIVE) is equivalent to NCPA = (ACTIVE,INACTIVE,ACTIVE,INACTIVE).

If the adapter is inactive, code INACTIVE as the corresponding *status* parameter. You must code channel adapters used in emulation mode only.

BUILD

Any channel adapters you specify as INACTIVE are disabled for all communication with the NCP (network control mode and emulation mode).

Note: The NCP must be loaded into the controller over one of the adapters you have specified as active. Any channel adapter not connected to an operational host must be disabled.

For the IBM 3705:

For example, if you specified CA=(TYPE2,TYPE3) for the CA operand, then you code the NCPA operand as:

```
NCPA=( ACTIVE , ACTIVE )
      OR
NCPA=( ACTIVE , INACTIVE )
      OR
NCPA=( INACTIVE , ACTIVE )
```

depending on the active or inactive status you need for the channel adapters operating in network control mode.

[NETID=name]

(gateway NCP only)
(not valid for NCP V4 Subset)

Specifies the name of the native network as known by the gateway SSCP. *name* has a maximum length of 8 characters. If it is not coded, the NCP does not support cross-network sessions.

For V4R2 Users Only: You must specify at least one VR operand on a PATH definition statement if you specify the NETID operand.

[NETLIM=n]

(gateway NCP only)
(not valid for NCP V4 Subset)

Specifies the total number of half-session control blocks (HSCBs) that can be assigned at any given time to all addresses in the native network.

The value of *n* can be 0 to 5000. The default value is 5000 unless you specified SESSLIM as 0, in which case NETLIM defaults to 0. If you specified the SESSLIM operand as 0, no HSCBs can be taken from the pool, so you also must specify *n* as 0. The limit defined by NETLIM includes HSCBs from the pool that are assigned to both predefined resources and resources not predefined.

This operand is valid only if you specified NETID.

See the note under the NUMSESS operand of the GWNAU definition statement for a further explanation.

```
{symbol}
[NEWNAME={NCP001}]
           {PEP001}
```

(optional for NCP or PEP generation)

Note: For a description of the **NEWNAME** operand for NCP V4 Subset, refer to the description of the **NEWNAME** operand in the list of required operands on page 2-20.

Specifies the name to be given to the generated NCP load module.

Code **NEWNAME**=symbol, where *symbol* is any valid symbol that does not exceed 7 characters. The generation procedure automatically assigns the name you specify, followed by the letter R, to the resource resolution table load module that corresponds to the NCP load module. If a block-handler set-resolution-table load module is generated, its name is the name you specified as *symbol*, followed by the letter B.

If you are operating with VSE and you do not specify 7 characters, the first phase is named with the value you specify for **NEWNAME**. The other phase names are derived from this **NEWNAME** value. For example, if you specify **NEWNAME**=NCPA, the phases are named NCPA, NCPA0002, NCPA0003, NCPA0004, NCPA0005, and NCPA0006. For more information on how phases are named for use, see the *NCP and SSP Generation and Loading Guide*.

If you omit the operand, the name defaults to NCP001 if **TYPGEN**=NCP or NCP-R, or PEP001 if **TYPGEN**=PEP.

```
[NPA={NO }]
           {YES}
```

Specifies whether the Network Performance Analyzer (NPA) function is included in this NCP. The default for this operand is NO. If you specify **NPA**=YES, NPA is included in this NCP. Also, you must define one virtual group with **NPARSC**=YES in the **GROUP** definition statement. (See the **NPARSC** operand in the **GROUP** definition statement.)

```
[NUMHSAS=n]
```

Specifies the number of host subareas and NCP subareas that have virtual routes ending in this NCP. The minimum value for this operand is 1. The maximum is the number specified in the **MAXSUBA** operand minus 1. If you omit this operand and the value of **MAXSUBA** divided by 2 is greater than or equal to the value of **MAXSSCP**, the default is the value of **MAXSUBA** divided by 2; if the value of **MAXSSCP** is greater than the value of **MAXSUBA** divided by 2, the default is the value of **MAXSSCP**.

In a SNA interconnection environment, a gateway NCP can activate virtual routes. Therefore, when specifying a value for **NUMHSAS**, you must consider virtual routes originating in a gateway NCP.

Note: Be careful when determining the value of **NUMHSAS**. An excessive value could waste NCP storage.

BUILD

[OLT={YES}]
{NO }

(network control mode only)

Specifies whether the optional online terminal test and online line test facilities (for lines in network control mode) are included in the NCP. Code OLT=NO to omit the facilities. Code OLT=YES (or omit the operand) to include them.

[OPCSB2={YES}]
{NO }

(3705 only)
(emulation mode only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies if 5 4-byte data buffers are to be provided for communication lines (1) that are serviced by a type 2 communication scanner, (2) which you have specified as operable in emulation mode, and (3) for which you have specified CHNPRI=HIGH in the LINE definition statement. These buffers are assigned permanently to the line. They provide extra protection against overruns that can result from temporary slowdowns in channel operation, or temporary peaks in data traffic in the network. Lines serviced by a type 2 scanner where OPCSB2=YES is not specified, have two 4-byte buffers. The 4 5-byte buffers are used only when the line is operating in emulation mode.

If you omit this operand, OPCSB2=NO is the default for lines associated with subchannels on a type 1 channel adapter. OPCSB2=YES is the default for lines associated with subchannels on a type 4 channel adapter for which you specified CHNPTRI=HIGH.

If you specify OPCSB2=YES, do not specify *both* CHNPRI=HIGH and TADDR=address in the same LINE definition statement. (Specify only one.)

[PRTGEN={GEN }]
{NOGEN}

Specifies whether macro generated statements are printed for the NCP table assemblies.

If you specify GEN (or omit the parameter), the generation procedure prints all of the generated statements produced by the phase 1 assembly.

NOGEN suppresses printing of the assembled statements with the exception of MNOTEs. MNOTEs are always printed.

[PWROFF={NO }]
{YES}

(channel-attached NCP only)

Specifies whether the NCP in a channel-attached communication controller turns off the link-attached controller's power upon command from a channel-attached access method. PWROFF=YES is valid only if the link-attached controller is equipped with the Remote Power-Off feature. (Power can be turned on again only at the control panel of the link-attached controller.)

[REMLOAD={YES}]
 {NO }

(3705 only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies whether the Remote Program Loader-II feature is installed on a 3705-II.

REMLOAD=NO is not valid for an NCP (TYPGEN=NCP-R) that is to run in a link-attached 3705-II.

If you specify TYPGEN=NCP-R and MODEL=3705-2, and omit this operand, REMLOAD=YES is the default; otherwise, REMLOAD=NO is the default.

Note: A 3705-II equipped with one or more channel adapters and a remote program loader can operate at different times as either a channel-attached or a link-attached controller. (Specify REMLOAD=YES if the controller has a remote program loader even if the NCP you are defining is for a channel-attached controller.)

[REMOTTO=n]

(NTRI generation only)

Specifies the NTRI acknowledgment timer value, when a logical connection is established with a terminal connected to a remote token ring. The value can range from 0.6 to 2.5.

This operand is valid only when you have coded MXRLINE and MXVLINE.

If you omit this operand, the default value is 1.5.

[RESOEXT={Q }]
 {count}

(dynamic reconfiguration only)

Specifies the number of network addresses in the resource vector table (RVT) extension. The size of the RVT extension determines the number of generation-defined PU and LU resources that can be deleted and reused. When a generation-defined PU or LU resource is deleted, the original address is deleted and a new address is assigned from the RESOEXT pool of addresses. These addresses do not apply to LUDRPOOL and PUDRPOOL resources.

All of the network addresses assigned to the resource vector table (RVT) are associated with the symbol that you specify for the BUILD definition statement. These network addresses and the symbol specified for this BUILD definition statement will appear in the cross reference listing.

The maximum value of *count* is subject to the maximum number of resources that can be defined in a particular NCP. (See the MAXSUBA operand of the BUILD definition statement.)

[SESSLIM={n }]
 {255}

(gateway NCP only)
 (not valid for NCP V4 Subset)

Specifies the maximum number of half-session control blocks (HSCBs) that

can be assigned to any address in the native network. Recall that although the address resides in the native network, the SSCP or LU that it represents resides in a non-native network.

The value of `SESSLIM` can be 0 to 255. The default value is 255.

This operand is valid only if you specify `NETID`.

Note: In some cases, `SESSLIM` also specifies the maximum number of sessions in which predefined resources can participate. See the `NUMSESS` operand under the `GWNAU` definition statement for further explanation.

```
[SLODOWN={12}  
          {25}]  
          {50}]
```

Specifies the minimum percent of NCP buffers that are available (not in use) before the NCP enters slowdown mode.

The NCP enters slowdown mode when fewer than one-half (`SLODOWN=50`), one-quarter (`SLODOWN=25`) or one-eighth (`SLODOWN=12`, or you omit the operand) of the buffers are available.

During initialization, the percent you specify is converted to the number of buffers available before the NCP enters slowdown mode (slowdown entry threshold). If this number is less than the value of `CWALL + 24`, `CWALL + 24` is used as the slowdown entry threshold.

Note: During initialization, the NCP will abnormally end (ABEND) if the total number of buffers contained in the NCP is less than twice the slowdown entry threshold. For example, if you use the default of 26 for `CWALL`, the NCP will ABEND during initialization if the total number buffers is less than 100 ((26 + 24) x 2).

These 100 buffers are not enough to guarantee satisfactory performance or prevention of deadlock. The actual number of buffers required is dependant upon the dynamic operation of the system.

```
[TIMEOUT=( [ca0cnt] , [ca1cnt] , . . . , [ca5cnt] ) ] (for the 3725)
```

```
[TIMEOUT=( [ca0cnt] , [ca1cnt] ) ] (for the 3720)
```

```
[TIMEOUT=( [ca0cnt] , [ca1cnt] , [ca2cnt] , [ca3cnt] ) ] (for the 3705)
```

Specifies the interval that the NCP waits for a response to an attention signal it has sent to the host before initiating channel discontact. The time-out intervals are coded either as an integral number of seconds (15,20) or to the nearest tenth of a second (12.5,18.2). The minimum value is 0.2 and the maximum is 840.0. The default for each parameter is based on the `NCPA` operand. If the channel adapter is inactive, the default is 0; if it is active, the default is 420.0.

The parameters correspond to the channel adapter locations in the communication controller and are positional. Therefore, the commas are required even if all parameters are not specified.

```
{ NO }
[TRACE={{(YES[, {size}] )}}]           (network control mode only)
      {10 }
```

Specifies whether the address trace option is included in the NCP. Code TRACE= YES to include the option. Code TRACE= NO (or omit the operand) to omit the option.

If you code TRACE= YES, you can also specify the number of 16-byte entries the trace table contains, from 10 [TRACE= (YES,10)] to 256 [TRACE= (YES,256)]. If you omit the number or specify fewer than 10, the table contains 10 entries.

```
[TRANSFR=count]                       (network control mode only)
```

Specifies the number of NCP buffers corresponding to the maximum length PIU that the NCP sends to a destination host processor.

The path between the NCP being defined and the destination host processor can comprise a channel connection to the attached host processor or a combination of SDLC links between NCPs and a channel connection to a distant host processor.

This operand limits the amount of line trace data accumulated in NCP buffers to no more than the access method (and intermediate access methods, if any) in the destination host processor can accept in a single PIU. This operand also limits the amount of line trace data to no more than the data transfer limit imposed by a subsequent NCP in the path.

You also can use this operand to specify the data transfer limit for a communication line for which the TRANSFR operand is omitted from the LINE definition statement. See the description of the TRANSFR operand in the LINE definition statement. Note however, if the NCP communicates with multiple hosts, the NCP uses the smallest value specified in the MAXBFRU and UNITSZ operands of the HOST definition statement.

To calculate the value of *count*:

1. Determine which host processors in the network receive the line trace data.
2. Calculate the data transfer limit, in bytes, imposed by the access method in each destination host processor. To do so, multiply the values specified by the MAXBFRU and UNITSZ operands and then subtract the value of the BFRPAD operand of the HOST definition statement that represents the access method to the NCP.
3. Determine which of the data transfer limits calculated this way is the smallest, and divide that limit by the buffer size specified in the BFRS operand of the BUILD definition statement in the present NCP. The

BUILD

result (ignoring any fractional remainder) is the maximum value of *count* you specify in this TRANSFR operand.

See the description of the TRANSFR operand in the LINE definition statement for an example showing how to calculate the data transfer limits. Also see this description for determining the *minimum* value of *count* if you use this TRANSFR operand to specify the data transfer limits for any communication line for which you omit the TRANSFR operand from the LINE definition statement.

Establish the same data transfer limit for line trace data as for message data received from communication lines by the present NCP. Because the buffers used for both purposes are of the same size, the *count* values you specify in the TRANSFR operands of the BUILD and LINE definition statements are the same.

If you omit the TRANSFR operand from some LINE definition statement, be sure that the value you specify in this TRANSFR operand (in the BUILD definition statement) is appropriate for the corresponding lines.

The minimum you can specify in this operand is one buffer (TRANSFR = 1); the maximum is 255 (TRANSFR = 255).

If you omit this TRANSFR operand, the program generation procedure determines a value in one of the following ways:

- If one or more HOST definition statements appear in this program, the generation procedure computes the data transfer limits from the MAXBFRU, UNITSZ, and BFRPAD operands as described. The generation procedure then divides the result (lowest result, if there is more than one HOST definition statement) by the NCP buffer size, rounds down to the next lower integer, and uses the resulting value (or a maximum of 255) as the maximum buffer count for the line trace data.
- If the program contains no HOST definition statement, the generation procedure assumes an arbitrary value of 7 buffers for the TRANSFR operand.

After filling the specified number of buffers with line trace data, the NCP transfers the data to the destination host processor and continues to accumulate trace data in other buffers. The cycle of obtaining buffers, filling them, and transferring their contents to the host processor continues until the operator ends the line trace function.

[TWXID=(inchars,outchars)]

(TWX terminals in network control mode only)

Specifies the characters used for both the initial ID answerback and subsequent prompting sequences for all TWX terminals on switched lines in network control mode.

If you omit this operand, an X-on character is the default for both parameters.

inchars specifies the answerback and prompting sequences sent to all TWX terminals when the switched connection is terminal initiated.

outchars specifies the answerback and prompting sequences sent to all TWX terminals when the switched connection is controller initiated.

You must specify *inchars* and *outchars* as the hexadecimal representation of the EBCDIC characters used. Each can contain up to 20 EBCDIC characters. You can specify any EBCDIC character, including those that translate into TWX carriage return or line feed.

TWXID is used to define both the ID answerback sequence (or ID) and the prompting sequence (or PROMPT) sent as part of each TWX terminal READ operation. If an ID is to be sent, then you must code XTWXID = YES on the TERMINAL definition statement. If you want to use prompting, then you must code PROMPT = YES on the LINE definition statement. IDs normally end with a WRU character. Prompts *always* end with an X-on character.

Because TWXID is used to define both the ID and prompting sequences, be sure you understand that, ***when you code TWXID for the ID, the NCP overlays the last character of the TWXID sequence with an X-on character*** when it transmits a prompting sequence. If you are not using IDs, then code TWXID for the prompting sequence (for example, the last character is an X-on character).

Note: Because the prompting sequence is sent at the beginning of every terminal read operation, you can specify a short sequence to avoid an excessive amount of time required in transmitting and printing the prompting sequence.

This operand has no meaning if communication with TWX terminals is only in emulation mode or if the terminals are in network control mode on nonswitched lines.

```
[TYP SYS={OS }]  
  {MVS}  
  {DOS}  
  {VSE}  
  {VM }
```

Specifies that the NCP generation procedure is run under MVS (TYP SYS = MVS or TYP SYS = OS), VSE (TYP SYS = VSE or TYP SYS = DOS), or VM. The following table explains the values you can specify for TYP SYS according to which version of the NCP you are defining.

BUILD

If You Are Defining This NCP	And Have Coded MODEL =	Then You Can Code TYP SYS =
Version 3 for 3705	3705	MVS, OS, VSE, DOS, or VM
Version 3 for 3725	3725	MVS, OS, or VM
Version 4 Release 1	3725 or 3720	MVS, OS, VSE, or DOS
Version 4 Release 2	3725 or 3720	MVS, OS, or VM
NCP V4 Subset	3720	MVS, OS, VSE, DOS or VM

If you omit this operand, the default is OS.

```
[UCHAN={NO }]  
      {YES}
```

Specifies whether user-written channel handling code is provided for channel adapter positions 0 through 5. If you omit this operand, UCHAN=NO is the default.

If you specify UCHAN= YES, user-written channel handling code must be assembled in phase 2 of the generation through the SRCLO operand of the GENEND definition statement, and:

- The HICHAN operand must specify the highest subchannel address that can be used by either the user-written channel code or any EP lines defined.
- The LOCHAN operand must specify the lowest subchannel address that can be used by either the user-written channel code or any EP lines defined.
- You must specify CHANLNK= YES in at least one GROUP definition statement.

```
[VERSION={V3 }]  
          {V4 }  
          {V4R2}
```

(required for NTRI generation)

Specifies the version number of the NCP you are defining. Specify V3 if you are defining an NCP Version 3; specify V4 if you are defining an NCP Version 4 Release 1 or NCP V4 Subset for VSE; specify V4R2 if you are defining an NCP Version 4 Release 2, or an NCP V4 Subset for MVS or VM. This operand is not valid if you omitted the TYPGEN operand (accepted the emulation program default). If you omit this operand, the default is V3 unless you specified USERGEN on the OPTIONS definition statement, in which case the default is V4R2.

For NTRI Users: In order to generate NTRI resources, you must code VERSION= V4R2.

[VRACT={YES}]
 {NO }

(For NCP V3 & V4R1 only)

Specifies whether the NCP can activate virtual routes to destination subareas in the network. If the NCP generation includes SNA network interconnection capability (you specified NETID in the BUILD definition statement), you can code only VRACT= YES specifying that the gateway NCP can activate virtual routes to destination subareas in the networks that it joins.

Notes:

1. *If you specify VRACT= YES, you must code at least one VR operand on a PATH definition statement.*
2. *If you code the NETID operand of the BUILD definition statement, you must specify VRACT= YES and under no circumstance can you code VRACT= NO.*
3. **For NCP V4R2 Users Only:** *Virtual route activation is a standard part of NCP V4R2; therefore, you should not code the VRACT operand. If you do code VRACT, you get an informational message that VRACT is ignored.*

[VRPOOL=n]

Specifies the number of entries in the virtual route pool for this NCP. The number of entries are determined by adding the following:

- The number of concurrently active virtual routes having an end point in this NCP
- The maximum number of virtual routes that can be deactivated and then reactivated because of an explicit route failure
- The number of active internal virtual routes needed by user written code.

The minimum value that you can specify is 1. The maximum is 5000. The default for this operand is six times the value specified in the NUMHSAS operand, not exceeding 5000.

Note: Exercise care when determining the value of VRPOOL. An excessive value could waste NCP storage.

[XBREAK={integer}]
 {NONE }

(SS lines in network control mode only)

integer

Specifies the length, in character times, of the break signal the NCP places on the line to interrupt transmission from the terminal. This specification is applicable only for lines in network control mode and terminals for which the LINE and TERMINAL definition statements specify DUPLEX= FULL and FEATURE= BREAK, respectively.

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The minimum value is 3; the maximum is 255.

NONE

Specifies that the NCP not send **break characters**.

If you omit the **XBREAK** operand, the default is 3 if the **LINE** definition statement is defined with **DUPLEX = FULL** and the **TERMINAL** definition statement is defined with **FEATURE = BREAK**.

If the network does not include such lines and terminals, **XBREAK = NONE** is the default if you omit the **XBREAK** operand.

[XITB={NO }]
{YES}

(3705 only)
(BSC devices in network control mode only)

Specify this operand only if you are defining an NCP for the **3705**.

Specifies whether the NCP inserts transparent ITB sequences and error-information blocks (EIBs) in transparent text sent to devices that have intermediate block checking specified.

If you specify **XITB = YES** and the *first* parameter of the **ITBMODE** operand of the **TERMINAL** definition statement for the station specifies intermediate block checking, the program substitutes an error information block for each DLE ITB sequence in transparent text received from the device.

If you specify **XITB = YES** and the *second* parameter of the **ITBMODE** operand specifies intermediate block checking, the program inserts **DLE** ITB sequences into transparent text being sent to the device.

If you specify **XITB = NO** (or omit the **XITB** operand), no insertion of **DLE** ITB sequences and EIBs is performed for any BSC device.

CLUSTER Definition Statement

USAGE: Clustered BSC stations only. One for each cluster controller.

POSITION: Must follow SERVICE definition statement if the SERVICE definition statement is coded and must precede other device definition statements (TERMINAL or COMP).

Use a CLUSTER definition statement to represent an IBM 3270 series only if the line is a nonswitched multipoint line (DIAL=NO in the GROUP definition statement and POLLED=YES in the LINE or GROUP definition statement).

Do not code CLUSTER definition statements following a LINE definition statement if:

- The line is an SS line (LNCTL=SS in the GROUP definition statement).
- The line is an SDLC link (LNCTL=SDLC).
- The line operates only in emulation mode.
- The line is a switched line (DIAL=YES in the GROUP definition statement).
- The line does not use multipoint line control (POLLED=NO in the LINE definition statement).

Each CLUSTER definition statement coded generates a resource name only if the GPOLL operand is coded. (Omit the GPOLL operand if the general polling function is not required.)

The CLUSTER definition statement applies only to lines operating in network control mode.

FORMAT AND OPERANDS: The format of the CLUSTER definition statement is:

symbol CLUSTER [operands]

Specifying Lower-Level Operands in a Higher-Level Definition Statement:

In addition to the following operands, you can specify most operands of the TERMINAL definition statement in the CLUSTER definition statement (for cluster-type stations) or in the LINE or GROUP definition statement, instead of the TERMINAL definition statement. Figure 2-1 on page 2-4 shows which of the TERMINAL definition statement operands you can specify in the CLUSTER definition statement or at a higher level.

VTAM Users Only: Appearing at the end of the following list of operands are the VTAM operands that can be coded in this definition statement. The VTAM operands provide information only to the VTAM initialization process and are not required as input to the NCP generation procedure.

CLUSTER

See the appropriate *VTAM Installation* manual for descriptions of these operands and for information on the VTAM initialization process.

Note: In the following chart, most of the operands are valid for the IBM 3705, the IBM 3725, and the IBM 3720. However, if an operand is valid only for the IBM 3705, '3705' appears in the 'Controller Type' column. Likewise, if an operand is valid only for the IBM 3725 and the IBM 3720, '3725/3720' appears in the 'Controller Type' column. If the operand is valid for all three controllers, no controller type appears in the 'Controller Type' column.

Operands	Controller Type
[BHEXEC={ <u>ALL</u> }] {([PT1][,PT2][,PT3])}	
{ <u>NONE</u> }	
[,BHSET={DYNAMIC}] {setname}	
[,CUTYPE={ <u>3271</u> }] {3275}	3725/3720
{2972}	3705
[,CUTYPE={ <u>3271</u> }] {3275}	
[,EXEC={ <u>YES</u> }] {NO }	
[,FEATURE={GPLKUP }] {NOGPLKUP}	3725/3720
[,FEATURE=([{BATCH }][,{GPLKUP }])] {NOBATCH} {NOGPLKUP}	3705
[,GPOLL=chars]	
[,INHIBIT={ <u>NONE</u> }] {([WACKCNT][,SUBBLOCK][,ERPR][,ERPW])}	
[,ITBMODE=([{YES}][,{YES}])] {NO } {NO }	
[,LGRAPHS=([{ <u>REJECT</u> }][,,{ <u>REJECT</u> })] {ACCEPT} {ACCEPT}	
[,NPACOLL={ <u>NO</u> }] {YES}	
[,PT3EXEC={ <u>NO</u> }] {YES}	

VTAM Operands

```

      {NO          }
[,DISCNT={{YES[, {F }]]}
      {NF}

[,DLOGMOD=default logon mode entry name]

[,FEATUR2=(operand,operand...)]

[,ISTATUS={ACTIVE  }]
      {INACTIVE}

[,LOGAPPL=application program name]

[,LOGTAB=interpret table name]

[,MODETAB=logon mode table name]

[,USSTAB=USS definition table name]

      {0}
[,VPACING={2}]
      {n}

```

Operand Descriptions

symbol

Specifies the name of the station and is required. symbol can be any valid assembler-language symbol. The first character cannot be \$. This name is a resource name for the cluster only if you code the GPOLL operand of this definition statement.

```

[BHEXEC={ALL          }]
      {([PT1][,PT2][,PT3])}

```

(block-handling routines only)

Specifies which block-handling routines the NCP uses from the block-handler set defined by the BHSET operand. If you specify BHSET=setname, you must specify at least one point. Do not code this operand if you specify BHSET=NONE or BHSET=DYNAMIC.

[PT1]

Specifies that the NCP uses the PT1 block handler. The NCP calls this block handler upon receiving a request from the host processor but before determining whether the line is available to contact the station.

[PT2]

Specifies that the NCP uses the PT2 block handler. The NCP calls this block handler upon receiving a request from the host processor *and* after determining that the line is available.

CLUSTER

[PT3]

Specifies that the NCP uses the PT3 block handler. The NCP calls this block handler after receiving a block, message, or transmission from the station.

ALL

Specifies that each block handler in the set is used at the appropriate time.

If you omit this operand and specify BHSET, ALL is the default.

{NONE }
[BHSET={DYNAMIC}]
{setname}

(block-handling routines only)

Specifies the name of a set of block handlers associated with this station.

NONE

Specifies that no block-handler set is assigned to this station. This is the default.

DYNAMIC

Specifies that no block-handler set is assigned initially to this station, but one can be assigned dynamically from the host processor.

setname

Specifies the block-handler set for this station. This parameter must be the setname appearing on a BHSET definition statement.

[CUTYPE={3271}]
{3275}

For the IBM 3725 and IBM 3720:

Specifies whether the station's control unit is a 3271 or 3275. (Code CUTYPE=3271, or omit the operand, if the control unit is an IBM 3274 or 3276 operating in BSC mode.)

Note: If the line has 3270 stations connected and operates in emulation mode as well as in network control mode, specify the CUTYPE operand in both the LINE definition statement and the CLUSTER definition statement.

{2972}
[CUTYPE={3271}]
{3275}

For the IBM 3705:

Specifies whether the station's control unit is a 2972, 3271, or 3275. (Code CUTYPE=3271, or omit the operand, for a 3274 or 3276 control unit.)

Note: If the line has 2972 or 3270 stations connected and operates in emulation mode as well as in network control mode, specify the CUTYPE operand in both the LINE definition statement and the CLUSTER definition statement.

```
[EXEC={YES}]
      {NO }
```

Specifies whether the block-handler set can be used without being activated by the host. If you specify EXEC = YES, the block handler is activated during initialization of the NCP. If you specify EXEC = NO, the block handler must be activated by a request from the host.

```
[FEATURE={GPLKUP  }]                                     (for the 3725 and 3720)
      {NOGPLKUP}
```

```
[FEATURE=([{BATCH  }][,{GPLKUP  }])]                   (for the 3705)
      {NOBATCH}   {NOGPLKUP}
                                                         (network control mode only)
```

For the IBM 3705:

Specifies features that must be included for certain BSC terminals.

```
[{BATCH  }]                                             (IBM 2972 only)
      {NOBATCH}                                         (IBM 3705 only)
```

Specify this suboperand only if you are defining an NCP for the IBM 3705 Communications Controller.

Specifies whether an IBM 2972 has the batched message input feature. If you specify FEATURE = BATCH, the NCP leaves the batched messages from the 2972 together. The NCP therefore does not identify the individual 2980 terminals from which each message was received.

For the IBM 3705, the IBM 3725, and the IBM 3720:

```
[{GPLKUP  }]                                           (IBM 3271 only)
      {NOGPLKUP}                                       (valid for 3705, 3725, and 3720)
```

Specifies the method used to determine which device responds to a poll. If you specify GPLKUP, a table associated with the cluster is searched to find the responding device, and only the *used* addresses—in other words, those specified on the ADDR operand of the TERMINAL definition statement—on the cluster controller are searched. If you specify FEATURE = GPLKUP, you do not have to code a TERMINAL definition statement for each unused address on the cluster controller.

If you specify NOGPLKUP, the response is used as an index value to locate the responding device. For NOGPLKUP, ensure that you code a separate TERMINAL definition statement for each address, even if no device is attached to that address. You must specify the devices in ascending address order. The default for this operand is NOGPLKUP.

CLUSTER

[GPOLL=chars]

For the IBM 3705 , the IBM 3725, and the IBM 3720:

Specifies that the general-polling procedure is used for the station and specifies the general-polling characters assigned to the control unit of the station. If you omit this operand, devices must be polled individually.

This operand is required if this CLUSTER definition statement represents an IBM 3271.

Specifying Polling and Addressing Characters

In the ADDR operand of each TERMINAL definition statement representing a 2980, code the addressing character assigned to that 2980. Because 2980s cannot be individually polled, the POLL operand is not valid.

IBM 3270 series except 3275: If general polling is required, code the general-polling character in the GPOLL operand of the CLUSTER definition statement. In addition, code a TERMINAL definition statement following this definition statement for each terminal address on the control unit. Code all of the addresses from the lowest address to the highest address regardless of whether some intermediate addresses are unused. For example, if terminals are attached to the third, fourth, eighth, and ninth addresses, you code nine TERMINAL definition statements, the first representing the first (lowest) address and the last representing the ninth address.

Every attached terminal must be represented by a TERMINAL definition statement. Entering data from any terminal that is not represented cancels the general-poll operation for the control unit.

In the POLL and ADDR operands of each TERMINAL definition statement, code the polling and addressing characters assigned to the device.

If a 3277 is used as an input-only device and you specify general polling characters in the CLUSTER definition statement, you can omit the ADDR and POLL operands from the TERMINAL definition statement for that 3277.

IBM 3275: If general polling is required, code the general-polling characters in the GPOLL operand of this definition statement. In addition, directly following this CLUSTER definition statement, code a single TERMINAL definition statement with TERM = 3275 specified. If you want the 3275 individually polled and addressed, specify the polling and addressing characters in the POLL and ADDR operands of the TERMINAL definition statement. If you specify addressing characters in the ADDR operand, you also must code polling characters in the POLL operand. (The reverse is not true.)

For the IBM 3705:

You must code the GPOLL operand if the control unit is a 2972 (CUTYPE = 2972), because individual polling of terminals attached to a 2972 is not possible.

IBM 2972: Code the general-polling characters in the GPOLL operand of this CLUSTER definition statement. In addition, code a TERMINAL definition statement following this definition statement for each terminal address on the control unit. Code all of the addresses from the lowest address to the highest address regardless of whether some intermediate addresses are unused. For example, if terminals are attached to the third, fourth, eighth, and ninth addresses, you code nine TERMINAL definition statements, the first representing the first (lowest) address and the last representing the ninth address.

```
[INHIBIT={NONE } ]
  { ([WACKCNT] [ ,SUBBLOCK] [ ,ERPR] [ ,ERPW] ) }
```

Specifies which, if any, of the NCP facilities are inhibited from functioning initially; that is, when the NCP starts running after being loaded into the controller.

Note: For BSC 3270 lines, it is recommended that you code **INHIBIT = SUBBLOCK**.

[WACKCNT]

Specifies that the WACK limit specified by the WACKCNT operand of the GROUP definition statement is inhibited. The first WACK received from the station causes the NCP to return the request to the host processor rather than respond to that and subsequent WACKs with an ENQ character.

[SUBBLOCK]

Specifies that the sub-blocking indicated by the TRANSFR operand of the LINE (or GROUP) definition statement is inhibited. If the number of buffers specified by the TRANSFR operand is filled by received text, the NCP terminates the receiving operation as if the cutoff limit (specified by the CUTOFF operand) were reached. It is recommended that you specify **INHIBIT = SUBBLOCK** for BSC 3270 devices.

[ERPR]

Specifies that recovery procedures for text-read errors are inhibited.

[ERPW]

Specifies that recovery procedures for text-write errors are inhibited.

NONE

Specifies that none of the NCP facilities are inhibited. NONE is the default.

CLUSTER

[ITBMODE=([{YES}] [, {YES}])]
 {NO } {NO }

(BSC devices in ITB mode only)

Specifies how the NCP handles intermediate text block (ITB) characters in text received from the station or the access method.

The first suboperand specifies whether the program inserts an EIB (error information block) character following each ITB character received from the station.

The second suboperand specifies whether an EIB character follows each ITB character received from the access method. If you specify YES, the NCP removes the first character following each ITB character from the data before sending it to the station.

[LGRAPHS=([{REJECT}] [, {REJECT}])]
 {ACCEPT} {ACCEPT}

Specifies whether the NCP accepts or rejects leading graphics received from the station.

The first parameter specifies acceptance or rejection of leading graphics for read operations. The second parameter specifies acceptance or rejection for write operations.

[NPACOLL={NO }]
 {YES}

Specifies whether data transmitted and received by this cluster is eligible for collection by the network performance analyzer (NPA). NPACOLL= YES is valid only for 3271 and 3275 cluster controllers with NPACOLL= YES on the LINE definition statement. The default for this operand is NO. See the *NCP and SSP Resource Definition Guide* for more information.

[PT3EXEC={NO }]
 {YES}

(block-handling routines only)

Specifies whether a block-handler set that is run at point 3 (see the BHSET definition statement) is associated with the station represented by this definition statement.

This operand is ignored if you omit the BHSET definition statement, or if you code BHSET= NONE, BHEXEC= PT3, or BHEXEC= ALL in this CLUSTER definition statement.

COMP Definition Statement

USAGE: BSC or SS devices only. One for each additional input or output component of a device.

POSITION: Must follow TERMINAL definition statement or other COMP definition statement.

COMP definition statements are required only for components the NCP must poll or address individually with specific component polling or addressing characters. A COMP definition statement is not required for a device having only one input component and one output component because the polling and addressing characters for these are specified in the TERMINAL definition statement. An exception is if two or more components need to have separate sessions established concurrently. In this case, each component must be represented by an individual TERMINAL or COMP definition statement. For example, to establish concurrent sessions with a keyboard and a card punch requires that a separate TERMINAL (or COMP) definition statement be used to represent each device.

Each COMP definition statement generates a resource name. All operands of the COMP definition statement apply only to line operation in network control mode.

FORMAT AND OPERANDS: The format of the COMP definition statement is:

symbol COMP [operands]

Specifying COMP Operands in a Higher-Level Definition Statement: Except for the POLL and ADDR operands, you can specify the operands of the COMP definition statement in the TERMINAL, LINE, or GROUP definition statement instead of the COMP definition statement. Figure 2-1 on page 2-4 shows which of the COMP definition statement operands you can specify at a higher level.

COMP

Operands

```
{addr chars          }
[,ADDR={selection chars  }]
      {[normal addr chars]
       [,alt addr chars]]}

[,ATTN={DISABLED}]
      {ENABLED }

[,BHEXEC={ALL          }]
      {[PT1][,PT2][,PT3]]}

      {NONE   }
[,BHSET={DYNAMIC}]
      {setname}

[,CONV={NO }]
      {YES}

[,ENDTRNS={EOT}]
      {EOB}

[,EXEC={YES}]
      {NO }

[,INHIBIT={([TEXTTO][,TIMEFILL][,WACKCNT][,SUBBLOCK][,ERPR][,ERPW]))}
          {NONE
          }

[,ITBMODE=([YES][,YES])
          {NO } {NO }

[,LGRAPHS=([REJECT][,REJECT])
          {ACCEPT} {ACCEPT}

[,POLL=chars]

[,PT3EXEC={NO }]
          {YES}

[,SRT=({65535},{255})]
      {m   } {n   }
```

*Note: The operands in this definition statement are equivalent to, and are used in the same way as, the corresponding operands of the **TERMINAL** definition statement. See the **TERMINAL** definition statement for descriptions of the operands.*

Operand Descriptions

symbol

Provides a name for the component and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

CSB Definition Statement

USAGE: Required. One for each scanner in the IBM 3705 Communications Controller. Code this definition statement *only* if you are defining an NCP for the IBM 3705.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the CSB definition statement is:

[symbol]	CSB	operands[,operands]	
Operands	Program Type		
	NCP	PEP	
SPEED=(rate,...)		R	R
[,MOD={Q}] {n}		•	•
[,TYPE={TYPE2}] {TYPE3}		•	•
[,WRAPLN=line addr]			R

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

SPEED=(rate,...)

(required for 3705 only)

Specifies the internal oscillator (business machine clock) rates for up to four oscillators installed in the communication scanner. (Do not confuse this SPEED operand, which specifies the oscillator bit rates, with the SPEED operand of the LINE definition statement, which specifies the data rate for the communication line.) The speeds must be specified in the same order that the oscillators are installed on the scanner, in ascending order according to speed. Standard oscillator bit rates are shown in the table at the end of the description of the SPEED operand.

Note: If external (modem) clocking is used for any line attached to this scanner (CLOCKNG=EXT is specified in the LINE definition statement), one of the oscillator bit rates you specify must be less than one-half of the lowest modem clocking rate specified in the SPEED operand of any LINE definition statement representing the attached lines.

A type 3 scanner is always equipped with an oscillator that provides 150-, 600-, and 1200-bps bit rates, and optionally can have a 2000- or 2400-bps oscillator. Therefore, if this CSB definition statement represents a type 3 scanner, specify SPEED = (150,600,1200) or SPEED = (150,600,1200,2000) or SPEED = (150,600,1200,2400), as appropriate.

If a line with CCITT X.21 support is attached to this scanner, you must specify a speed of less than 1/24th of the data rate (SPEED operand on the LINE definition statement) in this operand. See the X21SW operand on the GROUP definition statement for CCITT X.21 support.

Rate	Represents	Rate	Represents
45	45.5 bps	150	150.0 bps
50	50.0	200	200.0
56	56.89	300	300.0
74	74.2	600	600.0
75	75.0	950	950.0
100	100.0	1200	1200.0
110	110.0	2000	2000.0
134	134.5	2400	2400.0

Figure 2-4. Communication Scanner Oscillator Bit Rates

[MOD={0}]
{n}

(3705 only)

Specifies the physical location of the communication scanner. The line interface addresses (ADDRESS operand of the LINE definition statement) valid for each scanner type and module location are shown in Figure 2-5.

If this NCP is to run in a 3705-80 communication controller, you must specify MOD=0.

If scanner is in:	Code MOD =	Line Interface Addresses	
		Type 2 Scanner	Type 3 Scanner
3705 base module	0	020-05F ¹	020-04F
3705 first expansion module	1	0A0-0FF ²	0A0-0DF
3705 second expansion module	2	120-17F	120-15F
3705 third expansion module	3	1A0-1FF	1A0-1DF
¹ If the 3705 has the Remote Program Load feature or two channel adapters in this module, the address range is 020-04F for a type 3 scanner.			
² If two channel adapters are in this module, the address range is 0A0-OEF.			

Figure 2-5. Communication Scanner Line Interface Addresses

[TYPE={TYPE2}
{TYPE3}]

(3705 only)

Specifies whether the communication scanner is type 2 or type 3. (NCP does not support a type 1 scanner.) A type 3 scanner does not support start-stop lines.

Valid designations for scanner type are:

Controller	TYPE =
3705-II (MODEL = 3705-2)	TYPE2 TYPE3
3705-80 (MODEL = 3705-2)	TYPE2

If you omit this operand, the scanner is assumed to be type 2.

[WRAPLN=line addr]

(3705 only)
(required for emulation mode only)

Specifies the line address the controller uses to send test data when running a *wraparound test*. Specify the hexadecimal line address without framing characters; for example, WRAPLN=02F. The address specified must be within the range shown in Figure 2-5, and must appear in the ADDRESS operand of one of the LINE definition statements.

The line specified need not be dedicated to the wraparound test operation. Any line works that can be conveniently closed to normal message traffic when a wraparound test is needed. Both the specified line and the line to be tested must be closed to normal message traffic for the duration of the test. The online test (OLT) program selects the line to be tested.

Note: If any of the lines serviced by the scanner represented by this definition statement are BSC lines, the address you select for WRAPLN must be the line interface address for a BSC line.

DATE TIME Definition Statement

USAGE: BSC or SS devices only. One allowed for each block handler.

POSITION: Must follow EDIT definition statement, if EDIT definition statement is coded.

FORMAT AND OPERANDS: The format of the DATE TIME definition statement is:

```
[symbol]    DATE TIME [operands]
```

Operands

```
[DATE={YES} ]
      {NO  }
```

```
[ ,DATEFMT={YY.DDD  } ]
              {MM/DD/YY}
              {YY/MM/DD}
              {DD/MM/YY}
```

```
[ ,INSERT={ALL  } ]
              {FIRST}
```

```
[ ,PT2EXEC={BEFORE} ]
              {AFTER }
```

```
[ ,TIME={YES} ]
      {NO  }
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

```
[DATE={YES} ]
      {NO  }
```

Specifies whether the NCP inserts the current date in a block of data.

```
[DATEFMT={YY.DDD  } ]
          {MM/DD/YY}
          {YY/MM/DD}
          {DD/MM/YY}
```

Specifies the format for the date.

Code DATEFMT = YY.DDD (or omit the operand) if you want the date to appear as the year followed by the day of the year. For example, 86.294 (October 21,1986).

DATE TIME

Code DATEFMT = MM/DD/YY if you want the date to appear in the month/day/year format. For example, 10/21/86.

Code DATEFMT = YY/MM/DD if you want the date to appear in the year/month/day format. For example, 86/10/21.

Code DATEFMT = DD/MM/YY if you want the date to appear in the day/month/year format. For example, 21/10/86.

[INSERT={ALL }]
{FIRST}

Specifies whether the NCP inserts the date and time in the first block of each message or in all blocks.

[PT2EXEC={BEFORE }]
{AFTER }

Specifies, for a routine run at point 2, whether the routine inserts the date and time *before* the I/O operation (PT2EXEC = BEFORE) or *after* the I/O operation (PT2EXEC = AFTER).

[TIME={YES }]
{NO }

Specifies whether the NCP inserts the current time. The time is always in the format *hh.mm.ss*, using the continental (24-hour) form. For example, 07.42.18 represents 7:42:18 a.m.; 19.42.18 represents 7:42:18 p.m.

Do not code both DATE = NO and TIME = NO.

DELETE Definition Statement

USAGE: Used for dynamic reconfiguration. One for each PU or LU you want to delete from an existing link or PU, respectively.

POSITION: In a separate generation input deck, before a PU definition statement or an LU definition statement. If you specify the name of a link in this DELETE definition statement, the DELETE definition statement must precede a PU definition statement. If you specify a PU in this DELETE definition statement, the DELETE definition statement must precede an LU definition statement.

FORMAT AND OPERANDS: The format of the DELETE definition statement is:

```
[symbol]    DELETE    [operand]
```

Operand

```
FROM=symbol
```

Operand Description

[symbol]

Provides a name for the DELETE definition statement. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

FROM=symbol

If you want to delete a PU dynamically, specifies the name of the link defined in the NCP generation from which the PU will be deleted. If you want to delete an LU dynamically, specifies the name of the PU defined in the NCP generation from which the LU will be deleted.

If you want to delete a PU from a link, you must specify the *symbol* on the PU definition statement. If you specify any operands on the PU definition statement, the operands will be ignored.

If you want to delete an LU from a PU, you must specify the *symbol* on the LU definition statement. If you specify any operands on the LU definition statement, the operands will be ignored.

For an example of coding the DELETE definition statement for dynamic reconfiguration, refer to the *NCP and SSP Resource Definition Guide*.

DIALSET Definition Statement

USAGE: BSC or SS devices on switched data links only. One for each dial set to be defined.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the DIALSET definition statement is:

```
[symbol]          DIALSET  operand[,operands]
```

Operands

```
LINES=(line name,...)
```

```
[,DIALALT=dialset name]
```

```
[,QLIMIT={1  }]  
          {count}
```

```
[,QLOAD={0  }]  
          {count}
```

```
[,RESERVE={0  }]  
          {count}
```

Operand Descriptions

[symbol]

Provides a name for the dial set and is required except as indicated in the description of the LINES operand. *symbol* can be any valid assembler-language symbol. The first character cannot be \$. The name is referred to by the DIALSET operands of the LINE and TERMINAL definition statements and by the DIALALT operands of the LINE and DIALSET definition statements.

LINES=(line name,...)

(required)

Specifies the switched lines that compose the dial set. *line name* is the name of the LINE definition statement for an included line. Only a line whose LINE definition statement specifies CALL=OUT or CALL=INOUT can be included in a dial set. No line can appear in more than one dial set.

You can specify a maximum of 255 characters in the LINES operand, including the beginning and ending parentheses and all commas. This limit applies regardless of how many line names you code within the operand. If you need more than 255 characters to complete the list, code one or more additional DIALSET definition statement (omitting the symbol) after the

DIALSET

first. Code the remaining line names in the LINES operand. No other operands can be specified in the additional definition statements.

[DIALALT=dialset name]

Specifies an alternate dial set. *dialset name* is the name of the DIALSET definition statement for the alternate dial set. The alternate dial set must consist of the same type of lines as the primary dial set.

The DIALSET definition statement specified by the DIALALT operand must follow immediately the DIALSET definition statements defining this dial set. Omit the DIALALT operand from the last of a chain of DIALSET definition statements. Do not use the operand to specify the name of the first DIALSET definition statement in the chain.

[QLIMIT={1 }]
 {count}

Specifies the maximum number of requests the NCP lets accumulate on the queue for the dial set. When this limit is reached, the NCP rejects (returns to the host processor) any further call-out requests it receives. Rejection continues until the number of requests becomes less than the queue limit value specified. The minimum queue limit is 0; the maximum is 255. 0 specifies that the NCP rejects *any* request when the program does not immediately have a line available.

[QLOAD={0 }]
 {count}

Specifies the number of call-out requests the NCP lets accumulate on the queue for this dial set before using a line from the alternate dial set. If you code QLOAD=0 (or omit the operand), and specify an alternate dial set, the program uses a line from the alternate dial set if no line in the primary dial set is available.

The maximum number of requests is 255. The value you specify in QLOAD must be less than the value in QLIMIT. Otherwise the queue of unfulfilled call-out requests cannot use the alternate dial set.

[RESERVE={0 }]
 {count}

Specifies the number of lines in the dial set reserved for incoming calls from devices. If you code RESERVE=0 (or omit the operand), no lines are reserved. When all lines are busy with outgoing calls, no devices can call the communication controller.

The maximum value for RESERVE is 255.

EDIT Definition Statement

USAGE: BSC or SS devices only. One allowed for each block handler.

POSITION: Must appear before DATETIME definition statement, if DATETIME definition statement is coded.

FORMAT AND OPERANDS: The format of the EDIT definition statement is:

```
[symbol]    EDIT    [operand]
```

Operands

```
[BKSP={16  }]
      {char}
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

```
{BKSP={16  }}
      {char}
```

Specifies the character acting as the text canceling (backspace) character. A text cancelling character allows the keyboard operator to signal the NCP to correct text he has incorrectly entered. *char* is the hexadecimal representation of the text canceling character. If you omit this operand, 16 (the hexadecimal representation of the EBCDIC backspace [BS] character) is assumed as the text-canceling character. You must specify the value of this operand without framing characters (' ').

ENDBH Definition Statement

USAGE: BSC or SS devices only. One for each block handler.

POSITION: Must appear at end of block handler.

FORMAT AND OPERANDS: The format of the ENDBH definition statement is:

[symbol] ENDBH

Operands

This definition statement has no operands.

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

GENEND Definition Statement

USAGE: Required.

POSITION: Last in NCP definition statements, unless you code OPTIONS definition statement last.

FORMAT AND OPERANDS: The format of the GENEND definition statement is:

[symbol] GENEND [operands]

The following operands are divided into four groups: (1) operand used to include user-written control blocks, (2) operands used to specify the entry point for user-written or NTRI modules, (3) linkage editor operands used to include user-written modules, and (4) operands used to specify scanner control. Within each group the operands are listed in alphabetical order.

Note: In the following chart, most of the operands are valid for the IBM 3705, the IBM 3725, and the IBM 3720. However, if an operand is valid only for the IBM 3705, '3705' appears in the 'Controller Type' column. Likewise, if an operand is valid only for the IBM 3725 and the IBM 3720, '3725/3720' appears in the 'Controller Type' column. If the operand is valid for all three controllers, no controller type appears in the 'Controller Type' column.

Operands	Controller Type
[,SRCHI=(symbol1[,symbol2]...[,symboln])]	
[,SRCLO=(symbol1[,symbol2]...[,symboln])]	
[,INIT=(symbol1[,symbol2]...[,symboln])]	
[,TMRTICK=(symbol1[,symbol2]...[,symbol5])]	
[,INCHI=(symbol1[,symbol2]...[,symboln])]	
[,INCLO=(symbol1[,symbol2]...[,symboln])]	
[,INCINIT=(symbol1[,symbol2]...[,symboln])]	
[,INCL2HI=(symbol1[,symbol2]...[,symboln])]	
[,INCL2LO=(symbol1[,symbol2]...[,symboln])]	
[,KEYOINC=(symbol1[,symbol2]...[,symboln])]	3725/3720
[,KEYOORD=(symbol1[,symbol2]...[,symboln])]	3725/3720

GENEND

Operands	Controller Type
[,ORDHI=(symbol1[,symbol2]...[,symboln])]	
[,ORDLO=(symbol1[,symbol2]...[,symboln])]	
[,ORDINIT=(symbol1[,symbol2]...[,symboln])]	
[,ORDL2HI=(symbol1[,symbol2]...[,symboln])]	
[,ORDL2LO=(symbol1[,symbol2]...[,symboln])]	
[,HSPDSEL=([mask1][,mask2],[mask3],[mask4])]	3705
[,SCANCTL=([limit1],[limit2],[limit3],[limit4][,asmask])]	3705

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

Including User-Written Code

The following operands provide the NCP generation procedure with the library member names of user-written modules.

You can specify as many symbols as necessary for each operand. However, NDF has a limit of 255 characters per operand, which includes commas and framing parentheses.

```
[SRCHI=(symbol1[,symbol2]...[,symboln])]  
[SRCLO=(symbol1[,symbol2]...[,symboln])]
```

These two operands specify the source code for user-defined control blocks and tables that must be assembled with the NCP control blocks and tables. The source code must be in macro or open code form using 3725 or 3705 assembler instructions.

symbol is the member names of the macros as they are cataloged in the user macro library or the NCP phase 2 macro library (SYS1.MAC3725 or SYS1.MAC3705).

SRCHI defines source code that can reside anywhere in the communication controller storage.

If you specified user-written line control (LEVEL2 operand in a GROUP definition statement), you must do one of the following:

- Either specify SRCLO
- Or have a user-written generation load module pass link-edit data to the NDF link-edit cluster for ordering user control blocks.

Operands Used To Specify Entry Points For User-Written or NTRI Modules

The following operands provide the NCP generation procedure with the entry points of user-written or NTRI modules.

```
[INIT=(symbol1[,symbol2]...[,symboln])]
```

Specifies the entry points of user-written or NTRI initialization routines. These routines must be object modules cataloged in the MVS object library or cataloged as type OBJ in the VSE library and CMS text library. (See the *NCP and SSP Resource Definition Guide* for more information.)

If you use this operand to specify entry points for user-written modules, you also must do one of the following:

- Specify one of the following operands:
 - INCINIT
 - INCHI
 - INCLO
- Have a user-written generation load module pass data to the NDF link-edit clusters for INCINIT, INCHI, or INCLO using the NDF standard attachment facility.

NTRI Users Only: For generation of NTRI resources, you can specify INIT=ECLINIMD. If you do not code INIT=ECLINIMD, NDF adds it to the generation definition.

```
[TMRTICK=(symbol1[,symbol2]...[,symbol5])]
```

Specifies the entry point of up to five user-written or NTRI timer-tick service routines. These routines must be object modules, cataloged in the MVS object library or cataloged as OBJ in the VSE library and CMS text library. (See the *NCP and SSP Resource Definition Guide* for more information.)

To include the timer-tick routine in the NCP, you must also specify either the INCL2HI or the INCL2LO operand.

NTRI Users Only: To include the timer-tick routine for NTRI, you do not need to specify INCL2HI or INCL2LO. For generation of NTRI resources, you can specify TMRTICK=ECLTICK. If you do not code TMRTICK=ECLTICK, NDF adds it to the generation definition.

Linkage Editor Operands to Include User-Written Code

The following operands specify the names of macro library members that contain the linkage editor INCLUDE and ORDER statements for user-written object modules.

On an MVS or VM system, the object modules must be members of the user object library specified on the INCLUDE DD card or members of the NCP object library (SYS1.OBJ3725 or SYS1.OBJ3705). Every CSECT in the user object modules must be specified on a linkage editor ORDER statement. Any CSECT not specified on an ORDER statement will not be in the correct position in the load module and will be overlaid during initialization of the NCP.

In a VSE system, the object modules must be cataloged as type OBJ in a VSE sublibrary. Specify only the INCLUDE operands of this definition statement for a VSE system. The ORDER operands are not valid.

```
[INCHI=(symbol1[,symbol2]...[,symboln])]  
[INCLO=(symbol1[,symbol2]...[,symboln])]
```

These operands specify the macro library members (type OBJ for VSE) that contain linkage editor INCLUDE statements for object modules that are *not* level 2 or level 3 code. If you specified VIRTUAL=YES in a GROUP definition statement or if you included an NCPNAU definition statement in the generation, you must do one of the following:

- Either specify at least one of these operands (INCHI or INCLO)
- Or have a user-written generation load module which passes data to the NDF link-edit clusters for INCHI or INCLO.

INCHI names the object modules that can reside anywhere in the controller storage. These modules run with a storage protect key of 1.

INCLO names those object modules that must reside in the low 64K of controller storage. These modules run with a storage protect key of 0.

Note: If you include user block-handling routines (UBHR definition statements) in the generation, and you specified INCHI, the generation procedure assumes that the block-handling routine linkage editor control statements are included in the members specified in the INCHI operand.

```
[INCINIT=(symbol1[,symbol2]...[,symboln])]
```

Specifies the macro library members (type OBJ for VSE) that contain linkage editor INCLUDE statements for user-written initialization code. The modules included in the NCP generation by this operand are overlaid after the initialization is complete. If you don't want the user initialization code overlaid, specify the library members containing the INCLUDE statements in the INCHI or INCLO operands.

```
[INCL2HI=(symbol1[,symbol2]...[,symboln])]  
[INCL2LO=(symbol1[,symbol2]...[,symboln])]
```

These operands specify the macro library members (type OBJ for VSE) that contain linkage editor INCLUDE statements for object modules that are level 2 or level 3 code. These modules run with a storage protect key of 0.

INCL2HI names the object modules that can reside anywhere in the communication controller storage.

INCL2LO names those object modules that must reside in the low 64K of controller storage. If you specified user-written line control (LEVEL2 operand in a GROUP definition statement), you must do one of the following:

- Either specify INCL2LO
- Or have a user-written generation load module pass data to the NDF link-edit cluster for INCL2LO.

```
[KEY0INC=(symbol1[,symbol2]...[,symboln])] (3725 and 3720)
```

Specify this operand only if you are defining an NCP for the 3725 or 3720.

Specifies the macro library members (type OBJ for VSE) that contain linkage editor INCLUDE statements for object modules to be included in read only storage.

```
[KEY0ORD=(symbol1[,symbol2]...[,symboln])] (3725 and 3720)  
(MVS or VM only)
```

Specify this operand only if you are defining an NCP for the 3725 or 3720.

Specifies the macro library members that contain linkage editor ORDER statements for object modules to be included in read only storage.

```
[ORDHI=(symbol1[,symbol2]...[,symboln])] (MVS or VM only)  
[ORDLO=(symbol1[,symbol2]...[,symboln])]
```

These operands specify the macro library members (type OBJ for VSE) that contain linkage editor ORDER statements for object modules that are *not* level 2 or level 3 code. If this generation is on a VSE system, these operands are not valid, and you must omit them.

ORDHI names the object modules that can reside anywhere in the communication controller storage. This operand is required if you specified INCHI in this definition statement, and you specified TYP SYS = OS or TYP SYS = VM on the BUILD definition statement.

ORDLO names those object modules that must reside in the lower 64K of controller storage. This operand is required if you specified INCLO in this definition statement, and you specified TYP SYS = OS or TYP SYS = VM on the BUILD definition statement.

Note: If user block-handling routines (UBHR definition statement) are included in the generation and you specified INCHI, the generation procedure assumes that the linkage editor control statements of the block-handling routine are included in the members specified in the INCHI and ORDHI operands.

[ORDINIT=(symbol1[,symbol2]...[,symboln])] (MVS or VM only)

Specifies the macro library members that contain linkage editor ORDER statements for user-written initialization code. This operand is required and valid only if you specified INCINIT in this definition statement, and you specified TYP SYS = OS or TYP SYS = VM on the BUILD definition statement. You must omit this operand if you specified TYP SYS = DOS.

The members specified in this operand are overlaid after the initialization is complete. If you don't want the user initialization code overlaid, specify the library members containing the ORDER statements in the ORDHI or ORDLO operands.

[ORDL2LO=(symbol1[,symbol2]...[,symboln])] (MVS or VM only)
[ORDL2HI=(symbol1[,symbol2]...[,symboln])]

These operands specify the macro library members that contain linkage editor ORDER statements for object modules that are level 2 or level 3 code. If this generation is on a VSE system, these operands are not valid, and you must omit them.

ORDL2HI names the object modules that can reside anywhere in the communication controller storage. This operand is required if you specified INCL2HI in this definition statement, and you specified TYP SYS = OS or TYP SYS = VM on the BUILD definition statement.

ORDL2LO names the object modules that must reside in the lower 64K of controller storage. This operand is required if you specified INCL2LO in this definition statement, and you specified TYP SYS = OS or TYP SYS = VM on the BUILD definition statement.

Defining Communication Scanner Control

The following operands are used to define scanner control. You should specify these operands only if you are defining an NCP for the IBM 3705 Communications Controller.

[HSPDSEL=([mask1] , . . . , [mask4])] (type 3 scanner in a 3705-II only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies the high-speed select masks for each type 3 communication scanner installed in the communication controller. The masks are used to cause high-speed line interfaces to be scanned more frequently than interfaces for lower-speed lines (under 4800 bps). A mask is not valid for a type 3 high-speed scanner used with a 230.4-kbps line.

Note: This operand is not valid for a 3705-80 communication controller.

[mask1],...[mask4]

Specifies 8-bit binary sequences (for example, 00101000) constituting the masks. For scanning purposes, the line interface base (LIB) serviced by a type 3 scanner is divided into eight portions. The eight bit positions of a mask correspond to the eight portions (0-7) within all LIBs serviced by the scanner. See Appendix C, "Upper Scan Limits, Address Substitution, and High Speed Select Options" for an illustration.

A mask bit of 0 specifies that all line interface addresses in the corresponding portion of the LIB are scanned equally. A mask bit of 1 specifies that only the line interface with the lowest address within that LIB portion is scanned. All other addresses within that LIB portion are not scanned. The scans that would otherwise be applied to these addresses are instead applied to the lowest address. Therefore, the scan frequency of that address is increased. See Figure 2-6 for addresses scanned and not scanned for each high-speed select (HSS) mask bit position.

LIB Portion and HSS Mask Bit Position	Bit Value	Scanner Position	Address Scanned	Address Not Scanned
0	1	First	020	021,030,031,040,041
		Second	0A0	0A1,0B0,0B1,0C0,0C1,0D0,0D1
		Third	120	121,130,131,140,141,150,151
		Fourth	1A0	1A1,1B0,1B1,1C0,1C1,1D0,1D1
1	1	First	022	023,032,033,042,043
		Second	0A2	0A3,0B2,0B3,0C2,0C3,0D2,0D3
		Third	122	123,132,133,142,143,152,153
		Fourth	1A2	1A3,1B2,1B3,1C2,1C3,1D2,1D3
2	1	First	024	025,034,035,044,045
		Second	0A4	0A5,0B4,0B5,0C4,0C5,0D4,0D5
		Third	124	125,134,135,144,145,154,155
		Fourth	1A4	1A5,1B4,1B5,1C4,1C5,1D4,1D5
3	1	First	026	027,036,037,046,047
		Second	0A6	0A7,0B6,0B7,0C6,0C7,0D6,0D7
		Third	126	127,136,137,146,147,156,157
		Fourth	1A6	1A7,1B6,1B7,1C6,1C7,1D6,1D7
4	1	First	028	029,038,039,048,049
		Second	0A8	0A9,0B8,0B9,0C8,0C9,0D8,0D9
		Third	128	129,138,139,148,149,158,159
		Fourth	1A8	1A9,1B8,1B9,1C8,1C9,1D8,1D9
5	1	First	02A	02B,03A,03B,04A,04B
		Second	0AA	0AB,0BA,0BB,0CA,0CB,0DA,0DB
		Third	12A	12B,13A,13B,14A,14B,15A,15B

Figure 2-6 (Part 1 of 2). Addresses Scanned for HSS Mask Bit Position

GENEND

LIB Portion and HSS Mask Bit Position	Bit Value	Scanner Position	Address Scanned	Address Not Scanned
6	1	First	02C	02D,03C,03D,04C,04D
		Second	0AC	0AD,0BC,0BD,0CC,0CD,0DC,0DD
		Third	12C	12D,13C,13D,14C,14D,15C,15D
		Fourth	1AC	1AD,1BC,1BD,1CC,1CD,1DC,1DD
7	1	First	02E	02F,03E,03F,04E,04F
		Second	0AE	0AF,0BE,0BF,0CE,0CF,0DE,0DF
		Third	12E	12F,13E,13F,14E,14F,15E,15F
		Fourth	1AE	1AF,1BE,1BF,1CE,1CF,1DE,1DF
any	0	All addresses in corresponding scanner position are scanned.		

Figure 2-6 (Part 2 of 2). Addresses Scanned for HSS Mask Bit Position

mask1 applies to a type 3 scanner installed in the first scanner position (base module), *mask2* applies to a type 3 scanner installed in the second scanner position (first expansion module), and so forth. If a scanner position does not contain a type 3 scanner, code a comma to represent the missing mask if succeeding scanner positions do contain a type 3 scanner.

Ensure that the bit settings you specify correspond to the high-speed lines requiring increased scanning. For each such line interface installed in the controller, a High Speed Select feature is present that blocks the attachment of lines to all but the lowest address in the corresponding LIB portion.

Example: Assume that a 3705 having three modules is equipped with type 3 scanners in the first and second expansion modules but not in the base module. If High Speed Select features are present in the second scanner for LIB portions 3 and 7 (allowing high speed lines to be attached to addresses 0A6 and 0AE), you specify HSPDSEL=(,00010001,00000000). The first comma signifies that no type 3 scanner is installed in the base module. The first 8-bit mask indicates that increased scanning frequency is required for addresses 0A6 and 0AE in LIB portions 3 and 7, respectively. The second mask indicates that no addresses in the second expansion module (scanner position 3) require increased scanning frequency.

If you omit the HSPDSEL operand but the program generation procedure determines that the High Speed Select feature is required, the procedure determines the appropriate mask and assumes that the appropriate High Speed Select features are installed.

Warning: If you specify the HSPDSEL operand and omit the SCANCTL operand, a scan limit of 0 is the default for the SCANCTL operand. If the network includes lines having speeds between 4800 and 19 200 bps, a scan limit of 0 is not valid. Specify a scan limit of 2 for the scanners servicing lines within this range. Specify a scan limit of 3 for the scanners servicing lines with a speed of 19 200 bps.

[SCANCTL=([limit1],[limit2],[limit3],[limit4][,asmask])]

(3705 only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies the scan limits and the address-substitution mask for each type 2 communication scanner installed in the controller. Specifies only the scan limits for each type 3 scanner installed in the controller. This operand is valid only if one or more type 2 or type 3 scanners are installed in a 3705.

[limit1],...[limit4]

Specifies the scan limits for each installed type 2 or type 3 scanner. Each limit can range from 0 to 3. These values have the meanings shown below. *limit1* specifies the scan limit for the first scanner position (base module), *limit2* for the second position (first expansion module), and so forth. All addresses associated with a scanner are scanned if the scan limit for that scanner is 0. Scan limits of 1, 2, and 3 reduce the number of addresses scanned to 8, 48, and 16, respectively. If a scanner position does not contain a type 2 or type 3 scanner, code a comma for the corresponding limit. For example, code SCANCTL=(limit1,,limit3,,asmask). If a type 2 or type 3 scanner is installed but you specify no limit, the generation procedure assigns the appropriate limit based on the range of actual installed addresses and line speeds as specified in the LINE definition statements.

Note: A scan limit must not be specified for a type 3 high-speed scanner that has a 230.4-kbps line attached.

The scan limits have the following meanings:

Scan Limit	Addresses Scanned	Addresses Not Scanned	Maximum Line Speed
0	020-05F 0A0-0FF 120-17F 1A0-1FF	(all addresses scanned)	4 800 bps
1	020-027 0A0-0A7 120-127 1A0-1A7	028-05F 0A8-0FF 128-17F 1A8-1FF	57 600 bps
2	020-04F 0A0-0CF 120-14F 1A0-1CF	050-05F 0D0-0FF 150-17F 1D0-1FF	9 600 bps
3	020-02F 0A0-0AF 120-12F 1A0-1AF	030-05F 0B0-0FF 130-17F 1B0-1FF	19 200 bps

[*asmask*]

(*type 2 scanners only*)

Specifies the address-substitution mask used if the communication controller is equipped with the Address Substitution feature. The *asmask* operand is *not* valid if the communication controller contains a type 3 high-speed scanner that supports a 230.4-kbps line. Specify the mask as a binary sequence of 4 bits (omitting frame characters ' '), as follows:

Bit	Value	Meaning
0	1	Address substitution is performed for address 0 in LIB position 1. Addresses E and F in all LIB positions are disabled.
0	0	No address substitution; all addresses enabled.
1	1	Address substitution is performed for address 2 in LIB position 1. Addresses C and D in all LIB positions are disabled.
1	0	No address substitution; all addresses enabled.
2	1	Address substitution is performed for address 4 in LIB position 1. Addresses A and B in all LIB positions are disabled.
2	0	No address substitution; all addresses enabled.
3	1	Address substitution is performed for address 6 in LIB position 1. Addresses 8 and 9 in all LIB positions are disabled.
3	0	No address substitution; all addresses enabled.

Warning: Do not specify the address-substitution mask if one or more type 3 scanners are installed in the communication controller. Address substitution inhibits scanning of corresponding addresses in *all* LIBs regardless of whether serviced by type 2 or type 3 scanners. Instead of address substitution, use upper scan limits or high-speed select masks to provide increased scanning frequency for high-speed lines.

For type 2 scanners, if you omit the SCANCTL operand, the generation procedure automatically calculates the appropriate scan limits and, if the network configuration requires the use of address-substitution, calculates the address substitution mask. (For type 3 scanners, if you omit the SCANCTL operand, the default is always 0.) The procedure assumes that the appropriate Address Substitution feature is installed. A message is printed in the assembly listing when the feature is required. Determine from the system designer whether the feature is installed. If not, a discrepancy exists. Either re-specify the network configuration or have the Address Substitution feature installed.

Note: See the Warning note under the HSPDSEL operand description.

GROUP Definition Statement

USAGE: Required. One for each physical line group, even if the group is made up of only one data link.

POSITION: Must appear at beginning of each line group definition.

FORMAT AND OPERANDS: The format of the GROUP definition statement is:

```
symbol      GROUP    [operands]
```

Specifying Lower-Level Operands in the GROUP Definition Statement

Statement: In addition to the following operands, you can specify most operands of the LINE, CLUSTER, PU, LU, TERMINAL, and COMP definition statements in the GROUP definition statement instead of in the individual definition statement mentioned. Figure 2-1 on page 2-4 A shows which of the lower-level operands you can specify in the GROUP definition statement.

NTRI Users Only: Appearing in the list of operands below, under the 'NTRI' column, are the operands that you code in this definition statement if you want NCP/Token-Ring interconnection (NTRI) resources included in your generation. The descriptions for these operands are included in alphabetical order along with the NCP operands.

VTAM Users Only: Appearing at the end of the list of operands below are the VTAM operands that can be coded in this definition statement. These provide information only to the VTAM initialization process and are not required in the card deck used as input to the NCP generation procedure. See the appropriate *VTAM Installation* manual for descriptions of these operands and for information on the VTAM initialization process. (Depending on what product you are using, see either the *NetView Administration Reference* manual, or the *NCCF Installation Manual* for the description of the SPAN operand.)

- In the following chart, most of the operands are valid for NCP Version 3 for the IBM 3705; NCP Version 3 for the IBM 3725; NCP Version 4 Release 1 (for the 3725 and 3720; and NCP Version 4 Release 2 (for the 3725 and 3720). However, if an operand is valid only for a particular controller(s) and/or version of the NCP, the controller type(s) and/or NCP version appear in the 'Controller and/or Version' column. If the operand is valid for all three controllers, and all of the releases of NCP mentioned above, *nothing* appears in the 'Controller and/or Version' column.
- If you are defining a group of lines specified as TYPE = PEP, the operands you can code for that group of lines are those with a bullet (●) in both the NCP and EP Line Type columns in the following chart.

GROUP

- An R in one of the columns means that the operand is required; a bullet (●) in one of the columns means that the operand can be specified.
- **For NTRI Users:** For the optional operands listed under the 'NTRI' column, if you do not specify the operand, NDF adds the operand and a value appropriate for NTRI to the generation definition.
- If you specify NPARSC = YES and are **not including NTRI resources** on this GROUP definition statement, NDF ignores all operands specified on this GROUP definition statement except LNCTL, VIRTUAL, and CHANLNK.

Operands	Controller and/or Version	Line Type		Line Control				NTRI
		NCP	EP	SDLC	BSC	SS	USER	
[ACTIVTO={count}] {60 }	3725/3720	•		•				
[ACTIVTO={count}] {420.0}	3705	•		•				
[,AUTOGEN=n]	3725/V4R2	•		•				•
[,BERPROC=symbol]	3725/3720						•	
[,CAEXIT=(error,reset, timer,request)]							•	
[,CHANLNK={YES}] {NO }							•	
{[XONOFF][,chars]} [,CHAREC=({XON,chars {XOFF,chars {NO,chars })}]		•	•		•	•		
[,COMPACB={NO }] {YES}	NCP V4	•		•	•		•	•
[,CRETRY=count] {NO }		•			•	•		
[,DELAY={600 }] {1200}			•				•	
[,DIAL={NO }] {YES}		•	•	•	•	•		•
[,ECLTYPE={PHYSICAL PHY}] {LOGICAL LOG}	3725/V4R2	•		•				R
[,EOB=(char[,F])]			•				•	
[,EOT=(char[,F])]			•				•	
[,FRAMING={11}] {10}		•					•	
[,KBDLOCK={chars}] {80 }		•					•	
[,LEVEL2=symbol]							•	•
[,LEVEL3=symbol]							•	•
[,LEVEL5={NCP }] {USER}							•	•

GROUP

Operands	Controller and/or Version	Line Type		Line Control				NTRI
		NCP	EP	SDLC	BSC	SS	USER	
[,LINEADD=NONE]							•	•
[,LINEAUT=YES]							•	•
[,LNKOWNER=name]	NCP V4R2							
{SS }		•	•	•	•	•		•
[,LNCTL={BSC }]								
{SDLC}								
{USER}								
[,MODE={PRIMARY PRI}]		•		•				
{SECONDARY SEC}								
[,NPARSC={NO }]		•		•				•
{YES}								
[,PADCNT=count]		•				•		
[,PECHAR={FF }]		•				•		
{chars}								
[,PHYPORT={n }]	3725/V4R2	•		•				•
{NONE}								
[,QUIETCT={0 }]			•			•		
{count}								
[,REPLYTO=({cnt1},{cnt2})]	3725/3720	•	•	•	•	•		
{NONE} {NONE}								
[,REPLYTO={count}]	3705	•	•	•	•	•		
{NONE }								
{0 }								
{1 }								
[,RETRYTO={2.2 }]		•		•				
{3 }								
{23.5}								
{60 }								
[,RNRLIMT={3 }]		•		•				
{count}								
[,SYNDLAY={count}]	3705	•			•			
{1.0 }								
[,TEXTTO={count}]		•	•		•	•		
{NONE }								
[,TIMER=(error,[ras],stap,lstap)]							•	

Operands	Controller and/or Version	Line Type		Line Control			NTRI
		NCP	EP	SDLC	BSC	SS USER	
[,TTDCNT={15 }] {count}		•			•		
{EP } [,TYPE={NCP}] {PEP}		•	•	•	•	•	•
[,USERID=(id,entry,NORECMS)]						•	•
[,VIROWNER=name]	NCP V4R2						
[,VIRTUAL={NO }] {YES}						•	•
[,WACKCNT={15 }] {count}		•			•		
{count} [,WAKDLAY={2.2 }] {NONE }		•			•		
[,WTTYEOB=chars]		•				•	
[,WTTYEOT=chars]		•				•	
[,XIO=(line,setmode,immed[,link])]							•
[,X21SW={NO }] {YES}		•		•			

GROUP

VTAM Operands

```
[,ANSWER={ON }]  
          {OFF}  
  
          {IN }  
[,CALL={OUT }]  
        {INOUT}  
  
          {NO }  
[,DISCNT={YES[, {F }]]}  
          {NF}  
  
[,DLOGMOD=default logon mode entry]  
  
[,FEATUR2=(operand,operand...)]  
  
[,ISTATUS={ACTIVE }]  
          {INACTIVE}  
  
[,LOGAPPL=application program name]  
  
[,LOGTAB=interpret table name]  
  
[,OWNER=ownername]  
  
[,PU={YES}]  
     {NO }  
  
[,SPAN=spanname]  
  
          {USSSCS }  
          {USS3270}  
[,SSCPFM={FSS }]  
          {USS3275}  
          {USS3780}  
          {USSNTO }  
  
[,USSTAB=USS definition table name]  
  
          {0}  
[,VPACING={2}]  
          {N}
```

Operand Descriptions

symbol

Provides a name for the line group and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

NTRI Users Only: Statement labels beginning with J or K are generated by NDF when NTRI resources are included in a generation definition. Therefore, it is recommended that you not choose labels for your resources that begin with J or K to avoid the possibility of duplication.

[ACTIVTO={count}]
 {60 }

(for the 3725 and 3720)

[ACTIVTO={count}]
 {420.0}

(for the 3705)

(secondary mode only)

For the IBM 3705, the IBM 3725 and the IBM 3720:

Specifies the time-out value, to the nearest tenth of a second, that the secondary NCP waits for communication from the primary NCP before initiating shutdown. The minimum value is 60.0 seconds; the maximum is 420.0 seconds.

This operand is valid only if you specify MODE=SECONDARY on this definition statement.

The following expression is a guide in determining the appropriate ACTIVTO value:

$$MO - IPL \geq ACTIVTO \geq t \times n \geq SDO$$

MO is the maximum time the controller can be out of service because of link failure.

IPL is the interval normally required to load (IPL) the controller; if loading is not required, the value of IPL can be 0.

ACTIVTO is the value specified in the ACTIVTO operand.

t and *n* are the values specified in the RETRIES operand of the PU definition statement of the primary NCP.

SDO is the average duration of *short-duration outages* of the subarea link (outages caused by momentary loss of modem carrier, excessive noise, power surges, or other disruptive line conditions).

For the IBM 3725 and the IBM 3720:

If you omit this operand, the default is 60 seconds for lines operating as MODULO 8 lines or lines operating as MODULO 128 lines.

For the IBM 3705:

If you omit this operand, ACTIVTO=420.0 is the default.

[,AUTOGEN=n]

(NTRI generation only)

Specifies the number of LINE and PU definition statement pairs that must be added to the GROUP definition statement with ECLTYPE=LOGICAL specified. Ensure that you specify the value so that the number of logical NTRI lines you coded in the generation source and those added through the AUTOGEN facility exactly equal the value coded for the MXVLINE operand on the BUILD definition statement.

GROUP

AUTOGEN is valid only if you specify ECLTYPE=LOGICAL.

Note: The labels for NTRI resource statements added through the AUTOGEN facility are formed by concatenating a base 32 representation of the SUBAREA specified on the BUILD definition statement and a hexadecimal representation of the value of an NTRI resource counter. These labels will begin with either J or K.

You can code the AUTOGEN operand on as many as 25 GROUP definition statements in the generation definition.

[BERPROC=symbol]

(3725 and 3720)
(user-written code only)

Specify this operand only if you are defining an NCP for the 3725 or 3720.

Specifies the entry point of the user-written routine that handles the building of Box Error Records (BERs) for line errors on user controlled lines. This operand is required if you specify CHANLNK= YES.

[CAEXIT=(error,reset,timer,request)]

(channel user-written code only)

Specifies the entry points of user-written channel service routines. If user-written routines are to handle the channel operations, you must specify all four entry points.

error specifies the entry point of the user-written level 1 error recovery procedure routine.

reset specifies the entry point of the user-written system reset routine.

timer specifies the entry point of the user-written timer interrupt routine.

request specifies the entry point of the user-written routine that handles the program request interrupts, suppress out monitor requests, and permission-to-process stacked requests.

[CHANLNK={YES}
{NO}]

(channel user-written code only)

Specifies whether this group defines a channel link for which user-written routines handle channel operations. If you specify UCHAN= YES in the BUILD definition statement, at least one line group with CHANLNK= YES is required. A maximum of six groups can be defined.

CHANLNK= YES is valid only if you specify UCHAN= YES in the BUILD definition statement and if you specify LEVEL2=symbol, LEVEL5= NCP, LNCTL=SDLC, and VIRTUAL=NO in this GROUP definition statement. If you omit this CHANLNK operand, CHANLNK= NO (the default) is used.

If you specify CHANLNK= YES, you must also specify the operands CAEXIT on the GROUP definition statement, ADDRESS= channel adapter position on the LINE definition statement, and UCCB= name on the LU definition statement.

For the IBM 3705: A maximum of two lines can be specified for user-written channel operations. Therefore, if two line groups are defined, each can have only one LINE definition statement: one group defining channel adapter position 0, and the other group defining channel adapter position 1. If one line group is defined, it can contain one or both LINE definition statements.

```
[CHAREC= ( {XONOFF} [ , chars ] ) ]
```

(all TWX lines)

```

{XON, chars      }
{XOFF, chars     }
{NO, chars       }

```

Specifies the message-ending characters recognized by the NCP when receiving data from a TWX terminal.

When the NCP receives these characters from a line in emulation mode, the NCP signals channel-end and device-end status to the emulation subchannel associated with the line.

Specify this operand as follows:

The NCP allows the following options for selecting the ending characters:

- XONOFF indicates either XON (DC1) or XOFF (DC2) and no other character.
- (XONOFF,chars) indicates either XON, XOFF, or one or two user-defined characters.
- (XON,chars) indicates XON only or one or two user-defined characters.
- (XOFF,chars) indicates XOFF only or one or two user-defined characters.
- (NO,chars) indicates one or two user-defined characters but not XON or XOFF.

Coding CHAREC = (,chars) is the same as CHAREC = (XONOFF,chars).

If you omit this operand, CHAREC = XONOFF is the default.

Notes:

1. *The program does not recognize any characters other than WRU, XON, XOFF, and EOT unless specified in this operand.*
2. *The characters specified must **not** be the reversed code for the characters desired as they were in previous releases. You must specify chars as the parallel data field (PDF) representation of the characters that the terminal sends. For more information on these characters see the NCP and EP Reference Summary and Data Areas manual, specifically the section on "Line Characters", which includes the topic UASCII character codes for TWX.*

GROUP

[COMPACB={NO }]
{YES}

(For NCP V4)

Specifies whether the user adapter control blocks (UACBs) for the lines in this GROUP definition statement are compatible in format to the NCP's adapter control blocks (ACBs).

Specify COMPACB=YES if the UACBs are compatible with the NCP's ACBs and COMPACB=NO if they are not.

If you omit this operand, COMPACB=NO is the default.

NTRI Users Only: For generation of NTRI resources, you can specify *only* COMPACB=NO. If you do not code COMPACB=NO, NDF adds it to the generation definition.

[CRETRY=count]

(SS and BSC lines in network control mode only)

Specifies the maximum number of error recovery attempts the NCP makes when recoverable errors occur on any line in network control mode. (Errors in control mode are usually those that occur during polling or addressing.) The minimum number of retries is 0; the maximum is 254 (CRETRY=254). If you code CRETRY=255, the NCP retries the operation indefinitely. (The NCP makes error-recovery attempts only when the line is operating in network control mode.)

If you omit this operand, the NCP attempts error recovery twice for SS lines or seven times for BSC lines.

{NO }
[DELAY={600 }]
{1200}

(World Trade teletypewriters in emulation mode only)

Specifies whether the teletypewriter (teleprinter) terminals specified by this GROUP definition statement require a line turnaround time of 70 to 80 milliseconds.

Specify DELAY=600 if the terminals require the delayed turnaround and operate at 600 bps. Specify DELAY=1200 if the terminals require the delayed turnaround and operate at 1200 bps.

If delayed turnaround is not required, specify DELAY=NO or omit the operand.

[DIAL={NO }]
{YES}

Specifies whether the lines in the group require switched line control procedures. If they do, code DIAL=YES. If they do not, code DIAL=NO or omit the operand.

Note: SDLC subarea links, whether they comprise switched or nonswitched lines, use nonswitched line control procedures (DIAL=NO).

NTRI Users Only: For generation of NTRI logical lines, you can specify *only* DIAL= YES. For generation of NTRI physical lines, you can specify *only* DIAL= NO. If you do not code the DIAL operand, NDF adds the appropriate value to the generation definition.

[ECLTYPE={PHYSICAL | PHY}]
 {LOGICAL | LOG}

(NTRI generation only)

Specifies whether this GROUP definition statement defines a physical or logical connection to the token ring.

If you code the ECLTYPE operand, you must code the MXRLINE and MXVLINE operands on the BUILD definition statement.

Also, you must code NEWDEFN= YES on the OPTIONS definition statement. Ensure that you code at least one GROUP definition statement with ECLTYPE= PHYSICAL in order to define the Token-Ring interconnection coupler (TIC) to the IBM 3725. Also, ensure that you code at least one GROUP definition statement with ECLTYPE= LOGICAL in order to define the devices attached to the token ring.

Coding the ECLTYPE operand causes certain definition statements and operands to be added automatically to the generation definition. You also can manually code these definition statements and operands. Refer to the *NCP Resource Definition Guide* for a detailed explanation of the way the NCP/EP Definition Facility processes NTRI definition statements and operands.

[EOB=(char [, F])]

(World Trade teletypewriter lines in emulation mode only)

Specifies the end-of-block (end-of-message) sequence received from any World Trade teletypewriter terminal or certain U.S. and Canadian teletypewriter terminals. These terminals typically send either a sequence of four identical characters or a sequence of FIGS *char* LTRS.

If the terminal transmits a four-character sequence, specify the character used as EOB= char, where *char* is the hexadecimal representation of the character transmitted. For example, if the terminal sends the sequence MMMM (in letters shift), code EOB= 1C.

If the terminal transmits a FIGS *char* LTRS sequence, code *char* as the hexadecimal representation of the character sent and also code the F following the character. For example, FIGS M LTRS is coded as EOB= (3C,F).

Note: The *NCP and EP Reference Summary and Data Areas* lists the transmission code bit patterns for the ITA2 and ZSC3 codes.

The end-of-block sequence can be specified in either the EOB or the CHAREC operand, but not in both.

GROUP

[EOT=(char[,F])]

(World Trade teletypewriter lines in emulation mode only)

Specifies the character sequence the NCP recognizes as the end-of-transmission sequence when received from any World Trade teletypewriter terminal or certain (specially modified) U. S. and Canadian teletypewriter terminals. These terminals typically send, as an EOT indication, either a sequence of four identical characters or a sequence of FIGS *char* LTRS.

If the terminal transmits a four-character sequence, specify the character used as EOB=char, where *char* is the hexadecimal representation of the character transmitted. For example, if the terminal sends the sequence AAAA (in letters shift), code EOT=18.

If the terminal transmits a FIGS *char* LTRS sequence, code *char* as the hexadecimal representation of the character sent and code the F following the character. For example, FIGS A LTRS is coded as EOT=(38,F).

The standard teletypewriter ending sequence is FIGS H LTRS. If you omit the EOT operand, FIGS H LTRS is the sequence the NCP recognizes as the EOT sequence when receiving from a teletypewriter terminal.

[FRAMING={11}
{10}]

(TWX lines in network control mode only)

Specifies the number of stop bits per character the NCP sends and expects to receive from TWX terminals in the group. 11 specifies that 2 stop bits are used. 10 specifies that only one stop bit is used. Each TWX character comprises 1 start bit, 7 data bits, 1 parity, and 1 or 2 stop bits.

[KBDLOCK={char}
{80}]

(TWX lines in network control mode only)

Specifies the hexadecimal representation for the nonprinting, non-space character the NCP sends to TWX terminals to signal terminal operators to stop using the keyboard. This technique, called logical keyboard lock, is used to stop data entry by the terminal operator before the NCP is ready to receive. The signal is sent only when the TSO/TCAM monitor mode is active for the line.

If you omit this operand or code KBDLOCK=80, the NCP does not send any keyboard lock characters. If the null is sent, the line is put in a mark state (X'FF's are sent with the secondary control field (SCF) pad flag on).

This operand is valid only if you specify LNCTL=SS in the GROUP definition statement, MONITOR=YES and POLLED=NO in the LINE definition statement, and TERM=TWX in the TERMINAL (or higher-level) definition statement.

[LEVEL2=symbol]

(user-written line control or NTRI only)

Specifies the entry point of the user-written or NTRI code for level 2 scanner interrupt. This operand is required if you specify LNCTL=USER. Level 2 interrupt code is optional if LNCTL=SS, BSC, or SDLC.

If you code the LEVEL2 operand, you *must* also code the LEVEL3 operand

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* LEVEL2=ECLNAVL2. For generation of NTRI physical resources, you can specify *only* LEVEL2=ECLNARL2. If you do not code the LEVEL2 operand, NDF adds the appropriate value to the generation definition.

[LEVEL3=symbol]

(user-written line control or NTRI only)

Specifies the entry point of the user-written or NTRI code for level 3 interrupts. This operand is required if you specified LEVEL2.

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* LEVEL3=ECLNAVL3. For generation of NTRI physical resources, you can specify *only* LEVEL3=ECLNARL3. If you do not code the LEVEL3 operand, NDF adds the appropriate value to the generation definition.

[LEVEL5={NCP }]
{USER}

(user-written or NTRI code only)

Specifies whether the level 5 code is provided by the NCP or is user-written. This operand is valid only if you specify LEVEL2 and LEVEL3. If you omit this operand and have specified LEVEL2 and LEVEL3, LEVEL5=USER the default.

LEVEL5=NCP specifies that the level 5 code is provided by the NCP. In this case, LNCTL *must* equal SS, BSC, or SDLC. The LINE, CLUSTER, TERMINAL, COMP, PU, and LU definition statements also *must follow* the same requirements as for line groups supported totally by NCP-supplied code.

LEVEL5=USER specifies that the level 5 code is user-written and can be specified for any type of line control (LNCTL). When you select this option, the NCP generation procedure assumes that level 5 code is supplied separately, and therefore no level 5 control blocks are generated for this group.

If LEVEL5=USER and VIRTUAL=NO, only LINE definition statement can be specified in this GROUP definition statement. You must include separate GROUP definition statement with VIRTUAL=YES to attach the lines to the network. If VIRTUAL=YES in this GROUP definition statement, the LINE, SERVICE, PU, and LU definition statements must follow the same requirements as for line groups supported by NCP-supplied code.

NTRI Users Only: For generation of NTRI resources, you can specify *only* LEVEL5=NCP. If you do not code the LEVEL5 operand, NDF adds it to the generation definition.

[LINEADD=NONE]

(user-written line control or NTRI only)

Specifies that this line group has no physical address interface defined. This operand is valid only if you code VIRTUAL=NO and you specify a

GROUP

symbol for LEVEL2. You must not specify the ADDRESS operand of the LINE definition statement. If you omit LINEADD, no action is taken.

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* LINEADD=NONE. If you do not code the LINEADD operand, NDF adds it to the generation definition.

[LINEAUT=YES]

(user-written line control or NTRI only)

Specifies auto-call for a line group that has no physical address interface defined. This operand is valid only if you specify LINEADD=NONE and DIAL=YES. You must not specify the AUTO operand of the LINE definition statement. If you omit this operand, and specify DIAL=YES and LINEADD=NONE, the default is YES.

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* LINEAUT=YES. If you do not code the LINEAUT operand, NDF adds it to the generation definition.

[LNKOWNER=name]

(For NCP V4R2 only)

Specify this operand only if you are defining an NCP V4R2.

Specifies the name of the user-written generation load module that is responsible for the link-level processing for the resources defined in this GROUP definition statement. The name can be 3 to 8 characters long. The name must match one of the user-written generation load module names specified in the USERGEN operand of the OPTIONS definition statement. The user-written generation load module must have indicated in the start record of its statement/keyword vector table (SKVT) that it is valid for LNKOWNER.

LNKOWNER is valid only if LEVEL2 is coded on this GROUP definition statement.

{SS }
[LNCTL={BSC }]
{SDLC}
{USER}

Specifies the type of line control used for the lines in this group. A line group can contain lines of only one type. SS and BSC line groups can appear in the program generation deck in any sequence. SDLC line groups must appear after all SS and BSC line groups. User line groups follow the SDLC line groups.

For example:

```
G1  GROUP    LNCTL=SS,...
    *
G2  GROUP    LNCTL=BSC,...
    *
G3  GROUP    LNCTL=BSC,...
    *
G4  GROUP    LNCTL=SS,...
    *
G5  GROUP    LNCTL=SDLC,...
    *
G6  GROUP    LNCTL=SDLC,...
    *
G7  GROUP    LNCTL=USER,...
```

(* represents intervening lower-level definition statements)

If you omit the LNCTL operand from a GROUP definition statement, a line group is assumed as (1) an SS line group if no GROUP definition statement in which SDLC is specified precede the definition statement or (2) an SDLC line group if a GROUP definition statement in which LNCTL=SDLC is specified does precede the definition statement.

LNCTL=SDLC is valid for a line that is operated only in network control mode. (You specify TYPE=NCP in the GROUP definition statement.)

If LNCTL=SS, BSC, or SDLC, the LEVEL5 operand specifies whether the NCP or the user supplies the level 5 support.

Note: If you are running in emulation mode, remember that SS lines operate in emulate mode and BSC lines operate in normal mode.

NTRI Users Only: For generation of NTRI resources, you can specify *only* LNCTL=SDLC. If you do not code the LNCTL operand, NDF adds it to the generation definition.

```
[MODE={PRIMARY |PRI}]
      {SECONDARY|SEC}
```

(SDLC subarea link only)

Specifies the mode of operation of a line group associated with a selection table entry defined by an SDLCST definition statement. The MODE operands in both the GROUP definition statement and the associated SDLCST definition statement must be coded the same. You can specify the primary mode as either PRIMARY or PRI. Specify the secondary mode as SECONDARY or SEC. This operand is not valid if you specify VIRTUAL=YES in this GROUP definition statement.

```
[NPARSC={NO }]
      {YES}
```

(Network Performance Analyzer only)

Specifies this line group as an NPA line group used to send and receive Network Performance Analyzer (NPA) data and commands between the NCP and the host. Only one line group within an NCP can specify NPARSC=YES.

NPARSC is valid only if you specify NPA=YES on the BUILD definition statement. NPARSC is required on the GROUP definition statement that

GROUP

does NPA data collection if you specify NPA = YES on the BUILD definition statement.

If this GROUP definition statement is for NPA, you also must specify VIRTUAL = YES and LNCTL = SDLC, and you must omit CHANLNK. All other GROUP definition statement operands are ignored.

NTRI Users Only: For generation of NTRI resources, you can specify *only* NPARSC = NO. If you do not code the NPARSC operand, NDF adds it to the generation definition.

[PADCNT=count] *(World Trade teletypewriter lines in network control mode only)*

Specifies the number of idle characters sent to a World Trade teletypewriter terminal to permit its motor to reach full speed before receiving data. This operand is required only for a line where terminals are not equipped with a continuously running motor. You must specify a sufficient number of characters to create a 1.5-second delay on the line. The characters are sent only when the line is in network control mode.

The minimum value of *count* is 0; the maximum is 255.

[PECHAR={FF }]
 {chars} *(TWX lines in network control mode only)*

Specifies the hexadecimal representation of the data character that the NCP uses to overlay data received from a TWX terminal when the program detects incorrect parity. If you omit this operand, the program overlays with the X'FF' character.

This operand is valid only if you specify PARCHK = ODD or PARCHK = EVEN in one or more LINE definition statements associated with this group.

[PHYPORT={n }]
 {NONE} *(NTRI generation only)*

Specifies the physical port address with which the lines in this group will communicate. The value you specify for PHYPORT must be the same as the value coded on the PORTADD operand of the LINE definition statement. PHYPORT is valid only if you specify ECLTYPE = LOGICAL. If you specify PHYPORT = NONE, this group is not associated with any particular physical port.

*Note: All GROUP definition statements that you specify with PHYPORT = NONE must appear **before** the GROUP definition statements that specify PHYPORT with an actual address.*

[QUIETCT={Q }]
 {count} *(SS lines in emulation mode only)*

Specifies the number of character times that elapse between the end of a receive operation and the beginning of a transmit operation on a SS line. The elapsed time allows the line to become electrically quiet following the receive operation.

The default value of 0 is appropriate for most SS lines operating at speeds under 1200-bps. For lines operating at 1200 bps or more, you may need to specify one or more extra character times to ensure quieting of the line. The recommended value for 1200 bps SS lines is 5 (QUIETCT=5).

The minimum you can specify is 0; the maximum is 10.

Note: The interval (number of character times) following a normal receive operation equals the value specified plus 2. The interval following receipt of a negative response to polling equals the value you specify. Thus, if you specify QUIETCT=5, a normal receive operation is followed by seven character times and a negative response to polling is followed by five character times before the next transmission begins.

[REPLYTO=({cnt1}},{cnt2})] (for the 3725 and 3720)
 {NONE} {NONE}

[REPLYTO={count}] (for the 3705)
 {NONE }

For the IBM 3705, the IBM 3725, and the IBM 3720:

Specifies the reply time-out value or values for the lines in this group. If the NCP does not receive a response to a poll, selection, or message text before the specified time expires, a time-out error is indicated, and the appropriate error recovery procedure is started.

Specify this value as an integral number of seconds or to the nearest tenth of a second.

If you specify REPLYTO=NONE, no time-out occurs regardless of the time that elapses between sending to the station and receiving a response.

Reply time-outs for SS lines are resolved to the nearest half second; reply time-outs for BSC lines, to the nearest tenth of a second. For example, if you specify a value of 4.6 for a BSC line group, the reply time-out value is 4.6 seconds. If you specify 4.6 for an SS line group, the reply time-out value is 4.5 seconds.

Reply time-outs for BSC terminals using conversational replies must be long enough to allow the conversational text to be received.

Note: If any IBM 1050 in the line group includes a paper tape punch, specify a value of at least 23.5 seconds in this operand. If you specify a lesser time, the NCP can time out after sending data to the paper tape punch.

For the IBM 3725 and 3720: (lines in network control mode only)

cnt1

Specifies the time-out value for the lines in this group that operate as SDLC modulo 8 lines or BSC or SS lines. The default is 1.0 second for SDLC devices and 3.0 seconds for BSC devices.

cnt2

Specifies the time-out value for the lines in this group that operate as SDLC modulo 128 lines. The default is 3.0 seconds for all types of devices.

The range of values is .1 second to 60 seconds in network control mode.

If you specify `MODE = SECONDARY`, you must specify `REPLYTO = (NONE,NONE)`. This specification prevents the link from being inoperative due to an error on a primary link.

For most lines, the default value is appropriate.

For the IBM 3705: *(lines in network control mode
or emulation mode)*

The range of values is .1 second to 1 632 seconds for lines in network control mode, and .1 second to 51.1 seconds for lines in emulation mode.

If you omit the `REPLYTO` operand, the NCP uses a time-out of 23.5 seconds for TWX devices in network control mode, 1.0 second for SDLC devices, and 3.0 seconds for all other types of devices. However, the value specified for `REPLYTO` is ignored for the device and no time-out is provided if a `TERMINAL` definition statement in the group specifies:

- IBM 2740 Model 1 terminals (`TERM = 2740-1`) without at least one of these features:
 - Checking (`FEATURE = CHECK`),
 - Transmit Control (`FEATURE = XCTL`), or
 - Station Control (`FEATURE = SCTL`)
- Multiple-terminal-access devices (`TERM = MTA`)
- World Trade teletypewriter devices (`TERM = WTTY`)

For most networks, the default value is appropriate.

```
{0   }  
{1   }  
[RETRYTO={2.2 }]  
{3   }  
{23.5}  
{60  }
```

(CCITT X.21 interface only)

Specifies the time-out interval the NCP waits after receiving a retry Call Progress Signal (CPS) before retrying a callout. The time-out values are in seconds and the default time is 3 seconds. This operand is valid only if you specify `X21SW = YES` in this group.

```
[RNRLIMIT={3    }]  
          {count}
```

(SDLC only)

Specifies the interval, to the nearest minute, that the NCP allows a given station to refuse to accept data before identifying the station inoperative. For example, a station is considered inoperative if it responds with a Receive-Not-Ready (RNR) command to every poll sent by the NCP during the specified interval. The minimum value that you can specify is 1, and the maximum is 9.0.

This operand is not valid if you specify the LEVEL2 operand, or if you specify LNCTL=USER.

```
[SYNDLAY={1.0  }]  
          {count}
```

(3705 only)

(BSC lines in network control mode only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies the interval, in seconds, between transmissions by the NCP of the BSC synchronizing characters (SYN) on a line that is in text-transmit mode (and in network control mode).

Specify this interval as an integral number of seconds or to the nearest tenth of a second.

For example, for an interval of 2 seconds, code SYNDLAY=2 (or 2.0); for 1.5 seconds, code SYNDLAY=1.5.

The maximum interval you can specify is 1632 seconds. For most networks, the recommended default value is 1 second.

Note: This operand determines the interval for lines serviced by a type 2 communication scanner only. A type 3 scanner directly determines the interval for lines it services.

```
[TEXTTO={count}]  
          {NONE }
```

Specifies the text time-out value, in seconds, for the lines in the line group.

For SS lines, the timeout occurs whether the line is operating in network control mode or in emulation mode. For BSC lines, the timeout occurs only when the line is in network control mode. For SDLC links, the time-out occurs only when the link station in this NCP is the primary link station.

Specify this value as an integral number of seconds or to the nearest tenth of a second.

Text time-outs for SS and BSC lines are resolved to the nearest half-second; text time-outs for SDLC links, to the nearest tenth of a second. For example, if you specify a value of 20.2 for a SS or BSC line group, the text time-out value is 20 seconds (nearest half second). If you specify a value of 4.6 for an SDLC link, the time-out is 4.6 seconds. For the 3725 and 3720, if you specify TEXTTO=NONE, no time-out occurs regardless of the interval that elapses between receipt of successive sets of characters. For the 3705,

GROUP

if you specify `TEXTTO = NONE`, no time-out occurs regardless of the interval that elapses between receipt of successive characters.

Note: The value specified for count is a nominal value. The actual elapsed interval can vary anywhere between the nominal value and twice the nominal value. A nominal value of 30 seconds, for example, results in an actual interval of 30 to 60 seconds.

If you omit the `TEXTTO` operand, the NCP uses a value of 3.0 seconds for SDLC links, and 23.5 seconds for BSC lines. If you specify `TERM = 2741` in the `TERMINAL` definition statements of this line group and you omit the `TEXTTO` operand, the default is `NONE`. For any other type of terminal, a value of 23.5 seconds is the default for lines operating in network control mode, and 25.6 seconds is the default for lines operating in emulation mode. (If you specify `TERM = MTA`, the `TEXTTO` operand has no meaning and you omit it.) For most networks with SS and BSC terminals, the default value of 23.5 (or 25.6) seconds is recommended. For SDLC links the recommended value is based on line speed. Line speeds from 0 to 1199 bps need a time-out of about 4 seconds. Line speeds from 1200 to 2000 bps need a time-out of about 3 seconds. Line speeds greater than 2000 bps need a 1-second time-out. The maximum value is 1632 seconds for lines operating in network control mode, and is 51.1 seconds for lines operating in emulation mode.

Note: If you are defining a subarea link (`PUTYPE = 4`), you should not specify `TEXTTO = NONE`. If you are defining an SDLC link in secondary mode (`MODE = SECONDARY`), you must specify `TEXTTO = NONE`.

For the IBM 3725 and the IBM 3720: For SS lines, message characters are received in sets with up to four characters per set. If the interval between any two successive sets of characters received from a device exceeds this time-out value, the NCP ends the read or invite operation with a text time-out error indication.

For the IBM 3705: If the interval between any two successive message characters received from a device exceeds this value, the NCP ends the read or invite operation with a text time-out error indication.

[`TIMER=(error,[ras],stap,lstap)`]

(user-written line control or NTRI only)

Specifies the entry points of user-written or NTRI timer service routines. You must specify this operand if you specify the `LEVEL2` and `LEVEL3` operands. If you do not include level 2 and level 3 user-written or NTRI code, or if you specify `CHANLNK = YES` in the `GROUP` definition statement, you must omit this operand.

All four parameters of this operand are required.

error specifies the entry point of the user-written or NTRI timer error service routine.

ras specifies the entry point of the user-written timer RAS service routine used to make periodic checks for certain error conditions. This parameter

is optional, but the comma is required because the parameters are positional.

stap specifies the entry point of the user-written or NTRI timer shoulder-tap service routine that receives control when a user-initiated timer reaches 0.

lstap specifies the entry point of the user-written or NTRI lagging shoulder-tap timer routine.

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* `TIMER=(ECLNAV1,,ECLNAV2,ECLNAV3)`. For generation of NTRI physical resources, you can specify *only* `TIMER=(ECLNART1,,ECLNART2,ECLNART3)`. If you do not code the `TIMER` operand, NDF adds the appropriate value to the generation definition.

```
[TTDCNT={15  }]  
      {count}
```

(BSC lines in network control
mode only)

Specifies the maximum number of times the NCP accepts the BSC temporary text-delay (TTD) sequence from a device before the NCP aborts the operation. The TTD sequence notifies the NCP that the device is temporarily unable to send the next block of data. The maximum count is 255. Any value less than 255 specifies the maximum number of times the sequence is accepted. 255 specifies that the sequence is accepted without limit. This operand applies only to line operation in network control mode.

For most BSC lines, the default value of 15 TTD transmissions is recommended.

```
{EP }  
[TYPE={NCP}]  
      {PEP}
```

Specifies, for the line group represented by this GROUP definition statement, whether:

- All lines operate in network control mode.
- Some lines operate in one mode and some operate in another.
- Some lines can operate in either network control or emulation mode.
- All lines operate in emulation mode.

Note: A line group consisting of SDLC lines can operate only in network control mode. Specify `TYPE=NCP` if all lines in the group always operate in network control mode.

Specify `TYPE=PEP` if some lines in the group operate in network control mode and others in emulation mode, or if any lines can operate in either mode.

Specify `TYPE=EP` if all lines in the group always operate in emulation mode.

GROUP

Specify `TYPE=NCP` if you want to include NTRI resources in your generation definition. If you do not code the `TYPE` operand, NDF adds it to the generation definition.

The value choices for this operand depend on whether the program can perform only network control functions, or both network control and emulation functions, as specified in the `TYPGEN` operand of the `BUILD` definition statement. The following indicates the choices:

If <code>TYPGEN</code> operand (<code>BUILD</code>) specifies	Then valid choices for <code>TYPE</code> operand (<code>GROUP</code>) are
NCP, SNCP, NCP-R or SNCP-R	NCP
PEP or SPEP	PEP ¹ NCP EP ¹

¹ Not valid if `GROUP` definition statement represents an SDLC line group.

Default values: If you omit the `TYPE` operand from the `GROUP` definition statement, the following values are assumed for the NCP generation process:

<code>TYPGEN</code> operand (<code>BUILD</code>) specifies	Default for <code>TYPE</code> operand is
NCP, SNCP, NCP-R, or SNCP-R	NCP
PEP or SPEP	PEP if line group is SS or BSC (GROUP: LNCTL=SS or BSC) NCP if line group is SDLC (GROUP: LNCTL=SDLC)
Neither NCP, NCP-R, PEP, SNCP, SNCP-R, nor SPEP	EP if line group is SS or BSC (GROUP: LNCTL=SS or BSC)

Notes:

1. If you specify `TYPE=PEP`, you can specify all valid operands in this `GROUP` definition statement for operation in network control mode or in emulation mode. If you specify `TYPE=NCP`, code only valid operands for operation in network control mode. Operands applicable to emulation mode are ignored. If you specify `TYPE=EP`, code only valid operands for operation in emulation mode. Operands applicable to network control mode are ignored.
2. VTAM does not provide any default processing for the `TYPE` operand. If the NCP definition is used as input to VTAM, you must specify the `TYPE` operand.

[USERID=(id,entry,NORECMS)]

(user-written or NTRI code only)

Specifies an identification symbol given to user-defined or NTRI control blocks associated with this line group. The value also can specify the block dump-table entry label and the type of RECMS processing to be performed for this line group.

id

Specifies the identification symbol given to user-defined or NTRI control blocks associated with this line group. *id* is a symbol from 1 to 7 alphanumeric characters. This identification is placed in the group control block for this line group. *id* is required if you specify USERID.

entry

Specifies the entry label of the block dump table to be used by the dump formatter to format user-defined or NTRI control blocks. If you omit *entry*, the dump formatter does not format the control blocks.

NORECMS

Specifies that the NCP is not to perform RECMS processing.

Notes:

1. *USRECMS is no longer valid as the third suboperand. If you specify USRECMS, NDF ignores it.*
2. ***NTRI Users Only:*** *For generation of NTRI logical resources, you can specify **only** USERID=(5668866,ECLVBDT,NORECMS). For generation of NTRI physical resources, you can specify **only** USERID=(5668866,ECLRBDT,NORECMS). If you do not code the USERID operand, NDF adds the appropriate value to the generation definition.*

[VIROWNER=name]

(For NCP V4R2 only)

Specify this operand only if you are defining an NCP V4R2.

Specifies the name of the user-written generation load module that is responsible for the virtual processing for the resources defined in this GROUP definition statement. The name can be 3 to 8 characters long. The name must match one of the user-written generation load module names specified in the USERGEN operand of the OPTIONS definition statement. The user-written generation load module must have indicated in the start record of its statement/keyword vector table (SKVT) that it is valid for VIROWNER.

VIROWNER is valid only if VIRTUAL= YES is coded on this GROUP definition statement.

GROUP

[VIRTUAL={NO }]
{YES}

(user-written or NTRI code only)

Specifies whether programmed resources are supported in this group. This operand is valid only when LNCTL=SDLC. NO is the default.

NTRI Users Only: For generation of NTRI resources, you can specify *only* VIRTUAL=NO.

[WACKCNT={15 }]
{count}

(BSC lines in network control mode only)

Specifies the maximum number of times the NCP accepts the BSC wait-before-transmit positive acknowledgment (WACK) from a non-buffered BSC station before the NCP aborts the operation. The WACK sequence notifies the NCP that the device is temporarily not ready to receive. Any value less than 255 specifies the maximum number of times the sequence is accepted. 255 specifies that the sequence is accepted without limit. This operand applies only to line operation in network control mode.

Note: This operand has no effect for buffered BSC stations because the NCP, upon receiving a WACK sequence from such a station, transmits an EOT to end the transmission. (See the description of the BFRDLAY operand under the TERMINAL definition statement.)

The maximum count is 255; the minimum is 1.

For most BSC lines, the default value of 15 WACK transmissions is recommended.

{count}
[WAKDLAY={2.2 }]
{NONE }

(BSC lines in network control mode only)

Specifies the maximum interval that can elapse before the NCP responds to message text received from a device on any line in the group operating in network control mode. If the NCP is unable to respond normally (with a positive acknowledgment) by the time this interval has elapsed, it sends a WACK sequence instead.

If you code WAKDLAY=NONE, the NCP does not send a WACK sequence when unable to send a positive acknowledgment.

Specify this delay as an integral number of seconds or to the nearest tenth of a second. For example, code a delay of 12 seconds as WAKDLAY=12 (or WAKDLAY=12.0). For 12.5 seconds, code WAKDLAY=12.5.

The maximum number of seconds is 1632 (1632.0) seconds.

For most BSC lines, the default interval of 2.2 seconds is recommended.

[WTTYEOB=chars]

(World Trade teletypewriter lines in network control mode only)

Specifies the hexadecimal representation of the end-of-block sequence required for World Trade teletypewriters (teleprinters) connected to lines in

the group operating in network control mode. Specify up to 8 hexadecimal characters (4 EBCDIC characters). You can include any valid character in the sequence, but you can include the FIGS and LTRS characters only once. If the terminal is equipped to send who-are-you (WRU), avoid using the letter D in the sequence. See the *NCP and EP Reference Summary and Data Areas* for the World Trade Teletypewriter transmission codes.

[WTTYEOT=chars]

(World Trade teletypewriter lines in network control mode only)

Specifies the hexadecimal representation of the end-of-transmission sequence required for World Trade teletypewriters connected to lines in the group operating in network control mode. You can include any valid character in the sequence, but you can include the FIGS and LTRS characters only once. If the terminal is equipped to send who-are-you (WRU), avoid using the letter D in the sequence.

This operand is required for all World Trade teletypewriters. See the *NCP and EP Reference Summary and Data Areas* for the World Trade Teletypewriter transmission codes.

[XIO=(line, setmode, immed[, link])]

(user-written line control or NTRI only)

Specifies the entry points of user-written or NTRI execute I/O service routines. This operand is required if you specify the LEVEL2 and LEVEL3 operands. If you do not include level 2 and level 3 user-written or NTRI code, you must omit this operand.

line specifies the entry point of the user-written or NTRI execute I/O line service routine. This entry point is required.

setmode specifies the entry point of the user-written or NTRI execute I/O set mode service routine. This entry point is required.

immed specifies the entry point of the user-written or NTRI execute I/O immediate service routine. This entry point is required.

link specifies the entry point of the user-written or NTRI execute I/O link service routine. This entry point is required only if the user-written code issues an XIO LINK command. If no XIO LINK commands are issued, you can omit this parameter.

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* XIO=(ECLNAVXL,ECLNAVXS,ECLNAVXI,ECLNAVXK). For generation of NTRI physical resources, you can specify *only* XIO=(ECLNARXL,ECLNARXS,ECLNARXI,ECLNARXK). If you do not code the XIO operand, NDF adds the appropriate value to the generation definition.

[X21SW={NO }]
{YES}

(CCITT X.21 interface only)

Specifies whether the CCITT X.21 hardware is attached to each line in this group. This operand is valid only if the CCITT X.21 interface is installed and DIAL=YES, LNCTL=SDLC, and TYPE=NCP are specified in this GROUP definition statement. Direct-call capability is provided with the

GROUP

CCITT X.21 interface. Therefore, if the Direct Call feature is also installed, the NCP can connect to a remote station without transmitting dial digits. The default for this operand is NO.

The CCITT X.21 interface also places certain restrictions on the LINE definition statement:

- You must not code the AUTO and REDIAL operands.
- For the **3725** and **3720**, it is recommended that you specify FULL as the second parameter of the ADDRESS operand. For the **3705**, you must code two different line addresses for the ADDRESS operand.
- You can specify only one *rate* on the speed operand.
- You must specify ANSTONE=NO, CLOCKNG=EXT, NEWSYNC=NO, and RING=NO.

Defining a Stand-Alone Line Group for SDLC

To define a stand-alone SDLC line group (a GROUP definition statement followed by no LINE and lower-level definition statements) for an SDLC selection table, specify the following operands in the GROUP definition statement:

```
LNCTL=SDLC
TYPE=NCP
DIAL=NO
ACTIVTO=count
REPLYTO=count
MODULO=8 or MODULO=128 (NCP Version 3 for the 3725 or
NCP Version 4)
MODE=PRI or MODE=SEC (the MODE operand must be coded the
same in the GROUP and in the SDLCST definition statements)
```

See the SDLCST definition statement description in Chapter 3 for information on using an SDLC selection table.

Defining a Stand-Alone Line Group for MTA

A stand-alone GROUP definition statement (a GROUP definition statement not followed by any LINE and TERMINAL definition statement) is needed for MTA support only when there is no non-MTA GROUP definition statement that has the same values specified for the TERM, POLLED, and FEATURE operands. To define this stand-alone group, specify the following operands in the GROUP definition statement:

```
DIAL=YES
LNCTL=SS
TERM=1050, 2740-1, 2741, or TWX
POLLED=YES, only for TERM=2740-1
FEATURE=(XCTL,CHECK), only for TERM=2740-1
```

You can specify other GROUP definition statement operands for the stand-alone GROUP definition statement. However, do not code any LINE

or **TERMINAL** definition statement operands that you normally code for a **GROUP** definition statement for a *stand-alone* **GROUP** definition statement. Any **LINE** or **TERMINAL** operands coded for a stand-alone **GROUP** definition statement are ignored.

See the *NCP and SSP Resource Definition Guide* for an example of stand-alone line groups in defining MTA operations.

Restriction on Number of Time Intervals Specified

You can specify a maximum of 16 different time intervals to the NCP. This specification includes nine standard intervals (including default values) that are common to all NCPs and intervals that you specify in the **REPLYTO**, **SYNDLAY**, **TEXTTO**, and **WAKDLAY** operands of the **GROUP** definition statement. If the total number of different time intervals is 16, the default values are used for all subsequent time specifications the generation procedure encounters in processing the source statements. An example of different time-out values is **REPLYTO**=10, **WAKDLAY**=5. The same time value specified in any number of the four operands mentioned constitutes only a single time interval.

The standard time intervals for all NCPs are:

- 0.0 (immediate action required)
- 1.0 second
- 2.2 seconds
- 3.0 seconds
- 4.0 seconds
- 7.0 seconds
- 23.5 seconds
- 60.0 seconds
- NONE (infinite time delay)

GWNAU Definition Statement

Note: The GWNAU definition statement is not valid for the NCP V4 Subset.

USAGE: SNA network interconnection users only. One for each predefined resource that requires a cross-network address representation, and one for each network that requires a pool of reusable cross-network addresses.

GWNAU definition statements are used to allow the gateway NCP to assign alias addresses to SSCPs and LUs that reside in and have real addresses in one network, but that can participate in sessions with SSCPs and LUs in another network.

POSITION: If defining cross-network session specifications for resources in another network that participate in sessions with resources in the native network, must follow SYSCNTRL definition statement. If defining specifications for resources in any network that participate in sessions with resources in a non-native network, must follow NETWORK definition statement that defines the non-native network.

FORMAT AND OPERANDS: The format of the GWNAU definition statement is:

```
[symbol]      GWNAU  [operands]
```

Operands

```
[ELEMENT=n]
[,NAME={sscpname}]
      {luname  }
[,NETID=name]
[,NUMADDR=n]
[,NUMSESS={n}]
      {0}
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

[ELEMENT=n]

(not valid for NCP V4 Subset)

This operand applies to cross-network resources that are predefined.

Specifies the element address to be assigned to the resource. This operand is optional and you specify it only when a specific element address is necessary. This operand is valid only if you code the NAME operand. GWNAU definition statements with the ELEMENT operand coded must precede all other GWNAU definition statements for each network. GWNAU definition statements with the ELEMENT operand coded must be in ascending order by *n*, but not necessarily increasing by 1 (for example, values for *n* might be 2,5,6,12,...). Each possible element address that is skipped wastes 8 bytes of storage and addresses. Resources following the last GWNAU definition statement with the ELEMENT operand coded are assigned element addresses sequentially starting at the last *n* plus 1.

For NCP Version 4:

The maximum value you can specify is 32 767.

For NCP Version 3:

The maximum value is determined by the subarea split. The NCP allows 16 bits for both the subarea address and the element address, ranging from 2 to 8 bits for the subarea address and the remaining bits for the element address. For example, if the subarea address uses 8 bits, the element address uses the remaining 8 bits.

Notes:

1. **TCAM Users Only:** *TCAM users need not code the ELEMENT operand because TCAM does not support skipping of element addresses. However, if you code ELEMENT, the first specification must be equal to the first available element address, and all other specifications must increase sequentially by one.*
2. **NTO Users Only:** *Because the Network Terminal Option (NTO) uses element number 1, you cannot start your element numbering with the number one (1).*
3. **NPM Users:** *If you are using the Network Performance Monitor (NPM), you must assign your element numbers consecutively to obtain reliable performance information.*

[NAME={sscpname}]
 {luname }

(not valid for NCP V4 Subset)

This operand applies to addresses that are predefined.

Specifies a specific name to be associated with the address being defined. *sscpname* or *luname* is the name of the SSCP or LU that the address represents as it is known in its owning network. More than one GWNAU can be defined with the same name. If you omit this operand, you must

specify the NUMADDR operand. This operand is valid only when you specify NETID.

[NETID=name]

(not valid for NCP V4 Subset)

This operand applies to cross-network resources that are predefined.

Specifies a specific network ID to be associated with a resource address. *name* is the name of the network in which resides the SSCP or LU that the address represents and can be 1 to 8 characters long. If you omit this operand, you must specify the NUMADDR operand. This operand is valid only when you specify NAME.

[NUMADDR=n]

(not valid for NCP V4 Subset)

This operand applies to addresses that are dynamically assigned.

Specifies the number of addresses to be reserved for cross-network resource address assignment. The minimum value you can specify is 1. The maximum value of *n* depends on NCP storage size and the element addresses available per subarea in each attaching network. The NUMADDR and NAME operands are mutually exclusive operands. You must specify either this operand or the NETID and NAME operands.

Note: Be aware of the storage usage implications when you code NUMADDR.

The GWNAU definition statement that generates the pool of NAUs must be the last definition statement in the sequence of GWNAU and/or NCPNAU definition statements within a network. (System generation does not enforce this rule.)

To maintain address stability on subsequent gateway NCP generations, you must follow these rules:

- Do not delete an NCPNAU or GWNAU definition unless it is the last definition statement in the sequence of GWNAU and/or NCPNAU definition statements (excluding the GWNAU definition statement that generates the pool of NAUs).
- You must make additions of GWNAU and/or NCPNAU definition statements within a network after all existing GWNAU and/or NCPNAU definition statements (excluding the GWNAU definition statement that generates the pool of NAUs).

Alternatively you can code the GWNAU definition statements with the ELEMENT operand for those units that need address stability (such as certain SSCPs). As long as the value of the ELEMENT operand does not change, the gateway address does not change. You must code GWNAU definition statements in ascending order according to the values of the ELEMENT operands. GWNAU definition statements with the ELEMENT operand specified must precede all other GWNAU definition statements and any NCPNAU definition statements in a network.

[NUMSESS={n}]
{0}

(not valid for NCP V4 Subset)

This operand applies to cross-network resources that are predefined.

Specifies the number of half-session control blocks to be permanently assigned to the address being defined.

The value of *n* can range from 0 to 255.

The default value is 0.

Note: There is an interaction between the NUMSESS operand of the GWNAU definition statement and the SESSLIM operand of the BUILD or NETWORK definition statements if the GWNAU definition statement defines a permanent assignment for a specific SSCP or LU and the BUILD or NETWORK definition statement defines a pool of control blocks to be dynamically assigned. For this case, if the value you specified in the NUMSESS operand is less than the value you specified in the SESSLIM operand, the gateway NCP allocates additional control blocks from the pool to the SSCP or LU until the value you specify in the SESSLIM operand is reached or until the number of control blocks taken from the pool reaches the value you specify in the NETLIM operand.

If you specify a value greater than or equal to the value you specified in SESSLIM, the gateway NCP allocates the requested number of control blocks, but does not allocate additional control blocks from the pool, even if needed.

For NCP V4: The value of the HSBPOOL operand of the BUILD definition statement plus all NUMSESS values for the native network can range from 0 to 64 000. The total of all NUMSESS values for each non-native network can range from 0 to 64 000.

HOST Definition Statement

USAGE: NCPs in channel-attached controllers only. One for each access method to communicate with the NCP over a channel.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the HOST definition statement is:

```
[symbol]      HOST      operands[,operands]
```

VTAM Users Only: Appearing at the end of the list of operands below is the VTAM operand that can be coded in this definition statement. This operand provides information only to the VTAM initialization process and is not required in the card deck used as input to the NCP generation procedure. See the appropriate *VTAM Installation* manual for the description of this operand and for information on the VTAM initialization process.

Operands

INBFRS=count,

MAXBFRU=count,

UNITSZ=length

[,BFRPAD={n }]
 {28}

[,SUBAREA= {1 }]
 {subarea}

VTAM Operand

[,NETID=network id]

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

INBFRS=count

(required)

Specifies the number of controller buffers initially allocated for each data transfer received from the host processor. The minimum value is 1; the maximum is 255. If a data transfer requires additional buffers, they are allocated in multiples of the quantity you specify in this operand.

HOST

MAXBFRU=count

(required)

Specifies the number of buffer units the access method allocates for receiving data from the NCP. The minimum is 1; the maximum is 255.

See the description of the UNITSZ operand for a sample calculation.

Note: For VTAM, the value specified in this operand must be less than the value of the baseno subparameter of the LFBUF (VSE) or IOBUF (MVS) parameter of the VTAM start parameter list.

UNITSZ=length

(required)

Specifies the size of the access method buffer units used for data transfers from the NCP. *length* is the sum of (1) the length of the message data, (2) 29 bytes for control information, and (3) the number of pad characters specified in the BFRPAD operand.

The access method must use one buffer unit size for all transfers from the NCP. A buffer unit is the smallest unit of contiguous storage handled as buffer space. A buffer can consist of one or more units.

The NCP generation procedure accepts values between 1 and 65535, inclusive. However, the access method imposes its own minimum and maximum values. See the appropriate *VTAM* or *TCAM Installation* manual for the proper values for your particular network.

Note: For VTAM, this operand must specify the same value as the bufsize subparameter of the IOBUF (MVS) or LFBUF (VSE) parameter of the VTAM start parameter list.

The maximum number of characters the NCP transfers to the host processor in a single operation over the network control subchannel equals MAXBFRU times UNITSZ, minus the value specified in the BFRPAD operand.

Note: The values of MAXBFRU, UNITSZ, and BFRPAD must be specified so that the transfer size is equal to or greater than 1296 bytes. For example, if you code MAXBFRU=6, UNITSZ=255, and BFRPAD=28, the maximum number of characters sent to the host processor during a single channel operation is $6 \times 255 - 28 = 1502$ bytes. (This value includes the 29 bytes of control information associated with each response sent by the NCP.)

Warning: Ensure that the maximum amount of data received from any source and destined for this host does not exceed the amount that the NCP can send to this host.

[BFRPAD={*n* }]
{28}

Specifies the number of pad characters the NCP transmits to the access method immediately preceding the control information for the response. The minimum value is 0; the maximum is 255.

Placing pad characters at the beginning of each access method buffer allows the access method to insert message header and message text prefixes.

However, ensure that the value you specify in the BFRPAD operand equals the size of the prefixes that the access method uses. The required value for VSE VTAM is 15 bytes; VTAM, 0 bytes; for MVS TCAM, a minimum of 17 bytes; for TCAM, 17-28 bytes. Refer to the appropriate access method programmer's guide to determine the value you need to specify.

```
[SUBAREA={1      }]  
          {subarea}
```

Specifies the subarea address of the access method or access methods that your NCP can communicate with over a channel.

Each subarea in a network (whether the network is controlled by one or multiple NCPs) must have a unique subarea address. In interconnected networks this is true for each network that the gateway NCP joins.

The only exception is a configuration in which more than one access method has the same address but only one is communicating with the network at a time.

Note: The program generation procedure establishes a logical association of a host subarea, as represented by the HOST definition statement, with the NCP. The physical association between the host subarea and the NCP begins when the access method in the host subarea initiates communication with the NCP. The smallest subarea address you can specify is 1. The largest is 255. That operand specifies the maximum subarea address that can exist within the entire network, including those assigned to non-adjacent access methods and other NCPs.

IDLIST Definition Statement

USAGE: BSC or TWX devices on switched data links only. One for each list of ID sequences checked by the NCP.

POSITION: Must precede first GROUP definition statement.

Note: The IDLIST definition statement is used only in an NCP that communicates with MVS TCAM. The IDLIST definition statement is not valid for use with VSE VTAM.

An identification list is optional for each switched line that BSC or TWX devices can call or be called by the controller in network control mode. If you provide a list, the NCP checks ID sequences it receives from a device against the sequences in the list. If you do not provide a list, no check is made. (The same list can be used for more than one line.)

Note: You can specify that ID sequences received from devices calling the controller be checked by the access method instead of (or in addition to) the NCP. Refer to descriptions of the VIDLIST (VTAM-only) definition statement and the IDSEQ operand of the TERMINAL definition statement. See the appropriate TCAM Installation manual for information about ID verification by TCAM. ID sequences received during call-out operations are never passed to the access method.

FORMAT AND OPERANDS:

The format of the IDLIST definition statement is:

```
[symbol]      IDLIST      operands[,operands]
```

Operands

```
IDSEQ={ (chars, ...)          }
        { ((chars,termname), ...) }
```

```
[ ,MAXLEN=count ]
```

```
[ ,NOMATCH={ PASS }
             {STOP } ]
```

Operand Descriptions

[symbol]

Provides a name for the ID list and is required except as indicated in the description of the IDSEQ operand. *symbol* can be any valid assembler-language symbol. If *symbol* is required, the first character cannot be \$.

IDLIST

IDSEQ={ (chars,...) } (required)
{ ((chars,termname),...) }

Specifies the identification sequence for each device that can call or be called by the controller. This operand also can specify the name of the **TERMINAL** definition statement for the device from which the sequence is expected. You can specify either *(chars,...)* or *((chars,termname),...)* in this operand. You cannot intermix the two.

chars

Specifies the identification sequence the NCP recognizes as valid. Code *chars* as the hexadecimal representation of the EBCDIC characters to be recognized. You can specify a maximum of 20 EBCDIC characters in one sequence.

Note: Any EOT, ENQ, or ACK characters sent by a TWX terminal as part of its ID sequence are deleted by the NCP as it receives the sequence into a buffer. Therefore, you must omit one of these three characters when specifying the ID sequence in the IDSEQ operand. Failure to omit one of these characters causes the program never to recognize the received sequence.

[termname]

Specifies the name of the **TERMINAL** definition statement representing the device associated with the ID characters. (Do not specify a **TERMINAL** definition statement in which you coded **CTERM = YES**.)

If you omit *termname*, the NCP recognizes the sequence as valid, but it does not recognize it as the sequence for a specific device.

You can code a maximum of 255 characters in the IDSEQ operand, including the beginning and ending parentheses and all commas. This limit applies regardless of how many entries you code within the operand. If you need more than 255 characters, code additional IDLIST definition statements (omitting the symbol field of each) directly following the first IDLIST definition statement. (Only the first IDLIST definition statement can include the **MAXLEN** and **NOMATCH** operands.)

[MAXLEN=count]

Specifies the maximum size of the list of ID sequences you specify in the IDSEQ operand, in bytes (*not* the number of entries). This value includes the total number of bytes in all entries, plus the control field that precedes the list. Specify this operand only if the access method uses the dynamic control facility either to add entries to the list or to increase the size of one or more existing entries in the list.

Calculate the value for MAXLEN by adding:

For the list header: 4 bytes

For each entry in the list:

The number of bytes required to contain the ID sequence, plus either:

2 bytes if you omit *termname* in the IDSEQ operand; or
4 bytes if you specify *termname* in the IDSEQ operand.

Round the size of each entry to the next higher fullword.

The maximum number of ID sequences (entries) the list can contain is 256.

[NOMATCH={PASS}
{STOP}]

Specifies the action the NCP performs if it does not receive an ID sequence from a calling device or it receives an ID sequence it does not recognize as valid (a sequence not defined in this IDLIST definition statement).

If the NCP is to send any unrecognized ID sequences to the host processor, code NOMATCH=PASS. If the NCP receives no ID sequence, this fact is indicated by the response returned to the access method.

If the NCP is not to send unrecognized sequences to the host processor, code NOMATCH=STOP. Then, upon receiving an ID sequence it does not recognize, the NCP breaks the line connection.

LINE Definition Statement

USAGE: Required. One for each data link in the network.

POSITION: Can follow GROUP, PU, LU, TERMINAL, COMP, or other LINE definition statement.

Each LINE definition statement represents one SS or BSC communication line or SDLC link. Some of the operands apply only to certain types of lines or stations. The descriptions of the individual operands indicate the conditions under which they are coded.

One LINE definition statement must be coded for each SS or BSC communication line connected to the controller, whether it operates only in network control mode or in either network control or emulation mode. For an SDLC link, a single LINE definition statement represents either one or two communication lines. All LINE definition statements representing lines in a physical line group must appear between the GROUP definition statement representing that group and the next GROUP definition statement.

Notes:

1. *If you specify NPARSC= YES and are **not** including NTRI resources on the GROUP definition statement directly preceding this LINE definition statement, all operands specified on this LINE definition statement will be ignored.*
2. *LINE definition statements representing SDLC links must appear in the program generation input deck following LINE definition statements representing BSC and SS lines. (An example appears in the description of the LNCTL operand of the GROUP definition statement.)*

Parallel links must have a LINE definition statement to define each link. Up to eight parallel subarea links can be between any two adjacent subareas. If all of the links have the same group characteristics, they can be defined following the same GROUP definition statement.

If no TERMINAL definition statements follow a LINE definition statement for an SS or BSC line, CALL= OUT (VTAM only) and the device type (TERM operand) must be specified in the LINE or GROUP definition statement. The FEATURE operand of the TERMINAL definition statement also can be coded in the LINE definition statement. All other TERMINAL definition statement operands are ignored. (See the *NCP and SSP Resource Definition Guide* for an example of switched network operation.)

FORMAT AND OPERANDS: The format of the LINE definition statement is:

symbol LINE operands[,operands]

Specifying Lower-Level Operands in a Higher-Level Definition

Statement: In statement addition to the following operands, you can specify most operands of the PU, LU, CLUSTER, TERMINAL, and COMP definition statements in the LINE definition statement (or the GROUP definition statement) instead of in the individual definition statements mentioned. Also, you can specify most operands of the LINE definition statement in the GROUP definition statement. Figure 2-1 in "Summary of Definition Statements and Operands" shows which of the lower-level operands you can specify at a higher level.

NTRI Users Only: Appearing in the list of operands below, under the 'NTRI' column, are the operands that you code in this definition statement if you want NCP/Token-Ring interconnection (NTRI) resources included in your generation. The descriptions for these operands are included in alphabetical order along with the NCP operands.

VTAM Users Only: Appearing at the end of the following list of operands are the VTAM operands that can be coded in this definition statement. These provide information only for the VTAM initialization process and are not required in the card deck used as input for the NCP generation procedure. See the appropriate *VTAM Installation* manual for descriptions of these operands and for information on the VTAM initialization process.

Notes:

- 1. In the following chart, most of the operands are valid for NCP Version 3 for the IBM 3705; NCP Version 3 for the IBM 3725; NCP Version 4 Release 1 (for the IBM 3725 and the IBM 3720); and NCP Version 4 Release 2 (for the IBM 3725 and the IBM 3720). However, if an operand is valid only for a particular controller(s) and/or version of the NCP, the controller type(s) and/or NCP version appear in the 'Controller and/or Version' column. If the operand is valid for all three controllers, and all of the releases of NCP mentioned above, nothing appears in the 'Controller and/or Version' column.*
- 2. An R in one of the columns means that the operand is required; a bullet (●) in one of the columns means that the operand can be specified.*
- 3. For NTRI Users: For the optional operands listed under the 'NTRI' column, if you do not specify the operand, NDF adds the operand and a value appropriate for NTRI to the generation definition.*
- 4. If you are defining a line specified as TYPE=PEP, the operands you can code for that line are those with a bullet (●) in both the NCP and EP Line Type columns in the following chart.*

Operands	Controller and/or Version	Line Type		Line Control			Switched		NTR	
		NCP	EP	SDLC	BSC	SS	USER	YES		NO
ADDRESS={{(line addr,sa1[,sa2])}, {{(xmt addr,rcv addr) } {channl adapt position}}	3705	R	R	R	R	R		R	R	
SPEED=(rate[,rate])	3705	R	R	R	R	R		R	R	
[,ADDRESS={{(lnbr,{ <u>HALF</u> })}}] {FULL } {sal...[,san]} {channl adapt position}	3725 or 3720	•		•	•	•		•	•	R
[,ANSTONE={{ <u>NO</u> } } {YES}		•		•	•	•		•		
[,ATTACH={{ <u>MODEM</u> } } {DIRECT } } {LODIRECT } {DIR3725 }	3725 or 3720	•	•	•	•	•		•	•	
[,AUTO={{(line nbr,{ <u>10</u> } {NONE } {YES })}}	3725 or 3720	•	•	•	•	•		•		
[,AUTO={{address } } {NONE } {YES } }	3705	•	•	•	•	•		•		
[,AUTODL={{ <u>YES</u> } } {NO } }		•		•				•		
[,AUTUACB=symbol]							•			
[,AVGPB=n]		•		•	•	•		•	•	
[,BUFETTE={{ <u>2</u> } } {n}			•			•				
[,BUFSIZE={{size } } {64 } }	3725 or 3720		•		•			•	•	
[,BUFSIZE=size]	3705		•		•	•		•	•	
[,CALINE=channel A name]		•		•	•				•	
[,CALL={{ <u>OUT</u> } } { <u>IN</u> } } {INOUT}		•		•	•	•		•		
[,CHANLA={{YES } } { <u>NO</u> } }		•		•	•				•	•

LINE

Operands	Controller and/or Version	Line Type		Line Control			Switched		NTRI
		NCP	EP	SDLC	BSC	SS	USER	YES	
[,CHECK={DCD }] {NODCD}			•				•		
[,CHNLZ={YES }] {NO }		•		•	•			•	•
[,CHNPRI={NORMAL}] {HIGH }			•		•			•	•
[,CLINES=(chan Bname, Cname, Dname)]		•		•	•			•	
[,CLOCKNG={INT}] {EXT}	3725 or 3720	•	•	•	•		•	•	
[,CLOCKNG=({INT}[, {INT}])] {EXT} {EXT}	3705	•	•	•	•		•	•	
{EBCDIC } {USASCII } {USASCII-T} {BCD } {EBCD } {COR } [,CODE={KATAKANA }] {ITA2 } {ZSC3 } {DIC1 } {BCD2 } {COR2 } {DIC3 } {ASCII }		•	•		•		•	•	
[,CONFIG={NONSW}] {SW }		•		•				•	
[,CORNUM=n]		•		•	•			•	
[,CRRATE=integer]		•				•		•	•
[,CSPMODE={NORMAL NM}] {EMULATE EM}	3725 or 3720	•		•	•	•		•	•
{2701} [,CU={2703}] {2702}			•		•	•		•	•
[,CUTOFF={count}] {NO }		•			•	•		•	•
[,CUTYPE={3271}] {3275}	3725 or 3720		•		•				•

Operands	Controller and/or Version	Line Type		Line Control			Switched		NTF
		NCP	EP	SDLC	BSC	SS	USER	YES	
[,CUTYPE={2972} {3271}] {3275}	3705	•			•			•	
[,DATRATE={LOW }] {HIGH}	3725 or 3720	•	•	•	•	•		•	•
[,DATRATE=({LOW }[, {LOW }])] {HIGH} {HIGH}	3705	•	•	•	•	•		•	•
[,DIALALT={dial set name} {NONE }]		•			•				•
[,DIALSET={dial set name} {NONE }]		•			•	•		•	
[,DISABLE={YES}] {NO }		•			•	•		•	
{NONE } [,DUALCOM=({line nbr, {A}})] {B}		•			•	•		•	•
[,DUPLX={HALF}] {FULL}		•	•	•	•	•		•	•
[,ETRATIO={30}] {n }		•		•	•	•		•	•
[,FEATURE=([{NODUALCD}] {DUALCODE}		•				•		•	•
[, {NOIMEND}] {IMEND }		•	•			•		•	•
[, {LRC }] {NOLRC}		•				•		•	•
[, {NOSPACE}] {SPACE }		•				•		•	•
[, {STXBCC }]]] {NSTXBCC}	3725 or 3720	•			•			•	•
[,FGSLTRS={OUT}] {IN }	3705	•				•		•	•
[,HDXSP={NO } {YES}]		•		•				•	•
[,HISPEED={YES}] {NO }	3725 or 3720	•		•	•	•		•	•

LINE

Operands	Controller and/or Version	Line Type		Line Control			Switched		NTRI
		NCP	EP	SDLC	BSC	SS	USER	YES	
<pre> {0} {0} [,INTPRI=({1} [, {1}])] {2} {2} {3} {3} </pre>	3705	•	•	•	•	•	•	•	
<pre> [,IPL={YES}] {NO } </pre>		•		•				•	
<pre> [,LINECB=symbol] </pre>		•		•			•	•	
<pre> [,LINEFVT=symbol] </pre>		•		•			•	•	
<pre> [,LINESIZ=integer] </pre>		•				•		•	
<pre> [,LNQTCNT={1 }] {count} </pre>		•				•		•	
<pre> [,LOCADD=4000abbbbbbb] </pre>	3725/V4R2	R		R				R	R
<pre> {NO } [,LPDATS={{YES [, {3833}] }] {3834} {3863} {3864} {3865} {3867} {3868} </pre>	3725 V3 & V4R1 3720 V4R1	•		•	•			•	•
<pre> [,LPDATS={NO }] {{YES [, {3863}] }] {3864} {3865} {3867} {3868} </pre>	3705	•		•	•			•	•
<pre> {NO }] [,LPDATS={LPDA1 } {LPDA1,3867} {LPDA2 } </pre>	V4R2 3725 or 3720	•		•	•			•	•
<pre> [,LTRUNC={YES}] {NO } </pre>		•		•	•			•	•
<pre> [,MAXPU=count] </pre>		•		•				•	•
<pre> [,MAXTSL={265}] {n } </pre>	3725/V4R2	•		•				•	•
<pre> {OPTION1} [,MODEM={OPTION2}] {NTT } </pre>			•		•	•		•	•

Operands	Controller and/or Version	Line Type		Line Control			Switched		NTF	
		NCP	EP	SDLC	BSC	SS	USER	YES		NO
[,MODULO={ <u>8</u> }] {128}	3725 or 3720	•		•					•	
[,MONITOR={YES}] { <u>NO</u> }		•					•		•	
[,MONLINK={YES}] {NO }		•		•					•	
[,MPTALT={YES}] { <u>NO</u> }		•			•			•		
[,MTALIST=entry]		•					•		•	
[,NEGPOLP={ <u>NONE</u> }] {n }		•			•				•	
[,NEWSYNC={YES}] {NO }	3725 or 3720	•	•	•	•			•	•	
[,NEWSYNC=({YES} [, {YES}])] {NO } {NO }	3705	•	•	•	•			•	•	
[,NPACOLL={YES}] {NO }		•		•	•			•	•	•
[,NRZI={YES}] {NO }		•		•				•	•	
[,PAD={ <u>YES</u> }] {NO }			•		•			•	•	
{ODD } [,PARCHK={ <u>EVEN</u> }] {MARK } { <u>NOCHECK</u> } {SPACE }		•					•		•	
{ODD } [,PARGEN={ <u>EVEN</u> }] {MARK } {SPACE } {NOGEN }		•					•		•	
[,PAUSE=([{t1}] , [{t2 }])] {.2} {2.8}	3725 or 3720	•		•	•	•		•	•	
[,PAUSE=t]	3705	•		•	•	•		•	•	
{WAIT } [,POLIMIT=([{n}] [, { <u>NOWAIT</u> }])] {1} { <u>QUEUE</u> }		•			•	•			•	

LINE

Operands	Controller and/or Version	Line Type NCP EP	Line Control				Switched		NTRI	
			SDLC	BSC	SS	USER	YES	NO		
[,POLLED={YES}] {NO }		•		•	•		•	•		
[,POLLTO={ERROR }] {NEGRES}		•				•		•		
[,PORTADD=n]	3725/V4R2	R	R					R	R	
[,PROMPT={YES}] {NO }		•				•		•		
[,QUIET={YES}] {NO }			•				•	•		
[,RCVBUFC={1122}] {n }	3725/V4R2	•	•					•	•	
[,REDIAL={{(, [t1][,n[,t2]]) }] {{(m[,t1][,n[,t2]])}}		•	•	•	•			•		
[,RETRIES={NONE }] {(m[,t[,n]])}]		•	•	•	•			•	•	
[,RING={YES}] {NO }		•	•	•	•			•		
[,SCLSET={YES}] {NO }	3705	•				•		•	•	
[,SDLCST=(plcst,slcst)]		•	•					•		
[,SECURE={YES}] {NO }		•				•		•		
[,SERVLIM=count]		•	•	•	•			•		
[,SERVPRI={OLD}] {NEW}		•		•	•			•		
[,SESSION=count]		•		•	•			•		
[,SPDSEL={YES}] {NO }		•	•	•	•			•	•	
[,SPEED={rate }] {AUTOICC1} (V4R2 only) {AUTOICC2} (V4R2 only)	3725 or 3720	•	•	•	•	•		•	•	•
[,SPSHIFT={YES}] {NO }	3705	•				•		•	•	
[,TADDR=chars]		•	•	•	•			•		

Operands	Controller and/or Version	Line Type		Line Control				Switched		NTR
		NCP	EP	SDLC	BSC	SS	USER	YES	NO	
[,TAILING={YES}] {NO }		•		•	•				•	•
[,TERM=type]			R		•	•		•	•	
[,TRANSFR=count]		•		•	•	•		•	•	
{PEP}		•	•		•	•		•	•	•
[,TYPE={NCP}] {EP }										
[,UACB=(symbol1[,symbol2])]								•	•	•
[,UNITXC={YES}] {NO }			•		•	•		•	•	
[,USE={NCP}] {EP }		•	•		•	•		•	•	
[,YIELD={YES}] {NO }		•			•				•	

VTAM Operands

[,ANSWER={ON }]
 {OFF}

 {IN }

[,CALL={OUT }]
 {INOUT}

[,OWNER=ownername]

[,PU={YES}]
 {NO }

[,SECNET={YES}] (NCP Version 4 only / VTAM Version 3 only)
 {NO }

CRP Operand

[,LIC=n]

For more information on the Configuration Report Program (CRP) operand, refer to the *NCP and SSP Diagnosis Guide*.

LINE

Operand Descriptions

symbol

Provides a name for the communication line and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

```
{line addr          }  
ADDRESS={{(line addr,sa1[,sa2])}          (required for the 3705)  
          {(xmt addr,rcv addr) }  
          {channl adapt position}
```

Note: This operand is required for the 3705. For a description of the ADDRESS operand for NCP Version 3 for the 3725 and NCP Version 4, refer to the description of the ADDRESS operand in the list of optional operands on page 2-137.

For the IBM 3705:

Specifies the line interface address for the line represented by this LINE definition statement. This operand also specifies the emulation subchannel address for a line that operates in emulation mode, or specifies the channel adapter position for user-written channel code. This operand is required.

The line interface address is determined by the physical location of the line interface hardware on the line interface base (LIB) and the type of scanner installed in the controller. The range of valid addresses depends on the type of scanner installed (see Figure 2-7).

For SS and BSC lines:

If the line operates only in network control mode, specify a single line interface address (ADDRESS=line addr). *line addr* is the hexadecimal controller address to which the line is attached. For example, ADDRESS=02F.

Lines with a data rate of 14 400-bps or more require two consecutive controller addresses. Specify only the even address of the even-odd pair. If the addresses assigned to a 14 400 bps line are 022 and 023, you would code ADDRESS=022.

If the line operates in emulation mode, specify both the line address and the corresponding emulation subchannel address (or addresses) as

```
ADDRESS=(line addr,sa1[,sa2,...,san]).
```

The subchannel address is the same address specified in the unit channel block (UCB) for MVS or in the physical channel block (PCB) for VSE. Specify 3 hexadecimal digits for the line address. Specify 2 hexadecimal digits, each followed by -0 or -1, for each associated subchannel address: -0 to indicate that the channel adapter is installed in channel adapter position 0; -1 to indicate that the adapter is installed in channel adapter position 1. (Adapter position 0 is assumed if a -0 or -1 is not specified.)

Examples: ADDRESS = (02F,2E-0) means line address 02F, subchannel address 2E, channel adapter position 0; ADDRESS = (02F,2E-0,17-1,1C-0) means line address 02F, subchannel addresses 2E and 1C in channel adapter position 0, and subchannel address 17 in adapter position 1.

The subchannel address must be associated with a type 1 or type 4 channel adapter. The subchannel address specified for this line must not be the same as a subchannel address associated with any other line or used by any other program facility (such as the dynamic dump utility). Also, the subchannel address used for this line must not be the native subchannel.

Note: If the line address is for a line on a type 3 communication scanner, the subchannel address must be associated with a type 4 channel adapter. More than one subchannel address is valid only if the controller has one or two type 4 channel adapters.

The subchannel address must be within the range specified by the HICHAN and LOCHAN operands of the BUILD definition statement.

For SDLC links:

If the communication controller transmits and receives over the *same* path, specify a single line interface address (ADDRESS = line addr) regardless of whether the communication facility is half-duplex or duplex (for example, ADDRESS = 020).

If the communication controller transmits and receives over *separate* paths, specify *two* line interface addresses [ADDRESS = (xmt addr, rcv addr)]. For example, ADDRESS = (020,021).

Note: For lines attached to line set 1T or 1U, both addresses must be even addresses. For 230.4-kbps lines, only the two low-order even addresses on each scanner are valid (020 and 022, 0A0 and 0A2, 120 and 122, 1A0 and 1A2). The NCP supports a maximum of two duplex lines or four half-duplex lines.

The line interface address is determined by the physical location of the line interface hardware on the line interface base (LIB) and the type of scanner installed in the controller. The range of valid addresses depends on the type of scanner installed (see Figure 2-7).

For user-written channel adapter code:

If this line is in a line group with CHANLNK = YES, the ADDRESS operand is required to indicate the channel adapter position. channel adapter position must be either 0 or 1.

A maximum of two lines can be defined for user-coded channel links, and each requires its own LINE definition statement. The LINE definition statement must be defined under a GROUP definition statement with CHANLNK = YES. If two channel links are defined, they can be in the same or different line groups, and ADDRESS = 0 must be specified in one of the LINE definition statements and ADDRESS = 1 in the other. If you

LINE

specify ADDRESS = 1, you must specify the second suboperands of LOCHAN and HICHAN.

<i>If line is attached to</i>	<i>Range of valid addresses is</i>
Type 2 scanner	020-05F (Base module) 0A0-0FF (First expansion module) 120-17F (Second expansion module) 1A0-1FF (Third expansion module)
Type 3 scanner	020-04F (Base module) 0A0-0DF (First expansion module) 120-15F (Second expansion module) 1A0-1DF (Third expansion module)

Figure 2-7. Line and Auto-Call Addresses for LINE Definition Statement

SPEED=(rate[,rate])

(required for the 3705)

Note: This operand is required for the 3705. For a description of the SPEED operand for NCP Version 3 for the 3725 and NCP Version 4, refer to the description of the SPEED operand in the list of optional operands on page 2-178.

For the IBM 3705:

Specifies the data rate for this line in bits per second. This data rate is the rate at which the devices communicate with the communication controller.

If the modem at the controller is a dual-rate modem, specify the higher of the two rates.

If you specify one line interface address in the ADDRESS operand of this definition statement, specify SPEED = rate. If this LINE definition statement represents an SDLC link and if you specify two line interface addresses (*xmt addr*, *rcv addr*) in the ADDRESS operand, code SPEED = rate if the rates for both sides of the link are the same. Code SPEED = (rate,rate) for the transmit and receive addresses, respectively, if the rates differ.

If internal (business machine) clocking is used (see the CLOCKNG operand), the rate must be one of the four oscillator rates specified for the communication scanner where this line is attached (SPEED operand of the CSB definition statement). Specify the line speed in bits per second, omitting any fractional part. For example, specify a line speed of 1 200 bps as SPEED = 1200. Specify a line speed of 134.5 bps as SPEED = 134.

If external (modem) clocking is used, the rate must be the clocking rate of the modem. This rate is not necessarily one of the oscillator bit rates specified by the SPEED operand of the CSB definition statement. However, the SPEED operand of the CSB definition statement for the scanner must

specify a scanner oscillator bit rate *less than one-half* of the modem clocking rate specified in this SPEED operand.

If the external modem has more than one data rate, the lowest SPEED operand of the CSB definition statement must be *less than one half* of the lowest modem data rate that is used.

The normal range of line speeds that you can specify is from 45 bps to 56 000 bps. You can specify two additional line speeds of 57 600 and 230 400 bps for high speed scanners.

SPEED = 230400 is valid only for SDLC or BSC lines in network control mode that are attached to a type 3 high speed scanner in a 3705-II. The addresses for a 230 400-bps line must be 020 and 022, 0A0 and 0A2, 120 and 122, or 1A0 and 1A2. You must specify CLOCKNG = EXT for a 230 400-bps line.

If this LINE definition statement represents a multiple-terminal-access line used to communicate with terminals of different speeds, specify the speed of any of the terminals. For example, if terminals operating at speeds of 110 bps and 134.5 bps use this line, you can specify either SPEED = 110 or SPEED = 134.

```

{NONE          }
[ADDRESS={ (lnbr, {HALF      }) }]           (optional for the 3725 and 3720)
          {FULL      }
          {sal...[,san]}
{channl adapt position}

```

For the IBM 3725 and the IBM 3720:

Specifies the relative line number and data transfer mode, or emulation subchannel address or addresses for the line represented by this LINE definition statement. This operand also specifies the channel adapter position for user-written channel code.

This operand is *not* required if you specify LINEADD = NONE or VIRTUAL = YES on the GROUP definition statement.

lnbr

Specifies the relative line number of this line. The range of values is from 0 through 255 for the IBM 3725, and 0 through 27 and 32 through 63 for the 3720.

For NCP V4 Subset Users Only: The address range is 0 through 27 (28 lines).

The NCP converts this number into an even address or an even/odd pair of addresses, depending on the type of line you are defining.

LINE

If you specify HISPEED = YES for this line (230 kbps), the relative line number must be the lowest position on that scanner. The valid line numbers are:

LAB	lnbr if ONE scanner installed	lnbr if TWO scanners installed
1	0	(see note 1)
2	32 (see note 2)	(see note 1)
3	64	64 or 80
4	96	96 or 112
5	128	128 or 144
6	160	160 or 176
7	192	192 or 208
8	224	224 or 240

Notes:

1. Only one scanner can be installed in this line address base (LAB).
2. For the IBM 3720 Communication Controller, 0, 32, and 48 are the only valid high-speed line numbers.

NTRI Users Only: The ADDRESS operand is required if you specify ECLTYPE = PHYSICAL. On the ADDRESS operand, you must specify the relative line number within the following ranges:

80 - 83
112 - 115
144 - 147
176 - 179
208 - 211
240 - 243.

These ranges correspond to positions on the 3725 at which Token-Ring multiplexers (TRMs) can be installed. You can use only two address ranges in a generation definition, and the data transfer mode must be FULL. You cannot specify NTRI lines for the 3720 or the 3705.

When you are specifying the NTRI relative line number, be aware of the following restrictions:

If you specify an NTRI relative line number within this range:	Do not specify an NCP relative line number within this range:
80 - 83	80 - 95
112 - 115	112 - 127
144 - 147	144 - 159
176 - 179	176 - 191
208 - 211	208 - 223
240 - 243	240 - 255

{HALF}
{FULL}

Specifies that data will be transferred in half-duplex or duplex mode, respectively. If you specify HALF, the NCP converts the relative line number specified in the first parameter to an even address over which data is both transmitted and received. If you specify FULL, the NCP converts the relative line number to an even/odd pair of addresses. Data is transmitted on the even address and received on the odd address. HALF and FULL are only valid for lines operating in network control mode.

If you omit this parameter, HALF is the default.

Note: Do not specify FULL:

If this line is a BSC line operating in network control mode

If you have an automatic calling unit (ACU) installed (have coded the AUTO operand).

sa1...[,san]

Specifies the subchannel address or addresses. The subchannel address is the same address specified in the unit channel block (UCB) for MVS or in the physical channel block (PCB) for VSE.

If the line operates in emulation mode, specify both the relative line number and the corresponding emulation subchannel address or addresses as:

ADDRESS=(lnbr,sa1[,sa2]...[,san])

Specify three hexadecimal digits for the subchannel address. Specify 2 hexadecimal digits, each followed by -0, -1, -2, -3, -4, or -5 for the IBM 3725, or -0, -1 for the IBM 3720. The first two digits represent the subchannel address, and the third digit represents the channel adapter position. For example, specify -0 to indicate that the channel adapter is installed in channel adapter position 0, and so forth through position 5 for the 3725 or through position 1 for the 3720. (Adapter position 0 is the default if you do not specify a position.)

LINE

Examples:

ADDRESS=(32,2E-0): line number 32, subchannel address 2E, channel adapter position 0;

ADDRESS=(32,2E-0, 17-1, 1C-0): line number 32, subchannel addresses 2E and 1C in channel adapter position 0 and subchannel address 17 in adapter position 1.

The subchannel address must be within the range specified by the HICHAN and LOCHAN operands of the BUILD definition statement.

channl adapt position (user-written channel adapter code)

Specifies the channel adapter position. If this line is in a line group for which CHANLNK = YES is specified, the ADDRESS operand is required to indicate the channel adapter position. The channel adapter position must be either 0, 1, 2, 3, 4, or 5 for the IBM 3725; or 0 or 1 for the IBM 3720.

You can define a maximum of six lines for the 3725 and two lines for the 3720 for user-coded channel links. Each line requires its own LINE definition statement. You must define the LINE definition statement under a GROUP definition statement with CHANLNK = YES specified. If you define more than one channel link, they can be in the same or different line groups and you must specify different channel adapter positions in each LINE definition statement. If you specify ADDRESS = 0 through 5, you must specify the corresponding suboperands of LOCHAN and HICHAN.

NONE

Specify ADDRESS = NONE if you specify the LEVEL2 operand and VIRTUAL = NO on the GROUP definition statement.

[ANSTONE={NO }]
{YES} (call-in switched lines in network control mode only)

Specifies whether the NCP transmits an *answer tone* to the calling device to signify completion of the line connection.

The program only needs to send the tone when the modem does not send an answer tone. Most modems in the United States and Canada do provide the tone; therefore, ANSTONE = NO is normally appropriate. If in doubt, consult the supplier or installer of the modem.

This operand is valid only for incoming calls on switched links.

{MODEM }
[ATTACH={DIRECT }]
{LODIRECT}
{DIR3725 } (3725 and 3720)

Specify this operand only if you are defining an NCP for the 3725 or 3720.

Specifies whether this line is attached directly, or through a modem, to the terminals on the line. If modems are attached to the line, specify ATTACH=MODEM. If you omit this operand, MODEM is the default.

If modems are not attached to this line and this line is directly attached to terminals, specify DIRECT or LODIRECT. If you specify the SPEED operand of this definition statement, specify ATTACH=LODIRECT. If you do not specify the SPEED operand, specify ATTACH=DIRECT. In either case, you must specify DIAL=NO or omit the DIAL operand. If you specify ATTACH=DIRECT, you also must specify CLOCKNG=EXT. If you specify ATTACH=LODIRECT, you also must specify CLOCKNG=INT.

If this line is directly attached to another 3725 or 3720 (no modems), the NCP for the controller that provides the clocking must specify ATTACH=DIRECT, and the NCP for the other controller must specify ATTACH=DIR3725 and DIAL=NO. To determine in which NCP to specify ATTACH=DIRECT, ask your service representative which controller has the jumper cable attached that provides clocking for the other controller.

```
[AUTO={{(line nbr, {number})}}]           (call-out switched line)
      {NONE                               }
      {YES                                }           (user-written code only)
```

For the IBM 3725 and the IBM 3720:

Specifies that the automatic calling unit (ACU) is installed and gives the ACU relative line number. If the line does not have the ACU, omit this operand for the lines in network control mode, or specify AUTO=NONE for lines in emulation mode.

This operand is valid only if you specified DIAL=YES. For lines in network control mode, this operand is valid only if you specify CALL=OUT or CALL=INOUT on this LINE definition statement, and VIRTUAL=YES on the GROUP definition statement. The operand is not valid if you have coded ADDRESS=(lnbr, FULL) (for duplex mode).

For VTAM Users only: Specifying AUTO=YES when VIRTUAL=YES is also specified provides information to the VTAM initialization procedure and has no effect on the generation of the NCP.

line nbr specifies the relative line number for the line with the ACU and you must specify it when you have an ACU installed. The value can range from 0 through 255 for the IBM 3725, or from 0 through 27 and 32 through 63 for the IBM 3720.

For NCP V4 Subset Users Only: The NCP V4 Subset value can range from 0 through 27.

number is valid for EP lines only and specifies the number of dial digits to be passed on this line by the DIAL command. The value of *number* can range from 0 to 64, and the default is 10.

LINE

```
[AUTO={address}]
  {NONE   }
  {YES    }
```

For the IBM 3705:

Specifies that the auto-call facility is installed and gives the interface address of the automatic calling unit (ACU). A line used to call a device (CALL=OUT or CALL=INOUT in this definition statement) can be equipped with the ACU facility.

This operand is valid only if you specified DIAL=YES.

If the line has the ACU facility, code the ACU interface address in hexadecimal, without framing (' ') characters (AUTO=020). If the line does not have the ACU facility, omit the operand for lines in network control mode, or specify AUTO=NONE for lines in emulation mode.

A 1E or 9A line set is required for the ACU. Figure 2-5 gives the range of valid addresses.

If you specify AUTO=YES, you must specify LINEADD=NONE on the GROUP definition statement.

```
[AUTODL={YES}]
  {NO  }
```

(CCITT X.21 interface only)

Specifies whether the CCITT X.21 data communication equipment (DCE) accepts dial digits. This operand is valid only if you specify X21SW=YES in the GROUP definition statement for this line. If you code X21SW=NO, do not code the AUTODL operand.

Specifying AUTODL=YES causes the NCP to run the normal callout procedure for this line. For a DCE that does not accept dial digits, code AUTODL=NO. If you omit this operand and you specified X21SW=YES, AUTODL=YES is the default.

```
[AUTUACB=symbol]
```

(user-written line control only)

Specifies the name of the user adapter control block associated with the relative line number specified in the AUTO operand of this definition statement. This operand is required if user-defined line code is used to support a switched line using the auto-call facility. If the auto-call facility or user-defined line code is not supported, this operand is not valid.

```
[AVGPB=n]
```

(BSC and SS devices only)

Note: The PU statement is the lowest level definition statement in which you can specify the AVGPB operand for an SDLC line. Refer to the description of the AVGPB operand on the PU definition statement on page 2-241 for information on AVGPB for SDLC lines.

Specifies the average number of bytes expected from a BSC or SS device when the device is polled. This byte count is used by the NCP to determine

if enough buffer space exists to receive the expected data from a device that answers its poll. The value of *n* can range from 1 through 65 535 bytes.

The LINE definition statement is the lowest level definition statement in which AVGPB can be specified for a BSC or SS line. If you omit this operand for a BSC or SS line, the default is the buffer size specified in the BFRS operand of the BUILD definition statement.

[BUFETTE={2}
{*n*}

(SS lines in emulation mode only)

Specifies the number of 4-byte buffers allocated to an SS line. The value of *n* can range from 2 to 255. The default value is 2.

These buffers are used collectively as a data storage buffer to prevent overrun of data received from the line when the channel is in a slowdown or lockout condition.

[BUFSIZE={*size*}
{64 }

(emulation mode only)

For the IBM 3725 and the IBM 3720:

Specifies the size, in bytes, of the cycle-steal buffers that are generated for each line in normal (CSPMODE=NORMAL) mode. This operand is valid only when you specify CSPMODE=NORMAL. Each line in normal mode will have two buffers generated.

The value of *size* can range from 4 to 254 bytes in even increments. If you omit this operand, 64 bytes is the default.

[BUFSIZE=*size*]

(type 3 scanner; emulation mode only)

For the IBM 3705:

Specifies the size of the emulation mode buffers for a line serviced by a type 3 communication scanner. Each line has two buffers for data being sent to or received from the line. This operand also determines the amount of data (up to 32 bytes) transferred over the channel to the host processor without program interrupt.

The value of *size* can be any of the following:

4 (see note)	96
8	128
16	160
32	192
64	224

Specifying larger buffers offers more protection against possible overruns than does specifying smaller buffers. (Overruns can result from temporary slowdowns of channel operation or from momentary peaks in data traffic through the network.) Use of larger buffers also results in less interrupt-processing overhead for line operations and up to 32 bytes less interrupt-processing overhead for channel operations. The amount of data transferred across the channel is equal to *size* up to 32 bytes. For values of

LINE

size exceeding 32, the amount of data transferred over the channel is 32 bytes.

If you omit this operand, two 32-byte buffers (*size* defaults to 32) are provided if the line speed is 19 200 bps or less. Two 64-byte buffers (*size* defaults to 64) are provided if the line speed exceeds 19 200 bps.

Note: Do not specify 4-byte buffers (BUFSIZE=4) if the line is polled (POLLED=YES) and the size of the poll entries in the service order table is 6 bytes or more. A poll entry comprises the address characters, ENQ, and index byte used to poll one station on the line (for example, C1 C1 40 40 ENQ index).

[CALINE=channel A name]

(lines attached only to an IBM 38XX Modem with the Data Multiplexer Feature)

Specifies the name of the line attached to channel A of the same IBM 38XX Modem to which the line you are defining is attached.

Specify this operand only if the line you are defining is *not* attached to channel A, but *is* attached to channel B, C, or D. Channel A is the LPDA control channel. If you specify CHANLA=NO (CHNLZ=YES) you must specify CALINE.

For NCP V4R2: Do not code CALINE for this line if you specify LPDATS=LPDA2 on this LINE definition statement.

{OUT }
[CALL={IN }]
{INOUT}

(BSC or SS switched lines in network control mode only)

Specifies whether devices and/or the NCP can initiate calls. If the line is used only for incoming calls (stations call the controller), code CALL=IN, or omit the operand.

If the line is used only for outgoing calls (controller calls stations), code CALL=OUT. Also specify the name of the dial set for this line in the DIALSET operand.

If the line is used for both incoming and outgoing calls, code CALL=INOUT and specify the dial set name in the DIALSET operand.

This operand is valid only if you specify DIAL=YES in the GROUP definition statement, and it applies only to line operation in network control mode.

VTAM Users Only: For SDLC links, this operand provides information only to the VTAM initialization procedure and has no effect on the generation of the NCP. See the appropriate *VTAM Installation* manual for information on use of this operand for SDLC links.

[CHANLA={YES}]
{NO }

(lines attached only to an IBM 38XX Modem with the Data Multiplexer Feature)

Specifies whether the line you are defining is attached to the first-level link

LPDA control channel on the IBM 38XX Modem. Each IBM 38XX Modem with the Data Multiplexer Feature has only one LPDA control channel (channel A). You can specify CHANLA = YES only if you specify TAILING = NO and CHNLZ = YES.

For NCP V4R2: Do not code CHANLA for this line if you specify LPDATS = LPDA2 on this LINE definition statement.

NTRI Users Only: For generation of NTRI physical resources, you can specify *only* CHANLA = NO.

[CHECK={DCD }]
{NODCD}

(switched, duplex, SS lines in emulation mode only)

Specifies whether the controller uses the data carrier detect option for the line represented by this LINE definition statement. Use of this option prevents access to an application program's data by a device that dials the controller over this line at the moment the existing connection to a different device is lost. Continuous monitoring of the data carrier detect signal from the modem gives positive assurance that the switched line connection still is established.

The CHECK operand is valid only if the LINE definition statement specifies DUPLEX = FULL and the GROUP definition statement specifies LNCTL = SS and DIAL = YES.

[CHNLZ={YES}]
{NO }

*(lines attached only to an IBM 38XX Modem
with the Data Multiplexer Feature)*

Specifies whether the line you are defining is attached to an IBM 38XX Modem with the Data Multiplexer Feature.

If you specify CHNLZ = YES, you must specify the CORNUM operand and either the CALINE or CLINES operand depending on whether or not this line is specified as channel A. If you specify CHNLZ = NO, you must specify CHANLA = NO and TAILING = NO, and you must omit the CORNUM, CALINE, and CLINES operands.

If you specify CHANLA = YES or TAILING = YES, CHNLZ = YES is the default.

NTRI Users Only: For generation of NTRI physical resources, you can specify *only* CHNLZ = NO. If you do not code the CHNLZ operand, NDF defaults to CHNLZ = NO.

[CHNPRI={NORMAL}]
{HIGH }

(BSC lines in emulation mode only)

Specifies the priority of the emulation subchannel associated with this line with respect to the other emulation subchannels. This operand is valid only for a BSC line in emulation mode.

CHNPRI = NORMAL is ordinarily appropriate unless the data rate of the line is 19 200 bps or more and the majority of the remaining lines are slow-speed lines (2400 bps or less).

LINE

Notes:

For the IBM 3705:

1. *For lines connected to a type 2 communication scanner and that require a high channel priority, additional buffering is provided if you specified CA = TYPE4 and OPCS2 = YES in the BUILD definition statement. (See the description of the OPCS2 operand (BUILD definition statement)).*
2. *Do not code this operand if the line you are defining is connected to a type 2 communication scanner and you specified CA = TYPE4 and OPCS2 = NO in the BUILD definition statement.*

[CLINES=(chan Bname, Cname, Dname)]

(lines attached only to an IBM 38XX Modem with the Data Multiplexer Feature)

Specifies the names of the other lines attached to the same IBM 38XX Modem to which the data link you are defining is attached.

Specify this operand only if the line you are defining is attached to channel A (LPDA control channel). Each parameter is the name of the line attached to channel B, C, or D respectively.

If no line is attached to a specific channel, omit the parameter for that channel, but include the comma to represent the omitted parameter. Omit this operand if no other lines are attached to the modem.

For NCP V4R2: Do not code CLINES for this line if you specify LPDATS = LPDA2 on this LINE definition statement.

[CLOCKNG={INT}]
{EXT}

(for the 3725 and the 3720)

[CLOCKNG=({INT} [, {INT}])]
{EXT} {EXT}

(for the 3705)

For the IBM 3705, the IBM 3725, and the IBM 3720:

Specifies whether the modem (data set) or the communication scanner for the line provides clocking.

CLOCKNG = INT specifies that the scanner provides clocking (business machine clocking). CLOCKNG = EXT specifies that the modem provides clocking.

If this LINE definition statement represents a BSC or SDLC line and you omit the CLOCKNG operand, CLOCKNG = EXT is the default. If the LINE definition statement represents an SS line, CLOCKNG = INT is the default. Omit the CLOCKNG operand if the line is a multiple-terminal-access line.

Note: Notice that the letter I is omitted from the CLOCKNG operand.

For the IBM 3705:

If the ADDRESS operand in this LINE definition statement specifies one line interface address, specify only the first suboperand (CLOCKNG = INT or CLOCKNG = EXT).

If the ADDRESS operand specifies two line interface addresses (SDLC links only), specify only the first suboperand if both sides of the link use internal clocking or both use external clocking. If one uses internal clocking and the other uses external, specify CLOCKNG = (INT,EXT) or CLOCKNG = (EXT,INT). (The first and second suboperands apply respectively to the first and second addresses specified in the ADDRESS operand.)

```

{EBCDIC   }
{USASCII  }
{USASCII-T}
{BCD      }
{EBCD     }
{COR      }
[CODE={KATAKANA }]
{ITA2     }
{ZSC3     }
{DIC1     }
{BCD2     }
{COR2     }
{DIC3     }
{ASCII    }

```

(SS and BSC lines only)

Specifies the transmission code the NCP uses to communicate with devices for which a choice of codes is available. Determine from the system designer the code used. (The *NCP and EP Reference Summary and Data Areas* contains the translation tables associated with each transmission code.) This operand applies to all BSC lines and to SS lines in network control mode only.

The NCP does not perform code translation for a line operating in emulation mode. The NCP transmits data in the same transmission code in which it was received. However, for BSC lines operating in emulation mode, the NCP must be aware of the transmission code employed (EBCDIC or USASCII). For SS lines operating in emulation mode, the program does not need to know the code being used.

Note: Be aware that, if you have a 3725 and have specified LNCTL = BSC and CODE = USASCII, the 3725 does the character code translation.

Figure 2-8 lists the codes that you can specify for each type of device. ("WTTY" refers to various European teletypewriters using either the ITA2 or ZSC2 transmission codes.)

Do not specify the CODE operand for any type of device not shown in Figure 2-8. (If you specify a code, it is ignored.) Also omit the CODE operand if the line is a multiple-terminal-access line or if the LINE definition statement is for an SDLC link.

LINE

Transmission Code	CODE=	Type of Device					
		Any BSC Device	IBM 1050	IBM 2740	IBM 2741	TWX	WTTY
Extended BCD Interchange Code	EBCDIC	● ¹					
USA Standard Code for information Interchange	USASCII	●					
USASCII (transparent)	USASCII-T	● ²					
Extended Binary Coded Decimal	EBCD		● ¹	● ¹	●		
Binary Coded Decimal 1	BCD		●	●	●		
Binary Coded Decimal 2	BCD2		●		●		
Correspondence 1	COR			●	● ¹		
Correspondence 2	COR2				●		
Katakana	KATAKANA		●	●			
Data Interchange code 1	DIC1					● ¹	
Data Interchange code 3	DIC3					●	
ASCII	ASCII					●	
International Telegraph Alphabet No. 2	ITA2						● ¹
Figure Protected Code	ZSC3						●

¹ Code assumed if CODE operand is omitted.

² Valid only for a line operated in emulation mode.

Figure 2-8. CODE Operand Values

```
[CONFIG={NONSW}]
      {SW }
```

(subarea link only)

Specifies whether the subarea SDLC link between two communication controllers is switched or nonswitched.

If the path is switched (CONFIG=SW), the NCP uses switched line procedures to activate and deactivate the line. These procedures can include monitoring the line for ring indicator signals (RING=YES) and presenting an answer tone (if ANSTONE=YES) when this communication controller is called by the other communication controller.

This operand is valid only if LNCTL=SDLC and DIAL=NO is specified, and a subordinate PU definition statement specifies PUTYPE=4.

```
[CORNUM=n]
```

(lines attached only to an IBM 38XX Modem with the Data Multiplexer Feature)

Specifies a 2-byte correlation number for the line you are defining. You must specify the same value for each line that is attached to a particular IBM 38XX Modem with the Data Multiplexer Feature.

If you specify CHNLZ= YES, you must specify CORNUM. If you specify CHNLZ= NO, you must omit CORNUM.

For NCP V4R2:

All LINE definition statements coded with the same correlation number must have the same LPDA mode of operation. If you specify LPDATS= LPDA2, a maximum of 6 lines can have the same correlation number. If you specify LPDATS= LPDA1, LPDATS= (LPDA1,3867), or LPDATS= NO, a maximum of 4 lines can have the same correlation number.

[CRRATE=integer]

(SS lines in network control mode only)

Specifies the number of print positions the carriage returns for each idle character the NCP sends to a printer on this line. The minimum is 1; the maximum is 255.

If you omit this operand, 40 print positions per idle character is the default for TWX teletypewriter terminals. Thirteen is the default for IBM 1050 terminals equipped with the Accelerated Carrier Return feature. Ten positions per idle character is the default for all other terminals.

This operand is valid only if you specified LNCTL= SS in the GROUP definition statement. This operand applies only to line operation in network control mode.

[CSPMODE={NORMAL | NM}
{EMULATE | EM}]

(3725 and 3720)

Specify this operand only if you are defining an NCP for the **3725** or **3720**.

Specifies the mode of operation for PEP lines. You must specify CSPMODE= EMULATE (or CSPMODE= EM) for SS lines or lines used for tributary support (ADPREP and SEARCH commands). If you omit this operand, EMULATE is the default for SS lines and lines supported by user-defined code. NORMAL is the default for BSC lines.

{2701}
[CU={2703}]
{2702}

(emulation mode only)

Specifies which transmission control unit functions the NCP is emulating for this line.

[CUTOFF={count}]
{NO }

(SS and BSC lines in network control mode only)

Specifies a maximum number of sub-blocks the NCP accepts from a device attached to this line. If the NCP receives this number of sub-blocks before receiving an end-of-block character from the device, it breaks off the transmission. (A sub-block is the sequence of message text occupying the number of buffers specified by the TRANSFR operand of this definition statement.)

LINE

To limit the number of sub-blocks received, code CUTOFF = count, where *count* is from 1 to 255. If you don't need a limit, code CUTOFF = NO or omit the operand. The NCP continues to accept message text from the device until it receives an end-of-block character.

```
[CUTYPE={3271}
      {3275}
      {2972}
[CUTYPE={3271}
      {3275}
```

(for the 3725 and 3720)
(BSC lines in emulation mode only)

(for the 3705)

Specifies the type of control unit to which the individual devices in the clustered station are attached. If the line defined by this definition statement operates in network control mode, specify the control unit in the CUTYPE operand in the CLUSTER definition statement and omit the operand from the LINE definition statement. If the line operates both in network control mode and in emulation mode, specify CUTYPE on the GROUP definition statement only, the LINE definition statement only, both the GROUP definition statement and the CLUSTER definition statement, or both the LINE definition statement and the CLUSTER definition statement.

```
[DATRATE={LOW }
          {HIGH}
```

For the IBM 3725 and the IBM 3720:

Specifies the data rate for the link attached to a dual-rate modem.

Code DATRATE = HIGH to use the higher rate. Code DATRATE = LOW (or omit the operand) to use the lower rate.

Do not code this operand if the modem has only one data rate.

```
[DATRATE=( {LOW } [, {LOW } ] )
          {HIGH} {HIGH}
```

For the IBM 3705:

Specifies the data rates for the link attached to a dual-rate modem.

If the ADDRESS operand in this LINE definition statement specifies one line interface address, specify only the first suboperand. Code DATRATE = HIGH to use the higher rate. Code DATRATE = LOW (or omit the operand) to use the lower rate.

If the ADDRESS operand in this definition statement specifies two line interface addresses (SDLC links only), specify only the first suboperand if both sides of the link use the high rate or both use the low rate. If the rates differ, specify DATRATE = (HIGH,LOW) or DATRATE = (LOW,HIGH). The first and second suboperands apply respectively to the first and second addresses specified in the ADDRESS operand.

Do not code this operand if the modem has only one data rate.

Note: DATRATE=HIGH is not valid for modems attached to line sets 1A, 1B, 1C, 2A, 3A, 4A, 4B, and 4C and, if specified, can cause a feedback-check error condition.

[DIALALT={dial set name}]
 {NONE }]

*(nonswitched point-to-point
 or BSC multipoint lines only)*

Specifies the name of a dial set (DIALSET definition statement) the NCP uses to select an alternate line to communicate with a device. The NCP uses this dial set when it can't reach that device using the regular nonswitched point-to-point or BSC multipoint line. (This switched network backup function applies only to line operation in network control mode.) Upon request from the host processor, the NCP calls the device over a line from the dial set specified.

For the NCP to use the alternate line successfully, the lines in the dial set must have the same characteristics as the nonswitched line.

Code a dial set name in this operand only if:

- The line represented by this LINE definition statement is a nonswitched point-to-point or BSC multipoint line.
- You want the NCP to reach the device over an alternate line when communication with the device over the regular nonswitched line is impossible.
- You specify switched network backup among the options included in the NCP (see the SYSCNTRL definition statement).

This operand is not valid for an SDLC link (LNCTL=SDLC is specified in the GROUP definition statement).

[DIALSET={dial set name}]
 {NONE }]

(call-out BSC or SS switched lines only)

Specifies the name of the DIALSET definition statement for the dial set for this line. The LINES operand of the DIALSET definition statement must contain the name of this LINE definition statement.

This operand must specify the name of a dial set if this LINE definition statement represents a switched point-to-point line and the NCP calls the devices. (You must also code CALL=OUT or CALL=INOUT in this LINE definition statement.)

Code DIALSET=NONE (or omit the operand) if the line is used only for incoming calls (CALL=IN).

LINE

[DISABLE={YES}]
 {NO }

(emulation mode only)

Specifies whether the modem for this line requires a long disable time-out when disconnecting from the line. DISABLE = YES provides a 25.6 second time-out.

Most modems do not require the long time-out, and DISABLE = NO is recommended.

 { NONE }
[DUALCOM={({line nbr, {A}})]
 {B}

(emulation mode only)

For the IBM 3705, IBM 3725, and the IBM 3720:

Specifies that the NCP emulates the Dual Communication Interface feature for the line when operating in emulation mode. This operand applies only to a line emulating an IBM 2701 Data Adapter Unit with the Dual Communication Interface feature.

line nbr

For the IBM 3725 and IBM 3720: Specifies the *alternate relative line number* of the line formerly attached to the dual communication interface of the 2701. The value can range from 0 to 255 for the 3725, or from 0 to 27 and 32 to 63 for the 3720.

For NCP V4 Subset Users: The NCP V4 Subset value can range from 0 through 27.

For the IBM 3705: Specifies the *alternate* line interface address of the line formerly attached to the dual communication interface the 2701.

For the IBM 3705, the IBM 3725, and the IBM 3720:

A

Specifies that *this* line (line number specified in the ADDRESS operand of this LINE definition statement) corresponds to dual communication interface A.

B

Specifies that *this* line (line number specified in the ADDRESS operand of this LINE definition statement) corresponds to dual communication interface B.

NONE

Specifies that the 2701 being emulated was not equipped with the dual communication interface for this line.

Example: Assume that two communication lines were attached to an IBM 2701 by the dual communication interface. Assume also that the

two lines corresponded to dual communication interfaces A and B respectively. These two communication lines are now attached to the communication controller line addresses 020 and 021. Assume that the access method in the host processor communicates with these two lines alternately by emulation subchannel 017.

You specify the respective LINE definition statements for the two lines so that all of the following apply:

- The ADDRESS operands of both specify the same emulation subchannel, 017.
- Each DUALCOM operand specifies the line address designated in the ADDRESS operand of the *other* LINE definition statement.
- The DUALCOM operand of each definition statement specifies the interface--A or B--to which the lines formerly corresponded when attached to the 2701:

```

LINE1 LINE ADDRESS=(020,17), LINE2 LINE ADDRESS=(021,17),
      DUALCOM=(021,A),          DUALCOM=(020,B),
      .
      .
      .

```

```

[DUPLEX={HALF}]
        {FULL}

```

For the IBM 3725 and the IBM 3720:

Specifies whether the communication line and modem constitute a half-duplex or (full-)duplex facility.

Note: Do not confuse this operand with half-duplex or duplex data transfer. This operand specifies only the physical characteristic of the communication facility, and is used to control the request-to-send (RTS) signal under the following conditions.

For BSC and SS lines: If you specify DUPLEX = FULL, the RTS signal is active when the NCP is either sending or receiving data. If you specify DUPLEX = HALF, the RTS signal is active only when the NCP is sending data.

For SDLC lines: If you specify FULL as the second parameter of the ADDRESS operand, the DUPLEX operand has no effect on SDLC lines. If you specify HALF as the second parameter of the ADDRESS operand, the DUPLEX operand affects the RTS signal as follows:

- If you specify DUPLEX = FULL, the RTS signal is active when the NCP is either sending or receiving data.
- If you specify DUPLEX = HALF, the RTS signal is active only when the NCP is sending data.

For the IBM 3705:

Specifies whether the communication line and modem constitute a half-duplex or a duplex facility.

Note: Do not confuse this with half-duplex or duplex data transfer. This operand only specifies the physical characteristic of the communication facility (lines and modems).

This operand is used to control the request-to-send (RTS) signal under certain conditions described below.

For BSC or SS lines:

- If you specify DUPLEX = FULL, the RTS signal is active when the NCP is either sending or receiving data.
- If you specify DUPLEX = HALF, the RTS signal is active only when the NCP is sending data.

For SDLC lines on a type 2 scanner: The DUPLEX operand has no effect on the RTS signal.

- If you specify two addresses in the ADDRESS operand, the RTS signal is active always.
- If you specify one address in the ADDRESS operand, the RTS signal is only active when the NCP is sending data.

For SDLC lines on a type 3 scanner:

- If you specify two addresses in the ADDRESS operand, the DUPLEX operand has no effect on the RTS signal and the RTS signal is active always.
- If you specify one address in the ADDRESS operand and specify DUPLEX = FULL, the RTS signal is active always.
- If you specify two addresses in the ADDRESS operand and specify DUPLEX = HALF, the RTS signal is active only when the NCP is sending data.

[ETRATIO={30}]
{n }

(network control mode only)

Specifies the error-to-transmission ratio used by the programs that analyze statistical maintenance records. *n* is the ratio of errors detected to the number of transmissions in tenths of a percent. For example, ETRATIO = 125 indicates an error ratio of 12.5 percent.

The value of *n* can range from 1 (0.1 percent) to 255 (25.5 percent). If you omit this operand, the default value is 30 (3.0 percent).

This operand is not valid if you specify LEVEL5 = USER in the GROUP definition statement.

```
[FEATURE= ( [ {NODUALCD} ] [ , {NOIMEND} ] ... ) ]
           {DUALCODE}   {IMEND   }
```

Specifies features that certain BSC and SS terminals can have that must be included. The features are specified by a list of keywords separated by commas and enclosed in parentheses. If you do not specify the feature, the default value is assumed.

Note: This is the lowest level definition statement for which you can specify this operand for emulation mode. For network control mode, values also are described in the CLUSTER and TERMINAL definition statements.

```
[ {NODUALCD} ]                               (emulation of 2701 BSC line only)
  {DUALCODE}
```

Specifies whether the program emulates the Dual Code feature of an IBM 2701.

The Dual Code feature allows message transmission over the line in either EBCDIC or USASCII. Specify DUALCODE if either code can be used and the access method can change the code. Specify NODUALCD if the dual code function is not required.

```
[ {NOIMEND} ]                               (specially equipped SS terminals only)
  {IMEND   }
```

Specifies whether a receive operation from an SS terminal immediately ends when the EOT is received. If you code IMEND, the operation ends immediately. If you code NOIMEND, the program delays ending the receive operation until the line becomes electrically quiet following receipt of the EOT. The absence of further characters indicates that the EOT is valid. When you specify IMEND, the LNQTCNT operand (LINE definition statement for network control mode) or the QUIETCT operand (GROUP definition statement for emulation mode) is ignored.

```
[ {LRC   } ]                               (SS terminals only)
  {NOLRC}
```

Specifies whether the SS terminals on this line are equipped with record-checking capability (either as an inherent function or as a feature).

LRC is appropriate for the following stations:

Station	TERM operand specifies
IBM 1050	1050
IBM 1060	1060
IBM 2740 Model 1	2740-1
IBM System/7	SYS7

LINE

[{NOSPACE}]
{SPACE }

(teletypewriter terminals only)

Specifies whether the NCP reacts to space characters received from World Trade teletypewriter terminals as downshift characters when the line is in emulation mode. If you specify SPACE, each space character received from a terminal causes the program to send all subsequent text characters to the host processor in their downshifted form.

If you specify NOSPACE (or omit the parameter), the program does not convert the characters to their downshifted form but sends them as received from the terminal.

[{STXBCC }]
{NSTXBCC}

(3725 and 3720)

(BSC lines in emulation mode only)

Specify this suboperand only if you are defining an NCP for the **3725** or **3720**.

Specifies whether SWIFT support is included in the NCP. If the controller supports devices on this line that are equipped with the SWIFT feature, specify FEATURE=STXBCC. If the devices on this line are not equipped with the SWIFT feature, specify FEATURE=NSTXBCC or omit the parameter.

[FGSLTRS={OUT}]
{IN }

(3705 only)

(teletypewriter lines in network control mode only)

Specify this operand only if you are defining an NCP for the **3705**.

Specifies whether the NCP deletes FIGS and LTRS characters from message text received from 83B3, 115A, or World Trade teletypewriters terminals. This operand is valid for network control mode only.

[HDXSP={NO }]
{YES}

(SDLC only)

Specifies whether sending data to a terminal has priority over polling. This operand applies only to SDLC links that have one line interface address (half-duplex) and have more than one device active.

HDXSP=YES lets the NCP send, at the first opportunity, outgoing data that is ready for transmission without having to wait until it is the destination terminal's time to be polled.

HDXSP=NO lets the NCP send the outgoing data when it is the destination terminal's turn to be polled. In this case, the NCP sends the data just before sending the polling sequence unless the link is in the poll-wait state. (See the PAUSE operand of the LINE definition statement for a description of poll wait.)

This operand is valid only if you specified LNCTL=SDLC in the GROUP definition statement, PAUSE=0 in the LINE definition statement, and a

single line interface address in the ADDRESS operand of the LINE definition statement.

[HISPEED={YES}]
 {NO }

(3725 and 3720)
 (BSC and SDLC lines in
 network control mode only)

Specify this operand only if you are defining an NCP for the **3725** or **3720**.

Specifies whether this line operates at 230.4 kbps. This operand is valid only when TYPE = NCP is specified and LNCTL = SDLC or BSC is specified. If you specify HISPEED = YES, the relative line number specified in the ADDRESS operand must be the lowest position on the scanner. (See the ADDRESS operand of this definition statement.) The default is HISPEED = NO.

 {0} {0}
 [INTPRI=({1} [, {1}])]
 {2} {2}
 {3} {3}

(3705 only)

Specify this operand only if you are defining an NCP for the **3705**.

Specifies the interrupt priority for this line relative to other lines attached to the controller. Priority 3 is highest and 0 is lowest. Assign the higher priorities to lines with high data rates.

If the ADDRESS operand of this LINE definition statement specifies one line interface address, specify only the first suboperand.

If the ADDRESS operand specifies two line interface addresses (SDLC links only), specify only the first suboperand if the priority is the same for both addresses of the link. Specify both suboperands if the priority differs. (The first and second suboperands are the priorities for the first and second addresses, respectively.)

Appendix B, "Procedure for Determining Line Interrupt Priorities" gives a method for determining the interrupt priorities for each line in the network.

[IPL={YES}]
 {NO }

Specifies whether the NCP being generated can be loaded and dumped over this link. Any link specified with IPL = YES must agree with the IPL configuration data set. This operand is valid only for links that attach to type 4 PUs and only a maximum of eight LINE definition statement can specify IPL = YES in a single NCP generation. If you code IPL = YES, commands from the access method are accepted over this link that cause the NCP to abnormally end and then be reloaded with another NCP. This operand is not valid if you coded VIRTUAL = YES in the GROUP definition statement for this line.

[LINECB=symbol]

(user-written code only)

Specifies the name of a user-defined control block associated with a virtual

LINE

link. This operand is valid only if you specify `VIRTUAL= YES` in the `GROUP` definition statement.

[`LINEFVT=symbol`]

(user-written code only)

Specifies the name of the function vector table associated with a virtual link. This operand is required if you specify `VIRTUAL= YES` in the `GROUP` definition statement. This operand is not valid if `VIRTUAL= NO`. An `EXTRN` statement for each unique `FVT` symbol must be included in the user source code that is copied into the tables during assembly. (See the `SRCHI` operand in the `GENEND` definition statement.)

Note: The function vector table must be preassembled and included in the user object modules. (See the `INCHI` and `INCLO` operands in the `GENEND` definition statement.)

[`LINESIZ=integer`]

(SS lines in network control mode only)

Specifies the length of the print line for printer-type devices on this line. The minimum value for *integer* is 1. The maximum is 255. This operand applies only to line operation in network control mode.

If you omit this operand, a line length of 72 print positions is the default for `TWX` and World Trade teletypewriter terminals. 130 print positions is the default for all other types of terminals. Omit the `LINESIZ` operand if the line is a multiple-terminal access line.

[`LNQTCNT={1 }`
 {count}]

(SS lines in network control mode only)

Specifies the number of times the `NCP` tests an `SS` line after receiving data to ensure that the line has become electrically quiet. The line must become electrically quiet before the next data transmission begins, or loss of message data can occur.

The default value of 1 is appropriate for most `SS` lines under 1200 bps. For lines operating at 1200 bps or more, several tests in succession may be necessary to ensure that the line is quiet. The recommended value for 1200 bps `SS` lines is 5.

[`LOCADD=4000abbbbbbb`]

(required for `NTRI` generation only)

Specifies the locally administered address for the `IBM Token-Ring Network`. The *a* value must be a number from 0 to 7. The string of *b* values is comprised of numbers each in the range of 0 to 9. The value you code for `LOCADD` must be unique. For optimal performance, it is recommended that you use a different value for the last byte of `LOCADD` each time you specify it.

`LOCADD` is required when you specify `ECLTYPE= PHYSICAL` on the `GROUP` definition statement

```

                {NO                }                               (for the 3725)
[ ,LPDATS={ (YES [ , {3833} ] ) } ]                               (BSC and SDLC lines in network control mode only)
                {3834}                                           (V3 for the 3725 & V4R1)
                {3863}
                {3864}
                {3865}
                {3867}
                {3868}

[LPDATS={NO                } ]                               (for the 3705)
    { (YES [ , {3863} ] ) }                               (BSC and SDLC lines in network control mode only)
                {3864}
                {3865}
                {3867}
                {3868}
    {NO                }

[ ,LPDATS={LPDA1          } ]                               (For NCP V4R2 only)
    {LPDA1 ,3867}                               (BSC and SDLC lines in network control mode only)
    {LPDA2          }

```

For NCP V3, NCP V4R1, and NCP V4R2:

When you are specifying that a line uses modems that support Link Problem Determination Aids (LPDA) commands, be aware that, when an LPDA test is running on that line, the remote device(s)¹ are not polled. Therefore, ensure that remote device timeouts—the time a device waits to be polled before going offline—are large enough to allow for the LPDA test(s) to be run. Note that with a multipoint configuration, it is possible for LPDA tests to be run on two or more successive devices, during which time none of the other remote devices are polled. Therefore, with multipoint configurations, larger device timeout values may be required than with point-to-point configurations.

Specifically, for point-to-point configurations, device timeout values should be greater than 20 seconds for LPDA1 lines and 30 seconds for LPDA2 (NCP V4R2 only) lines. This prevents the possibility of device outages—the device is not repolled within the required time interval—due to the execution of an LPDA test.

For multipoint lines, in rare cases, a succession of tests on consecutive devices can lead to device outages unless larger device timeouts are used. To ensure that no outages occur because of LPDA tests on multipoint lines, use the following guideline for choosing timeout values:

For LPDA1: Use device timeout values of at least 20 X n* seconds.

For LPDA2: Use device timeout values of at least 30 X n* seconds.

Do not construe these timeout values to be the amount of time it normally takes to perform an LPDA test. These timeout values are related to the rare

¹ Can be more than one device if you are specifying a multipoint line

* Where n is the number of remote devices on the multipoint line.

situations in which no response is received to a modem test. When the LPDA test returns a response, the test duration time is much shorter.

For NCP V3 and NCP V4R1:

Specifies whether the line uses modems that support Link Problem Determination Aid (LPDA) commands. This operand also specifies the type of modem the line uses to support LPDA commands. If you omit this operand, LPDATS=NO is the default.

This operand is valid only for SDLC and BSC lines in network control mode with externally clocked modems that support the LPDA facility. If you specified LEVEL5=USER or X21SW=YES in the GROUP definition statement, LPDATS=(YES,38nn) is not valid.

For NCP V4R2:

Specifies whether the line uses modems that support Link Problem Determination Aid (LPDA) commands, and whether the modems operate in NORMAL (LPDATS=LPDA2) or MIGRATION (LPDATS=LPDA1 or LPDATS=LPDA1,3867) mode. If you omit this operand, LPDATS=NO is the default. Code this operand only if you have coded VERSION=V4R2.

This operand is valid only for SDLC and BSC lines in network control mode with externally clocked modems that support the LPDA facility. If you specified LEVEL5=USER or X21SW=YES in the GROUP definition statement, you must code LPDATS=NO or omit the operand.

Notes:

1. *Do not code LPDATS=LPDA1 for a 586X modem if that modem has a two-wire switched network backup (SNBU) coupler installed and the SNBU capability is going to be used.*
2. **NTRI Users Only:** *For generation of NTRI resources, you can specify only LPDATS=NO.*

The following chart shows which modems are valid depending on which suboperand you choose:

If you have this type modem	And it runs in this mode	Code
3833 3834 3837 3863 3864 3865 3868	LPDA1	LPDATS=LPDA1

statement must be greater than or equal to 8. If `MODULO=8`, the value of `MAXOUT` must be less than or equal to seven.

If you omit this operand, the default is 8. This operand is valid only if you specify `LNCTL=SDLC` and `DIAL=NO`.

[MONITOR={YES}]
 {NO }

(IBM 1050, 2741, TWX, and multiple-terminal-access
 lines in network control mode only)

Specifies whether the NCP monitors the line for an attention signal or a disconnect condition at the terminal. If `MONITOR=YES`, the NCP monitors the line whether or not it is executing a command for that line.

The access method is notified when either an attention signal or a disconnect condition is detected.

Note: If you code the logical keyboard lock for TWX terminals, (KBDLOCK operand of the GROUP definition statement), you must specify MONITOR=YES.

[MONLINK={YES}]
 {NO }

(SDLC subarea link only)

Specifies whether the link address is monitored for an Activate Physical command when the NCP is not in session with an SSCP on this link. This operand is valid only for links attached to a type 4 PU and is not valid if you coded `VIRTUAL=YES` in the GROUP definition statement for this link. The default value is NO for a channel-attached NCP (`TYPGEN=NCP` or `PEP` in the BUILD definition statement) and YES for all link-attached NCPs (`TYPGEN=NCP-R` in the BUILD definition statement).

[MPTALT={YES}]
 {NO }

(switched call-out BSC line in network control mode only)

Specifies whether a switched BSC line can be used as an alternate line for communicating with BSC stations normally reached over a nonswitched multipoint line. When failure of the multipoint line prevents the NCP from communicating with a station over that line, the switched network backup facility can be used to reach the station over any switched call-out BSC line that has `MPTALT=YES` specified.

This operand is valid only if the line is a switched call-out BSC line (you specified `CALL=OUT` or `CALL=INOUT` in this LINE definition statement). If you specified these operands and you omit the `MPTALT` operand, `MPTALT=NO` is the default.

[MTALIST=entry]

(call-in MTA lines in network control mode only)

Specifies that this line is used as a call-in multiple-terminal access line. This operand also identifies the list the NCP uses to identify the type of terminal calling the controller over this line. *entry* is the name of an `MTALIST` definition statement that defines the list that identifies the terminal type.

LINE

This operand is valid only if you specify DIAL = YES and LNCTL = SS in the GROUP definition statement, and specify CALL = IN or CALL = INOUT in this LINE definition statement (or in the GROUP definition statement).

[NEGPOLP={NONE}]
 {n }

(multipoint BSC lines in network control mode only)

Specifies a pause before the NCP resumes polling after receiving a negative response to polling from a multipoint BSC station. The pause can be specified as seconds or as seconds and tenths. The minimum is 0.1 second. The maximum is 23.5 seconds.

If you specify NEGPOLP = NONE, there is no pause between receipt of the negative response and continuation of polling.

A negative polling pause limits the amount of nonproductive polling on a BSC multipoint line and therefore reduces the amount of processing overhead. However, too large a negative polling pause can increase the response time experienced by the operators of terminals on the line.

[NEWSYNC={YES}]
 {NO }

(for the 3725 or 3720)

[NEWSYNC=({YES} [, {YES}])]
 {NO } {NO }

(for the 3705)

For the IBM 3705, IBM 3725, and the IBM 3720:

Specifies whether the communication controller supplies the new-sync signal to the modem (data set) on this line.

NEWSYNC = YES is valid only if all the following apply:

- The modem (at the controller) serving the line has the new-sync feature.
- The communication controller is the multipoint primary device for a duplex line.
- The modem at the link-attached device does not continuously send carrier signals to the modem at the controller.

The modem at the link-attached station can send a continuous carrier signal or the station can send a continuous request-to-send to the modem. Consult your IBM representative or the installer of the modem for further information about these signals.

NEWSYNC = NO is required if there is only one link-attached station on the communication line.

If you omit the NEWSYNC operand, NEWSYNC = YES is the default if you specified POLLED = YES (BSC only), DUPLEX = FULL, CLOCKNG = EXT, and DIAL = NO for this line. If you didn't code any of these operands in this manner, NEWSYNC = NO is the default.

If you have this type modem	And it runs in this mode	Code
5865 5866 5868	MIGRATION	LPDATS=LPDA1
3867	LPDA1	LPDATS=(LPDA1 , 3867)
5865 5866 5868	NORMAL	LPDATS=LPDA2

[LTRUNC={YES}]
{NO }

(SDLC and BSC lines in network control mode only)

Specifies whether the Line Trace Data Copy Truncation is in effect for this line. If you omit the operand and the line speed is greater than or equal to 19 200, the default is YES. If the line speed is less than 19 200, the default is NO.

[MAXPU=count]

(SDLC only)

Specifies the maximum number of physical units that can be associated with the link. If you omit this operand, the default is number of PU definition statements following the LINE definition statement. If this link is a switched link or the PU is a type 4, MAXPU must equal 1.

The minimum value for this operand is the number of PU definition statement that follow this LINE definition statement. The maximum value is 255. If dynamic reconfiguration is not supported and you code MAXPU, *count* must be equal to the number of PUs defined for this line.

Physical units can be added to a nonswitched SDLC link if (1) dynamic reconfiguration is supported, (2) *count* is greater than the number of PU definition statements, and (3) the service order table contains an extension. The service order table extension is defined within the MAXLIST operand in the SERVICE definition statement. Ensure that the number of entries in this extension is equal to or greater than the number of PUs that can be added to the link.

This operand is not valid if you coded VIRTUAL= YES in the GROUP definition statement for this line.

NTRI Users Only: For generation of NTRI resources, you can specify *only* MAXPU=1. If you do not code the MAXPU operand, NDF adds it to the generation definition.

[MAXTSL={265}]
{n }

(NTRI generation only)

Specifies the maximum amount of data, in bytes—including the transmission header (TH) and the request/response header (RH)— that NTRI can transmit. The value of *n* can range from 265 to 1108. This operand is valid only when you specify ECLTYPE= PHYSICAL on the GROUP definition statement.

LINE

If you omit this operand, the default is 265.

```
{OPTION1}  
[MODEM={OPTION2}]  
  {NTT }
```

(emulation mode only)

Specifies whether the communication line is enabled or is disabled after the communication controller is loaded (by IPL) or the System Reset key is pressed.

If you code MODEM = OPTION1, the line is enabled immediately after controller is loaded (by IPL) or the System Reset key is pressed. If you code MODEM = OPTION2, the line is disabled after the controller is loaded or the System Reset key is pressed, and subsequently must be enabled by command from the access method.

Until the line is enabled, most commands issued to the line by the access method result in an intervention-required indication to the access method. Which procedure is appropriate depends on the data-set-ready lead in the modem that attaches the line to the controller.

If the data-set-ready lead of the modem is energized continuously, specify MODEM = OPTION1. This specification is valid only for lines with IBM 1030, 1050, 1060, 2740 Model 1 or 2, 2741, or System/7 devices attached.

If the data-set-ready lead is *not* continuously energized (and the access method must issue an enable command to enable the line), specify MODEM = OPTION2.

Specify MODEM = NTT if the modems on the line are from the Nippon Telegraph and Telephone Company.

```
[MODULO={8  }]  
  {128}
```

(3725 and 3720)

Specify this operand only if you are defining an NCP for the **3725** or **3720**.

Specifies the maximum number of information frames (I-frames) that the NCP sends to the device attached to the line before the NCP requests a response from this device. If you specify MODULO = 8, the NCP sends a maximum of 7 I-frames to the device on the line, and the line is said to operate as a modulo 8 line. If you specify MODULO = 128, the NCP is capable of sending a maximum of 127 I-frames to the device on the line. If the NCP sends a maximum of 127 I-frames to the device on the line, the line is said to operate as a modulo 128 line.

For a subarea link: If you specify MODULO = 128, the line operates as a modulo 128 or as a modulo 8 line depending on the value specified in the MAXOUT operand on the PU definition statement of the adjacent NCP. See the description of the MAXOUT operand on the SDLCST definition statement for more information.

For a BNN link: If you specify MODULO = 128, the line operates as a modulo 128 line. If you specify MODULO = 8, the line operates as a modulo 8 line. If MODULO = 128, the MAXOUT operand of the PU definition

For the IBM 3705:

If the ADDRESS operand in this LINE definition statement specifies one line interface address, specify only the first suboperand (NEWSYNC = YES or NEWSYNC = NO).

If the ADDRESS operand specifies two line interface addresses, specify only the first suboperand if the new-sync option is used for both addresses of the link (NEWSYNC = YES) or for neither (NEWSYNC = NO). If the option is required for only one of the two, specify NEWSYNC = (YES,NO) or NEWSYNC = (NO,YES). (The first and second suboperands apply respectively to the first and second addresses specified in the ADDRESS operand.)

[NPACOLL={YES}]
 {NO }

Specifies whether data transmitted and received on this line is eligible for collection by NPA. This operand is valid only if you specify NPA = YES in the BUILD definition statement, *and* either (1) specify LNCTL = SDLC and VIRTUAL = NO or (2) specify LNCTL = BSC in the GROUP definition statement.

NPACOLL = YES is not valid if LNCTL = BSC and any terminal or cluster controller other than a 3271 or 3275 is defined on the line. The default for this operand is YES for SDLC resources and NO for BSC resources. See the *NCP and SSP Resource Definition Guide* for more information.

NTRI Users Only: For generation of NTRI resources, you can specify *only* NPACOLL = NO if NPA = YES is specified on the BUILD definition statement. If you do not code the NPACOLL operand, NPACOLL = NO is added to the GROUP definition statement.

[NRZI={YES}]
 {NO }

(SDLC lines only)

Specifies whether the data terminal equipment at the ends of the SDLC link must operate in non-return-to-zero change-on-ones (NRZI) mode (NRZI = YES) or in non-return-to-zero (NRZ) mode (NRZI = NO).

If internal (business machine) clocking is used on the link, specify NRZI = YES or omit the operand.

If external (modem) clocking is used on the link, specify NRZI = YES or omit the operand *unless* the modem is sensitive to repeated binary 10 bit patterns (that is, 10101010...). Sensitivity to this pattern can cause the modem to lose synchronism when it encounters sufficiently long sequences of this pattern in message data. If the modem is sensitive to this bit pattern, specify NRZI = NO. To determine whether your modems are sensitive to repeated binary 10 bit patterns, consult your IBM representative (for IBM modems) or the supplier or installer of the modem (for non-IBM modems).

Note: NRZI = NO is the correct choice for most non-IBM modems.
 NRZI = YES is correct for IBM modems.

LINE

Warning: All business machine equipment (terminal equipment) on the same SDLC link must use the same encoding scheme. That is, all use NRZI mode (NRZI = YES) or all use NRZ mode (NRZI = NO). Mixing of modes on the same SDLC link results in total lack of communication between stations on the link. In the case of an SDLC link between communication controllers, the equivalent choice (NRZI = YES or NRZI = NO) is required for the LINE definition statement in each program that represents the SDLC link and must correspond to the setting of the NRZI bit in the IPL configuration data set of the remote program loader (when the controller is link-attached). (The IBM customer engineer sets the NRZI bit in the communication controller.) Some terminals have the specification of NRZI or NRZ as a part of the customization process.

This operand is valid only if you specified LNCTL=SDLC in the GROUP definition statement.

[PAD={YES}]
 {NO }]

(BSC lines in emulation mode only)

Specifies whether a communication controller, emulating an IBM 2703, verifies the first 4 bits of trailing pad characters received from the lines.

If you specify PAD= YES or omit the operand, the controller checks each pad character received and indicates a data check error if the first 4 bits are not all 1s.

If you specify PAD= NO, the controller does not check the pad characters.

 {ODD }]
[PARCHK={EVEN }]
 {MARK }]
 {NOCHECK}]
 {SPACE }]

(TWX lines in network control mode only)

Specifies whether the NCP checks for odd, even, mark, or space parity or does no parity checking for TWX terminals on the line. (Refer also to the PECHAR operand of the GROUP definition statement.) For MARK parity, a character has a parity error if the parity bit is not 1. For SPACE parity, a character has a parity error if the parity bit is not 0.

 {ODD }]
[PARGEN={EVEN }]
 {MARK }]
 {SPACE }]
 {NOGEN}]

(TWX lines in network control mode only)

Specifies whether the NCP generates odd, even, mark, or space parity or does not set parity (leaves the parity bit as it is in the translate table) for

data transmitted on the line. MARK parity generation always sets the parity to 1, whereas SPACE sets it to 0.

[PAUSE=([{t1}],[{t2 }])] (for the 3725 or 3720)
 {.2} {2.8}

[PAUSE=t] (for the 3705)

(network control mode only)

For the IBM 3705, the IBM 3725, and the IBM 3720: Specifies a delay or cycle duration time according to the type of link.

For the IBM 3725 and IBM 3720: The first parameter *t1* specifies the pause for this line if the line is operating as a modulo 8 line. The default for this parameter is 0.2 second. The second parameter *t2* specifies the pause for this line if the line is operating as a modulo 128 line. The default for this parameter is 2.8 seconds.

For the IBM 3705: If you omit this operand, a pause of 0.2 second is the default.

For the IBM 3705, the IBM 3725, and the IBM 3720:

For BSC and SS lines: Specifies the number of seconds of delay between successive service cycles when no sessions currently exist. *tn* can range from 0 to 255. You must specify integer (not fractional) values for *tn*. For example, you can specify *tn*=225, but you cannot specify *tn*=225.7. If you omit the operand, 0 is the default, and no delay exists between successive cycles. This operand applies only to line operation in network control mode and when you specified POLLED=YES for this line.

For SDLC links: Specifies the average duration of the polling cycle in seconds or in seconds and tenths of a second. The polling cycle extends from the moment the NCP examines the first entry in the service order table to the moment polling next begins at the same entry. The cycle includes time for polling, reading, and writing to the terminals on the line. If the time spent in a complete polling cycle (servicing all active entries in the service order table) equals or exceeds the time specified as *tn*, the next polling cycle begins immediately. If the time spent in a complete polling cycle is less than *tn*, the beginning of the next polling cycle is deferred until *tn* seconds have elapsed since the beginning of the cycle just completed. During the pause, the SDLC link is in poll-wait state. Any outgoing data ready for transmission to the SDLC stations on the link is sent during this pause.

Allowing a pause to elapse when activity on the link is relatively low can reduce the amount of processing time consumed by unproductive polling.

For subarea links: If the NCP is in a primary state, specifies the poll pause as described above.

If the NCP is in a secondary state, specifies the time the NCP can defer answering a poll from the adjacent primary NCP.

LINE

Note: The larger the number of active entries in the service order table, the more likely the polling cycles will proceed continuously, without intervening pauses.

[POLIMIT=([{n}] [, {NOWAIT}])] (nonswitched multipoint SS or BSC
lines in network control mode only)
 { 1 } {QUEUE }

Specifies the number of consecutive negative responses to polling the NCP accepts from a device before breaking the logical connection. The maximum value of *n* is 255.

This limit applies only to line operation in network control mode and only to polling performed after the NCP has received at least one message block from the device. This limit does not apply to initial polling.

This operand is valid only if the line is a nonswitched multipoint line.

Note: For a switched line used to communicate with IBM 1050 terminals, the NCP accepts up to 16 consecutive negative responses to polling and then executes the WAIT option.

The second set of suboperands (WAIT, NOWAIT, and QUEUE) specifies the action the NCP performs if the maximum number of negative responses, *n*, is reached.

VTAM Users Only: If the NCP runs under VTAM, you must code this operand POLIMIT=(,QUEUE) or POLIMIT=(n,QUEUE).

WAIT

Specifies that the logical connection between the NCP and the device is maintained. The NCP notifies the host processor that the negative response limit has been reached and then waits for another request from the host processor before performing any further action on the line.

NOWAIT

Specifies that the NCP breaks the logical connection with the device, notifies the host processor, and terminates the current read request.

QUEUE

Specifies that the NCP breaks the logical connection, notifies the host processor, and queues the current read request onto the beginning of the queue for the device.

[POLLED={YES}] (lines in network control mode only)
 { NO }

Specifies whether SS and BSC devices attached to the line must be polled and addressed. This operand is not valid for SDLC links.

The actual pause between dialing operations and between sequences of dialing operations is represented only partly by the *t1* and *t2* values, for the following reasons:

1. An inherent delay exists in the automatic calling unit (ACU) from the moment the unit transmits the last dial digit to the moment it abandons the call upon failure of the called device to answer. This delay is called the ACR (abandon call and retry) delay.
2. Each dialing operation is preceded by a Disable operation for the line, and the line remains disabled for the duration of the disable time-out specified by the DSABLTO operand of the BUILD definition statement.

The maximum number of dialing operations the NCP performs is $[(m + 1)$ times $(n + 1)]$.

Example: Assume that you specify REDIAL=(6,2,18), when the value of *m* (3) is provided by the access method. The maximum number of dialing operations $(m + 1)$ times $(n + 1)$ therefore is 12. The action of the NCP can be represented this way:

```
Dial (pause1) Dial (pause1) Dial (pause1) Dial (pause2)
Dial (pause1) Dial (pause1) Dial (pause1) Dial (pause2)
Dial (pause1) Dial (pause1) Dial (pause1) Dial
```

pause1 represents the pause whose duration is the sum of (1) the *t1* value (6 seconds), and (2) the ACR and disable time-outs. *pause2* represents the pause whose duration is the sum of (1) the *t1* value (18 seconds), and (2) the ACR and disable time-outs.

If you omit one or more parameters, the default values are:

```
t1=0
n=0
t2=0
```

```
[RETRIES={NONE      } ]
      {(m[,t[,n]])}
```

Specifies the number of attempts to recover from errors occurring during transmission over the link specified by this LINE definition statement (with the exception of errors of the kinds mentioned later in the note under "Maximum, Minimum, and Default Values").

Transmission Retries on an SDLC Link

On an SDLC link, an error condition exists when the NCP does not receive a positive indication that a frame sent was received successfully, and the NCP retries transmitting that frame.

The repetitive retries (retransmissions of data or of control commands) are called a retry sequence. Specify the maximum number of retries in the sequence as m , which can range from 0 to 128. (RETRIES=0 is equivalent to RETRIES=NONE, resulting in no retry attempts at all.)

Optionally, you can specify that a primary NCP pause after completing the retry sequence, then begin a new retry sequence. This second sequence continues until the frame is transmitted or received successfully; or the maximum, m , is reached again. Alternation of retry sequence and pause continues until the error is cleared or the maximum number of retry sequences is reached. The pause, specified by the t parameter, can range from 1 to 255 seconds. The maximum number of retry sequences, specified by n , can range from 1 to 127. If the NCP is functioning as a secondary device, the t and n parameters are ignored.

The maximum number of retries (retransmissions of data or of control commands)— $(n + 1)$ times m —is 128.

Always specify the maximum number of retries per sequence, m , in the RETRIES operand of the LINE definition statement.

You can specify the t and n parameters individually for each station connected to the SDLC link represented by this LINE definition statement. (Specify these values in the RETRIES operand of the PU definition statement.)

You can specify the t and n parameters also in a PU definition statement associated with a LINE definition statement for a backup SDLC local-channel-attached or local-remote link (that is, a PU definition statement from which you omit the SUBAREA operand).

Maximum, Minimum, and Default Values (SDLC Devices)

If m is 0 (or is omitted), t must be 0 (or must be omitted). If t is 0 (or is omitted), n must be 0 (or must be omitted).

If you omit n and t is not 0, n defaults to 1 if $(n + 1)$ times m is less than or equal to 128; and n defaults to 0 if $(n + 1)$ times m is greater than 128.

If you omit n and t is 0, n defaults to 0.

If you code RETRIES=NONE, no error recovery is attempted.

Note: Retries of the following kinds of error conditions are governed by fixed parameters within the NCP, not by the parameters you specify in the RETRIES operand: information frames received out of sequence, information frames having data check errors, and unexpected responses (such as a request for initialization).

Note: You must specify all lines in a line group the same (POLLED = YES or POLLED = NO). You cannot include both options in the same line group.

Code POLLED = YES if:

- The line is an SS or BSC multipoint line (except when the controller is a tributary device on a BSC multipoint line).
- The line is a nonswitched or switched point-to-point line (including a multiple-terminal-access line) used to communicate with an IBM 1050 terminal.

Code POLLED = NO if:

- The line is an SS nonswitched or switched point-to-point line or a BSC point-to-point line (unless the terminal is an IBM 1050).
- The line is a multiple-terminal-access line (MTALIST operand of this LINE definition statement is coded) over which no IBM 1050 terminals communicate with the controller.

If you omit this operand, POLLED = NO is the default.

[POLLTO = { ERROR }]
 { NEGRESP }

(SS lines in network control mode only)

Specifies whether a time-out occurring during polling is treated as an error condition or a negative response. If the time-out is treated as an error condition (POLLTO = ERROR), the value you specify in the CRETRY operand of the GROUP definition statement determines the number of subsequent attempts at polling. If the time-out is treated as a negative response (POLLTO = NEGRESP), the value you specify in the POLIMIT operand of this LINE definition statement (or the GROUP definition statement) determines the number of times the station is repolled.

[PORTADD = n]

(required for NTRI generation only)

Specifies the physical port address. The value of *n* can range from 0 to 99. The operand is required if you specify ECLTYPE = PHYSICAL on the GROUP definition statement.

[PROMPT = { YES }]
 { NO }

(TWX lines in network control mode only)

Specifies whether, at READ time, the NCP will transmit the PROMPT defined by the TWXID operand in the BUILD definition statement.

Note: Remember that the TWXID sequence is referred to as an ID at line activation time and a PROMPT at READ time. Prompting can be overridden via a set-destination-mode command and is always bypassed if data has been received in read-ahead mode.

If you omit this operand, YES is the default.

LINE

[QUIET={YES}]
 {NO }

(SS lines in emulation mode only)

Specifies whether the NCP observes a long-line quiet time-out of 25.6 seconds when receiving from the line. If you specify QUIET = YES, the NCP observes the long time-out. If you specify QUIET = NO (or omit the operand), the NCP observes the normal time-out of 3.0

Do not specify QUIET = YES if you specify FEATURE = IMEND for this line.

[RCVBUFC={1122}]
 {n }

(NTRI generation only)

Specifies the NTRI buffer capacity for receiving data from a data link during one data transfer. This value must be greater than or equal to the maximum amount of data (in bytes)—including the token-ring header, the logical link header (LLH), the transmission header, and the request/response header—that NTRI can receive in one data transfer. The valid range for *n* is from six times the NCP buffer size specified on the BUILD definition statement to 4095. This operand is valid only when you specify ECLTYPE = PHYSICAL on the GROUP definition statement.

If you omit this operand, the default is 1122.

[REDIAL={{(, [t1] [, n [, t2]]) } }
 {([m] [, t1] [, n [, t2]]) }

*(switched SDLC links
switched BSC and SS lines
in network control mode)*

Specifies the number of dialing operations the NCP performs in attempting to reach a device over a switched line, and the pause desired between dialing operations.

For switched SDLC lines, the number of dialing operations within each sequence is provided by the access method; this value (referred to as *m*) is therefore not specified in this operand. Code a comma directly following the left parenthesis in this operand.

t1 specifies (in part) the pause in seconds between successive dialing operations within each sequence. *t1* must be 0 or a multiple of 3 seconds. The maximum is 765 seconds. (If you specify a value that is not a multiple of three, the next lower multiple of three is the value assumed by the generation procedure.)

n specifies the desired number of sequences of *m* + 1 dialing operations. The maximum is 254 sequences (*n* is 254). (If you specify *n* as 255, an indefinite number of sequences of dialing operations is performed.)

t2 specifies (in part) the pause in seconds between successive sequences of dialing operations. *t2* must be 0 or a multiple of 3 seconds. The maximum is 765 seconds. (If you specify a value that is not a multiple of three, the next lower multiple of three is the value assumed by the generation procedure.)

If you omit this operand entirely, the default values are 15 for m , 0 for t , and 0 for n .

Figure 2-9 summarizes the maximum, minimum, and default values.

Transmission Retries on a BSC or SS Line:

On a BSC or SS line, detection of an error causes a retry in transmitting the block that produced the error.

The repetitive retries (retransmissions of data) are called a retry sequence. The maximum number of retries in the sequence is specified as m , which can range from 0 to 255. (RETRIES=0 is equivalent to RETRIES=NONE, resulting in no retry attempts at all. RETRIES=255 specifies unlimited retries; that is, retransmissions are made without limit.)

Optionally, you can specify that the NCP pause after completing the retry sequence and then begin a new retry sequence. This second sequence continues until the block is successfully transmitted or the maximum, m , is reached again. Alternation of retry sequence and pause continues until the error is cleared or the maximum number of retry sequences is reached. The pause, specified by the t parameter, can be from 0 to 255 seconds. The maximum number of retry sequences, specified by n , can range from 1 to 255.

The parameters t and n do not apply to text-read errors.

Figure 2-9 summarizes the maximum, minimum, and default values.

	<i>SDLC Links</i>	<i>BSC and SS Lines</i>
<i>m</i>	Maximum: 128 Minimum: 0 ^{1 2} Default: 7	255 ⁴ 0 ¹ 7 (BSC) 2 (SS) 0 (if station incapable of retransmitting)
<i>t</i>	Maximum: 255 Minimum: 1 Default: 0 ³	255 0 0
	(Note: you can specify <i>t</i> in the RETRIES operand of the PU definition statement.)	(Note: <i>t</i> applies only to text-write errors)
<i>n</i>	Maximum: 127 Minimum: 1 Default: 0, if <i>t</i> =0 0, if <i>t</i> =0 and $(n+1) \times m > 128$ 1, if <i>t</i> ≠0 and $(n+1) \times m \leq 128$	255 1 0, if <i>t</i> =0 0, if <i>t</i> =0 and $(n+1) \times m > 128$ 1, if <i>t</i> ≠0 and $(n+1) \times m \leq 128$
	(Note: You can specify <i>n</i> in the RETRIES operand of the PU definition statement.)	(Note: <i>n</i> applies only to text-write errors.)

¹ RETRIES=0 is equivalent to RETRIES = NONE.

² If *m*=0, specify *t*=0 (or omit *t*).

³ If *t*=0, specify *n*=0 (or omit *n*).

⁴ RETRIES = 255 specifies unlimited attempts (retransmission without limit).

Figure 2-9. Summary of Parameters for RETRIES Operand

[RING={YES}]
 {NO }

(switched lines only; not applicable to U.S. and Canada)

Specifies whether the ring-indicator mode of an automatic answer operation is used. This decision depends upon the type of modem (data set) that connects the link to the controller. Determine from the modem supplier or installer whether the modem has a ring-indicator interface lead.

If the modem has the ring-indicator interface, code RING = YES. If it does not, code RING = NO (or omit the operand).

The RING operand is valid only for a switched line.

[SCLSET={YES}]
 {NO }

(3705 only)
 (telegraph lines in network control mode only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies whether the telecommunication line is attached to a type 2A line set (telegraph single-current line set). SCLSET = YES is valid only for an SS line. If you omit this operand, SCLSET = YES is the default for 83B3, WU 115A, and World Trade teletypewriter terminals. SCLSET = NO is the default for all other terminals.

[SDLCST=(plcst,slcst)]

(required for PU type 4)

Specifies which SDLC selection table entry the NCP uses when it is operating in a primary state (*plcst* parameter) and which entry the NCP uses when it is operating in a secondary state (*slcst* parameter). (Parameters specified in the GROUP, LINE, and PU definition statement associated with the link are used until the NCP operates as a primary or secondary NCP.) This operand is required for links attached to a PU type 4 and is not valid for PU type 1 or 2.

The table entries, whose contents are defined by the following operands of the SDLCST definition statement, specify the parameters the NCP applies to the link. *plcst* and *slcst* are the *symbol* name of the SDLCST definition statement.

MAXOUT	SERVLIM
PASSLIM	TADDR
RETRIES	TRANSFR

See the description of the SDLCST definition statement for the conditions pertaining to the use of an SDLC selection table.

[SECURE={YES}]
 {NO }

(switched, duplex, SS lines
 in network control mode only)

Specifies whether the NCP uses the secure option for the SS line represented by this LINE definition statement. Use of this option prevents access to an application program's data by a SS terminal that dials the communication controller over the line at the moment the existing connection to a different terminal is lost. If you specify SECURE = YES, the NCP continuously monitors the data-carrier-detect signal from the modem to give positive assurance that the switched connection still is established.

This operand is valid only if the LINE (or GROUP) definition statement specifies DUPLEX = FULL and the GROUP definition statement specifies LNCTL = SS and DIAL = YES.

LINE

[SERVLIM=count]

*(nonswitched multipoint lines
and SDLC links in network
control mode only)*

For SS or BSC lines: Specifies the number of entries in the service order table for this line that the NCP checks each time the program performs service seeking. The maximum you can specify is 255.

If you omit this operand and this LINE definition statement represents an SS or BSC line (LNCTL=SS, LNCTL=BSC), the program checks half of the table entries each time it performs service seeking.

Notes:

- 1. For BSC and SS lines, this operand is valid only if you specify POLLED= YES on this definition statement.*
- 2. For BSC 3270 lines, it is recommended that you specify the highest number of devices attached to the cluster controller on the line.*

For SDLC links: Specifies the maximum number of regular scans of the service order table that the NCP makes for normal servicing of physical and logical units on the link before it makes a special scan of the table. The maximum value you can specify is 255.

Specifying a low value in SERVLIM gives the NCP more frequent opportunities to fulfill accumulated status commands than does specifying a higher value. Such status commands are fulfilled more promptly, but at the cost of frequent interruptions to normal servicing. Conversely, specifying a higher value in SERVLIM causes fewer interruptions to normal servicing of devices, but delays fulfillment of the status commands. Base your selection of a value for the SERVLIM operand on:

- The relative number of status commands the access method issues for the link served by the service order table
- The relative importance of the alternatives described above
- Experience.

Warning: The NCP performs a time-out for any status command issued for the physical unit of an SDLC station whose power is off. The duration of this time-out interval is whatever you specified in the REPLYTO operand of the GROUP definition statement.

Normal servicing of physical and logical units is interrupted during the time-out interval because regular scanning of the service order table is suspended. Only when the specified interval expires does regular scanning (and therefore normal servicing) resume. A low value for SERVLIM (which causes relatively frequent special scans) and/or a high value for REPLYTO (resulting in long time-out delays) results in serious degradation of message throughput on the SDLC link if status commands are received for SDLC

Notes:

1. *For lines coded with AUTOICC1 or AUTOICC2, you must type in an uppercase X as the first character entered after establishing a connection. You have 23.5 seconds to do this, or the NCP will disconnect the line.*
2. ***NTRI Users Only:** For generation of NTRI physical resources, you can specify only SPEED = 9600. If you do not code the SPEED operand, NDF adds it to the generation definition.*

AUTOICC1 *(V4R2 using SS lines only)*

Specifies that the NCP is to determine the speed for a data link with an Internal Clocking Card-1.

AUTOICC2 *(V4R2 using SS lines only)*

Specifies that the NCP is to determine the speed for a data link with an Internal Clocking Card-2.

[SPSHIFT={YES}]
 {NO }

(3705 only)
(teletypewriter lines in network control mode only)

Specify this operand only if you are defining an NCP for the 3705.

Specifies whether the NCP reacts to space characters received from 83B3, WU 115A, or World Trade teletypewriter terminals as downshift characters when the line is in network control mode. If SPSHIFT = YES, each space character received from a terminal causes the NCP to send all subsequent text characters to the host processor in their downshifted form.

If you code SPSHIFT = NO (or omit the operand), the NCP does not convert the text characters and sends them as they are received from the terminal.

[TADDR=chars]

Specifies a symbolic link station address for this NCP when the NCP is a type 4 PU on a subarea link. Specify this address on the secondary SDLCST definition statement also.

chars is the 2-digit hexadecimal representation of the EBCDIC character you have chosen as the symbolic address. If you omit this operand, the default is to 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 X'03' (the hexadecimal representation of the subarea address).

Note: If you omit this operand and the subarea address is 255, the default value is 254. This case is the only one in which the default is not equivalent to the subarea address.

If this NCP operates in a link-attached controller (TYPGEN = NCP-R in the BUILD definition statement), these addresses must be identical to the physical address entered into the IPL configuration data set on the diskette

LINE

contained within the link-attached controller. (For the 3705, the customer engineer enters this address.)

If this NCP is for a tributary controller on a BSC line, code TADDR = *chars*, where *chars* is the 2-digit hexadecimal representation of a single character (in transmission code). The character specified must be the same as the polling character specified in the NCP for the controller that controls this line. If, for example, A is the polling character to which this tributary controller responds, you specify A as the tributary address in this LINE definition statement. In the other NCP, you specify A in the POLL operand of the appropriate TERMINAL definition statement. (See also the ADDR operand of the TERMINAL definition statement.)

Although the same character--A--is required in the TADDR and POLL operands in the respective programs, the way you specify the character can differ. In the POLL operand, you code the hexadecimal representation of the *EBCDIC* letter A (POLL = C1). In the TADDR operand of this LINE definition statement, you code the hexadecimal representation of the *transmission code* bit pattern. If the transmission code used on the line is *EBCDIC*, the hexadecimal representation is the same (POLL = C1, TADDR = C1). If, however, the transmission code is *USASCII*, you code the *USASCII* bit pattern for the letter A in the TADDR operand (TADDR = 41).

Note: The polling character you assign to the tributary controller must have a bit pattern in which the third bit from the left (bit 2) is 0. Any uppercase alphabetic character in either EBCDIC or USASCII (except EBCDIC letters S-Z) meets this requirement. Any other bit pattern that meets this condition can be assigned also, whether or not that bit pattern represents a character. For example, all of the following are valid polling characters for a tributary controller:

<i>EBCDIC</i> Character	(Binary)	<i>Bit Pattern</i> (Hex)
A	1100 0001	C1
!	0101 1010	5A
(none)	0101 0100	54

<i>USASCII</i> Character	(Binary)	<i>Bit Pattern</i> (Hex)
A	0100 0001	41
[0101 1011	5B

[TAILING={YES}]
{NO }

(lines attached only to an IBM 38XX Modem with the Data Multiplexer Feature
or lines attached to a 586X Modem)

Specifies whether the line you are defining is attached to a second level LPDA circuit. For NCP V3 and V4R1, if you specify TAILING = YES, the default is CHNLZ = YES.

stations whose power is off. (The time-out interval recurs for each successive special scan.)

You can minimize the possibility of throughput degradation by specifying a high value in the SERVLIM operand and/or a low value in the REPLYTO operand. Also, you can prevent the risk by arranging network operating procedures to avoid sending commands to physical units whose power is off.

If you omit this operand and this LINE definition statement represents an SDLC link (LNCTL=SDLC), a value of 4 (four regular scans of the table) is assumed.

[SERVPRI={OLD}]
{NEW}

*(multipoint SS and BSC lines
in network control mode only)*

Specifies whether the NCP gives priority to servicing current sessions (SERVPRI=OLD) or to establishing new sessions (SERVPRI=NEW) on the line.

This operand is valid only for a nonswitched line in network control mode with multipoint line control.

[SESSION=count]

*(multipoint SS and BSC lines
in network control mode only)*

Specifies the number of sessions the NCP attempts to maintain concurrently on a nonswitched line in network control mode. The maximum number of sessions must not exceed the number of devices connected to the line. If you omit this operand, no more than one session is maintained on the line. This operand is valid only for a nonswitched line with multipoint line control.

This operand does not limit the number of sessions if clustered stations are attached to the line and general polling is used. The NCP cannot control the number of terminals that can respond to a general poll, and a separate session is established with each responding terminal.

Note: If this line has IBM 3270 terminals attached, the value of count is the sum of the number of cluster controllers and the number of terminals on the line. This value is also the default value.

[SPDSEL={YES}]
{NO}

(lines in network control mode only)

Specifies whether the data rate of a dual-rate modem can be changed by request from the access method.

Specify SPDSEL=YES to allow the NCP to change the data rate of the modem. SPDSEL=YES is valid only if external clocking is used on the line. The data rate specified in the SPEED operand must be the higher of the two data rates.

Specify SPDSEL=NO (or omit the operand) if the modem has one data rate or if it has two data rates but the NCP does not change the rate.

LINE

```
[SPEED={rate    }]
      {AUTOICC1}
      {AUTOICC2}
```

(optional for the 3725 or 3720)

Note: For a description of the SPEED operand for NCP Version 3 for the 3705, refer to page 2-136.

For the IBM 3725 and 3720:

rate

Specifies the data rate for this line in bits per second. This data rate is the rate at which the devices communicate with the communication controller.

If the modem at the controller is a dual-rate modem, specify the higher of the two rates.

If internal (business machine) clocking is used (see the CLOCKS operand), this operand is required and the rate must be one of the following values: 50, 75, 100, 110, 134, 200, 300, 600, 1200, 2400, 4800, 9600, 19200, or RPQ.

If this LINE definition statement represents a multiple-terminal-access line used to communicate with terminals of different speeds, specify the speed of any of the terminals. For example, if terminals operating at speeds of 110 bps and 134.5 bps use this line, you can specify either SPEED = 110 or SPEED = 134.

If you are including NPA in this NCP, you must specify the SPEED operand to ensure correct calculation of line utilization. If external clocking is used, NDF ignores the SPEED operand; however, it is recommended that you specify the SPEED operand for documentation purposes.

For NCP V4R2:

NCP V4R2 will determine the speed for the data link you are defining if you specify SPEED = AUTOICC1 (for an Internal Clocking Card-1) or SPEED = AUTOICC2 (for an Internal Clocking Card-2). You can specify AUTOICC1 or AUTOICC2 only if you specify DIAL = YES, TYPE = NCP, LNCTL = SS, and TERM = TWX for this LINE definition statement.

The speeds that the NCP will support depend on the hardware configuration of your 3725 or 3720. In particular it depends on the level of the installed Internal Clocking Control (ICC) card. If the installed card in an ICC-1, the NCP will support 110, 300, 600, and 1200 bps. If the installed card is an ICC-2, the NCP will support all the ICC-1 speeds plus 2400 bps.

For NCP V4R2 Users:

If you specify LPDATS = LPDA1: you can specify TAILING = YES only if you specify CHANLA = NO and CHNLZ = YES.

If you specify LPDATS = LPDA2: you can only specify TAILING = YES if CHNLZ = NO.

NTRI Users Only: For generation of NTRI physical resources, you can specify *only* TAILING = NO.

[TERM=type]

Specifies the type of device the NCP communicates with over this line. The device must be one of the types listed in Figure 2-10.

This operand is required if the line operates in emulation mode, and you do not specify the CUTYPE operand. If the line operates only in network control mode, specify the TERM operand of the LINE definition statement or the TERMINAL definition statement.

Note that in Figure 2-10, some types of devices are restricted to operation in network control mode. Devices of these types (System/7; MTA terminals) must not be specified in this TERM operand if the line operates in both network control and emulation mode.

Notes:

1. *If you coded the CUTYPE operand of the LINE (or GROUP) definition statement, this TERM operand is ignored.*
2. *If different types of BSC devices (for example, 3275s and 3277s) are attached to the line, specify only one of the device types.*

LINE

<i>If type of device is</i>	<i>Code TERM=</i>
IBM 1050 Data Communication System	1050
IBM 1130 Computing System	1130
IBM 1800 Data Acquisition and Control System	1800
IBM System/360 Model 20	2020
IBM System/360 Model 25	2025
IBM 2701 Data Adapter Unit	2701
IBM 2703 Transmission Control	2703 ¹
IBM 2715 Communications Terminal Model 1	2715
IBM 2740 Transmission Control Unit Model 2	2740-1
IBM 2740 Communications Terminal Model 2	2740-2
IBM 2741 Communications Terminal	2741
IBM 2770 Data Communications System	2770
IBM 2780 Data Transmission Terminal	2780
IBM 2972 General Banking Terminal System:	
IBM 2980 Teller Station Models 1 and 4	2980 ¹
IBM 2980 Administrative Station Model 2	2980 ¹
IBM 3270 Information Display System:	
IBM 3275 Display Station	3275
IBM 3276 Control Unit Display Station	3277
IBM 3277 Display Station	3277
IBM 3278 Display Station	3277
IBM 3284 Printer	3284
IBM 3286 Printer	3286
IBM 3287 Printer	3284
IBM 3288 Line Printer	3286
IBM 3289 Line Printer	3286
IBM 3650 Retail Store System (in BSC mode)	SYS3
IBM 3660 Supermarket System (in BSC mode)	SYS3
IBM 3704 Communications Controller	3704
IBM 3705 Communications Controller	3705
IBM 3735 Programmable Buffered Terminal	3735
IBM 3740 Data Entry System:	
IBM 3741 Data Station	3741
IBM 3747 Data Converter	3747
IBM 3767 Communications Terminal (in SS mode):	
Supported as 2740 Model 1	2740-1
Supported as 2740 Model 2	2740-2
Supported as 2741	2741

¹Valid for the IBM 3705 Communications Controller only

Figure 2-10 (Part 1 of 2). Values for TERM Operand of LINE Definition Statement

<i>If type of device is</i>	<i>Code TERM=</i>
IBM 3770 Data Communications System (in BSC mode)	2770
IBM 3780 Data Communications Terminal ¹	3780
IBM System/370 Model 125	3125
IBM System/370 Model 135	3135
IBM System/3	SYS3
IBM System/7 ² (BSC version)	(Footnote ³)
IBM System/7 (SS version)	2740-1
IBM System/32 (BSC version)	SYS3
IBM Communicating Magnetic Card Selectric Typewriter	2741
83B3 Selective Calling Station	83B3 ⁴
Western Union Plan 115A Outstations	115A ⁴
Western Union Teletypewriter Exchange Service	TWX
World Trade Teletypewriter Terminals ³	WTTY
Multiple Terminal Access (IBM 1050,2740,2741;TWX) ³	MTA

¹Specify this type if the line operates only in network control mode.

²Specify a System/7 (BSC version) as follows: (1) Specify TERM = SYS3 in the TERMINAL (or LINE or GROUP) definition statement if the line operates only in network control mode. (2) Specify TERM = SYS3 in the LINE (or GROUP) definition statement if the line operates in both network control and emulation modes (alternately). (3) Specify TERM = SYS7 in the LINE (or GROUP) definition statement if the line operates only in emulation mode.

³Not supported on switched lines.

⁴Valid for the IBM 3705 Communications Controller only

Figure 2-10 (Part 2 of 2). Values for TERM Operand of LINE Definition Statement

[TRANSFR=count]

(network control mode only)

Specifies the number of NCP buffers corresponding to the maximum amount of data (the data transfer limit) that the NCP can receive from the line during a single data transfer operation.

The path between the NCP being defined and the destination can comprise (1) a channel connection to an attached host processor or (2) a combination of SDLC links (with or without intervening channel connections) between NCPs and a channel connection to a distant host processor.

You can use this operand to limit the amount of data accepted from a line during a single data transfer. This limit must be no more than the access method in the destination host processor (and intermediate access methods, if any) can accept in a single channel operation. Also this limit must be no more than the data transfer limit imposed by a subsequent NCP in the path. You also can use this operand to limit the number of buffers that the NCP can assign at one time to a device on the line. You therefore prevent that device from monopolizing the available NCP buffers.

Note: The value you specify for the TRANSFR operand must be the same for all lines in the transmission group. If the values of the

TRANSFR operands are not the same, link activation problems will occur.

Ensure that the value you specify in the TRANSFR operand lies between certain minimum and maximum values.

Calculating Maximum Value of TRANSFR Operand

To calculate the maximum value of *count*:

1. Determine which host processors in the network receive the data.
2. Calculate the data transfer limit, in bytes, imposed by the access method in each destination host processor. To do so, multiply the values specified by the MAXBFRU and UNITSZ operands, then subtract the value of the BFRPAD operand, of the HOST definition statement that represents the access method to the NCP.
3. Determine which of the data transfer limits calculated this way is the smallest and divide that limit by the buffer size specified in the BFRS operand of the BUILD definition statement in the present NCP. The result (ignoring any fractional remainder) is the maximum value of *count* you specify in this TRANSFR operand.

Example: Figure 2-11 shows three host processors, each of which can be a destination host processor for lines and devices attached to any of the three 3705s shown. As calculated in the manner described above, the data transfer limits are 5972, 7472, and 4972, respectively, for host processors 1, 2, and 3. You therefore select the smallest limit, 4972, and divide it by the buffer size (BFRS operand), 232 bytes, in NCP A. The result of 21 (ignoring the fractional remainder) is the maximum value you specify in the TRANSFR operand of the LINE definition statement for the line from which the data is received. Use the same method to determine the value of TRANSFR for each line controlled by NCPs B and C.

Understand that the values calculated this way are only maximums. You can limit the amount of data received from a line to much less than that which the access method accepts over the channel.

Calculating Minimum Value of TRANSFR Operand

To calculate the minimum value of *count*:

1. Determine the maximum amount of user data to be received from the line represented by this LINE definition statement.
2. Add 23 or 24 bytes (control information; see following note) to the user data.
3. Divide the sum (maximum user data plus control information) by the NCP buffer size (BFRS operand).
4. Round the result to the next higher integer.

If, on the BUILD definition statement, you specify TYPGEN =	And, on the GROUP definition statement, you specify TYPE =	Then, on the LINE definition statement, you specify TYPE =
NCP, NCP-R, SNCP, or SNCP-R	NCP	NCP
PEP or SPEP	PEP ¹	PEP ¹ NCP EP ¹
	NCP	NCP
	EP ¹	EP ¹

¹ Not valid if LINE definition statement represents an SDLC link.

If you omit the TYPE operand from the LINE definition statement, the default value is the same as the value specified in the TYPE operand of the GROUP definition statement.

If you specify TYPE = PEP, you can specify all operands of this LINE definition statement. If you specify TYPE = NCP, code only the operands for network control mode. If you specify TYPE = EP, code only valid operands for operation in emulation mode. For emulation mode, operands that apply to network control mode are ignored.

NTRI Users Only: For generation of NTRI resources, you can specify *only* TYPE = NCP. If you do not code the TYPE operand, NDF adds it to the generation definition.

[UACB=(symbol1[,symbol2])]

(user-written line control or NTRI only)

Specifies the names of the user or NTRI adapter control blocks associated with this line. This operand is required when user-defined or NTRI code is specified for levels 2 and 3 in the GROUP definition statement. Otherwise, this operand is not valid.

symbol1 and *symbol2* are the names of the user or NTRI adapter control blocks defined by the ADDRESS operand in this definition statement.

NTRI Users Only: For generation of NTRI resources, you can specify any valid symbol for UACB. If you do not code the UACB operand, NDF adds it to the generation definition.

[UNITXC={YES}]
{NO }

(emulation mode only)

Specifies whether the NCP signals unit-exception status to the host processor when the program receives an EOT from the line.

Usually, you can specify UNITXC = YES (or omit the operand), which causes the NCP to signal unit-exception status upon receiving an EOT. However, if read and write commands within the access method are

LINE

command chained, you can specify UNITXC=NO. UNITXC=NO, by suppressing the unit-exception indication, prevents the command chain from being broken. (Unit exception status always breaks the command chain.)

[USE={NCP}]
{EP }

*(lines operable alternately in
network control and emulation modes)*

Specifies whether the line operates initially in network control mode (USE=NCP) or emulation mode (USE=EP).

If you specify TYPE=PEP in this definition statement, either USE=NCP or USE=EP is valid. If you omit the USE operand, USE=NCP is the default.

A request from the access method to the NCP switches a line from one mode to another.

This operand has no meaning unless you specified TYPE=PEP for this line.

[YIELD={YES}]
{NO }

(BSC lines in network control mode only)

Specifies the controller as the secondary device on a nonswitched point-to-point (contention) line. This operand applies only to line operation in network control mode.

Code YIELD=YES (or omit the operand) if the controller yields to the primary device when contention occurs. Code YIELD=NO if the controller is the primary device.

This operand is valid only for a BSC point-to-point line (GROUP definition statement specifies LNCTL=BSC and LINE [or GROUP] definition statement specifies POLLED=NO [or you omitted the POLLED operand]).

Switched Virtual Link Support

To define a virtual link in a switched line group, specify a LINE definition statement followed by one PU definition statement. You cannot specify the LU definition statement. Specify the MAXLU, LUCB, and LUFVT operands in either the PU, LINE, or GROUP definition statement.

The generation procedure creates the number of logical units specified in the MAXLU operand. Each of these logical units has the same user control blocks and function vector tables. A network address is also assigned to each LU.

Note: Control information is 23 bytes for a type 1 or 2 scanner, and 24 bytes for a type 3 scanner.

Example: Assume that a maximum of 700 bytes can be received in a single data transfer over the line represented by this LINE definition statement, and that the NCP buffer size is 232 bytes. Adding 23 to 700 and dividing by 232 yields 3.1. The minimum value you specify in the TRANSFR operand therefore is 4.

For a complex network that includes several NCPs or access methods, establishing the same data transfer limits (in bytes) for all lines between NCPs is more convenient. Note, however, that the values you specify in the TRANSFR operands of the several NCPs are the same only if the buffer size (as specified by the BFRS operands in these programs) is identical.

The minimum value accepted by the program generation procedure is one buffer of data (TRANSFR = 1). The maximum is 255 buffers (TRANSFR = 255). If this LINE definition statement defines a subarea link between two type 4 PUs, the minimum value of *count* multiplied by the value in the BFRS operand must equal or exceed 1050 bytes.

Default Values

If you omit this TRANSFR operand, the program generation procedure determines a value in one of the following ways:

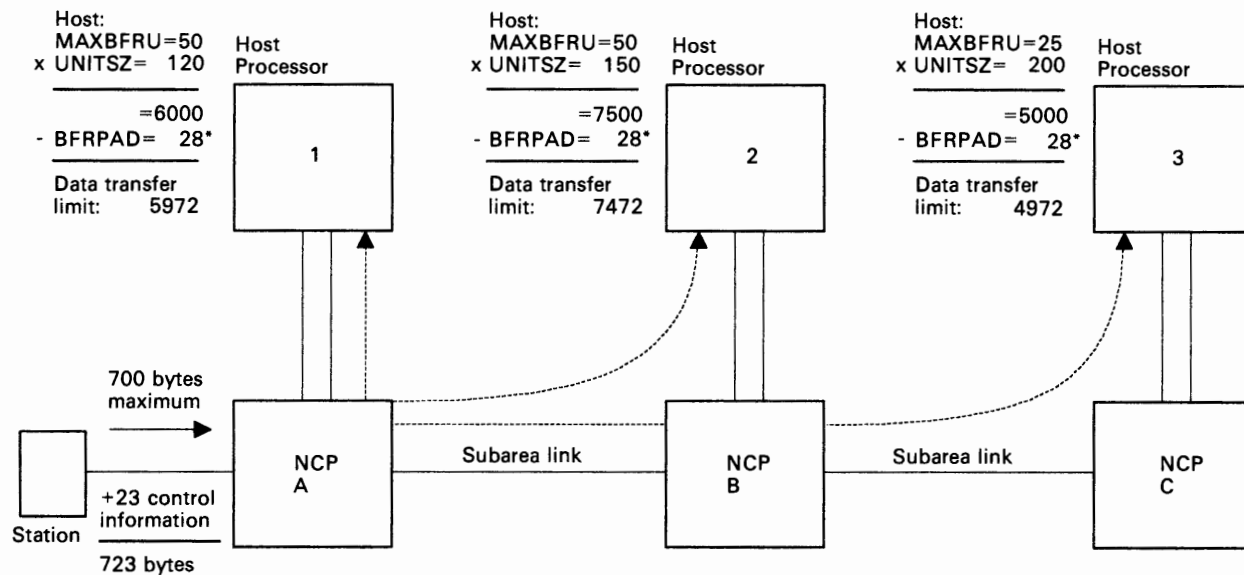
- If you specified the TRANSFR operand in the BUILD definition statement (see the operand description under that definition statement), the value you specify is assumed for the line represented by this LINE definition statement.
- If you omitted the TRANSFR operand from the BUILD definition statement but one or more HOST definition statements appear in the source statements for the present NCP, the generation procedure computes the data transfer limits from the MAXBFRU, UNITSZ, and BFRPAD operands as described above. The generation procedure then divides the result (lowest result, if more than one HOST definition statement exists) by the NCP buffer size (BFRS), and uses the resulting value (or a maximum of 255) as the maximum buffer count for the line.
- If the program contains neither a TRANSFR operand in the BUILD definition statement nor any HOST definition statement, the generation procedure assumes an arbitrary value of seven buffers for the line (TRANSFR = 7).

Action of NCP Upon Reaching Buffer Limit

When the buffer limit for the line is reached, NCP procedures differ for SDLC and non-SDLC (BSC and SS) lines.

For an SDLC link, if the end of the path information unit (PIU) has not been received by the time the buffer limit is reached, the NCP discards all the data received and sends a negative acknowledgment to the sending device. (The discarded data is *not* sent to the host processor.)

LINE



BUILD: BFRS=60
LINE: TRANSFR=82 (maximum) (4972/60=82.9) TRANSFR=20 (minimum) (1050/60=17.5)

*This value is only for OS/VIS TCAM

Since host processor can receive 82 and the minimum is 20, any value between 20 and 82 can be used.

Figure 2-11. Determining Maximum and Minimum Values of TRANSFR Operand

For a BSC or SS line, the program sends the filled buffers to the host processor as a sub-block. The program continues to receive message data from the device until it receives an end-of-block or end-of-transmission character or until the sub-block limit you specified in the CUTOFF operand of this LINE definition statement (or the GROUP definition statement) is reached.

This operand applies only to line operation in network control mode.

```
{ PEP }
[ TYPE={ NCP } ]
{ EP }
```

(SS and BSC lines only)

Specifies whether the line represented by this LINE definition statement operates in network control mode only (TYPE = NCP), emulation mode only (TYPE = EP), or in either network control mode or emulation mode (TYPE = PEP).

The valid choices for this operand depend upon (1) whether the NCP can perform only network control functions, only emulation functions, or both as specified by the TYPGEN operand of the BUILD definition statement; and (2) whether the line group to which the line belongs is defined in the GROUP definition statement to operate in network control mode, in emulation mode, or in either mode, as follows:

LU Definition Statement

USAGE: SDLC devices only. One for each LU associated with a device on a nonswitched data link.

POSITION: Must follow PU definition statement or other LU definition statement associated with same device. The sequence of LU definition statements must be in ascending order according to local addresses assigned to logical units (as specified in the LOCADDR operand of this definition statement). LU definition statements are not required for any local addresses with which no logical units are associated. The generation procedure does not generate logical unit control blocks for each local address not defined.

FORMAT AND OPERANDS: The format of the LU definition statement is:

```
symbol      LU  operand[,operands]
```

Specifying LU Operands in Higher-Level Definition Statements: You can specify some operands of the LU definition statement in the PU, LINE, or GROUP definition statement instead of in the LU definition statement. Figure 2-1 on page 2-4 shows which of the operands you can code at a higher level.

*Note: If you specify NPARSC= YES and are **not** including NTRI resources on the GROUP definition statement directly preceding this LU definition statement, all operands specified on this LU definition statement will be ignored except for MAXCOLL and NPACOLL.*

NTRI Users Only: Appearing in the list of operands below, under the 'NTRI' column, are the operands that you code in this definition statement if you want NCP/Token-Ring interconnection (NTRI) resources included in your generation. The descriptions for these operands are included in alphabetical order along with the NCP operands.

For the optional operands (●) listed under the 'NTRI' column, if you do not specify the operand, NDF adds the operand and a value appropriate for NTRI to the generation definition.

VTAM Users Only: Appearing at the end of the following list of operands are the VTAM operands that can be coded in this definition statement. The VTAM operands provide information for the VTAM initialization procedure and are not required as input for the NCP generation procedure. See the appropriate *VTAM Installation* manual for descriptions of these operands and for information on the VTAM initialization process. (Depending on what product you are using, see either the *NetView Administration Reference* manual or the *NCCF Installation Manual* for the description of the SPAN operand.)

Operands	NTRI
LOCADDR=n	•
[,BATCH={NO }] {YES}	
[,LUCB=({symbol1,symbol2 {symbol1[,symbol2]...[,symbol9]})]	
[,LUDR={NO }] {YES}	•
[,LUFVT=({symbol1,symbol2 {symbol1[,symbol2]...[,symbol9]})]	
{1}	
[,LUNTFY={2}] {3}	
[,MAXCOLL=nn]	
[,NPACOLL={YES}] {NO }	•
[,NUMSESS=n]	
[,PACING=({{n}[, {m}]})] {1} {1}	
[,UCCB=name]	

VTAM Operands

```
[,DLOGMOD=default logon mode entry]

      {REQD}
[,ENCR={SEL }]          (MVS only)
      {OPT }
      {NONE}

[,FEATUR2=(operand,operand...)]

[,ISTATUS={ACTIVE  }]
      {INACTIVE}

[,LOGAPPL=application program name]

[,LOGTAB=interpret table name]

[,MODETAB=logon mode table name]

[,SPAN=spanname]       (NetView or NCCF only)

      {USSCS }
      {USS3270}
[,SSCPFM={FSS  }]
      {USS3275}
      {USS3780}
      {USSNTO }

[,TERM=type]

[,USSTAB=USS definition table name]

      {0}
[,VPACING={2}]
      {n}
```

Operand Descriptions

symbol

Provides a resource name for the logical unit and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$. (This name must not be specified on the ORDER operand of the SERVICE definition statement.)

LOCADDR=n

(required)

Specifies the local address (in decimal, without leading zeros) of the logical unit. The valid range of addresses for a logical unit associated with a type 1 physical unit is 0-63. The valid range of addresses for a logical unit associated with a type 2 physical unit is 1-255. You must specify the addresses in ascending order. That is, the LU definition statement specifying the lowest address must appear first (following the PU definition statement), and the LU definition statement specifying the highest address must appear last.

For User-Written Channel Code

If this LU definition statement is in a line group that supports user-written channel handling code (CHANLNK = YES in the GROUP definition statement), LOCADDR specifies the subchannel address used by that user-written code. *n* is the hexadecimal subchannel address and must be within the range specified by the HICHAN and LOCHAN operands for the channel adapter position specified in this line's ADDRESS operand.

The subchannel address specified for this LU must not be the same as a subchannel address associated with:

- Any EP line on the channel adapter
- Any other LU on this line
- Any other program facility (for example, Dynamic Dump) using this channel adapter.

You must specify the subchannel addresses in ascending order. That is, the LU definition statement with the lowest subchannel address must appear first (following the PU definition statement), and the LU definition statement with the highest address must be last.

NTRI Users Only: For generation of NTRI physical resources, you can specify *only* LOCADDR=0. If you do not code the LOCADDR operand, NDF adds it to the generation definition.

```
[BATCH={NO }]
        {YES}
```

Specifies the processing priority that the NCP uses for the logical unit. BATCH=NO indicates a high priority (suitable for interactive applications). BATCH=YES indicates a low priority.

```
[LUCB=({symbol1,symbol2          })]           (user-written code only)
        {symbol1[,symbol2]...[,symbol9]}
```

Specifies the names of user-defined control blocks associated with a virtual logical unit. This operand is valid only if you specify VIRTUAL=YES in the GROUP definition statement.

If you specify the NUMSESS operand, you must specify two symbols for the virtual LU control block. *symbol1* is the name of the NAU control block and *symbol2* is the name of the half session control block. If you omit NUMSESS, you can specify one to nine symbols.

The symbols in the LUCB operand are related by position to the symbols in the LUFVT operand. If you specify a symbol in LUCB, you *must* specify a corresponding symbol in the same symbol position in the LUFVT operand.

```
[LUDR={NO }]
      {YES}
```

(dynamic reconfiguration only)

Specifies whether the logical unit can be deleted from the network by using the dynamic reconfiguration function. If you omit this operand, the default assumes the same value as the PUDR operand of the PU definition statement. LUDR = YES is valid only if dynamic reconfiguration is supported. LUDR = NO is not valid if PUDR = YES.

NTRI Users Only: For generation of NTRI resources, you can specify *only* LUDR = NO. If you do not code the LUDR operand, NDF adds LUDR = NO to the generation definition.

```
[LUFVT=({symbol1,symbol2
         {symbol1[,symbol2]...[,symbol9]})]
      ]]
```

(user-written code only)

Specifies the names of the functional vector tables associated with a virtual logical unit. This operand is valid only if you specify VIRTUAL = YES in the GROUP definition statement.

If virtual resources are included in this NCP, *symbol1* is required. That FVT is for the SSCP-LU session. The remaining FVTs are for LU-LU sessions that occur for this resource. The symbols in this operand are related by position to the symbols in the LUCB operand.

If you specified the NUMSESS operand, you must specify two symbols. *symbol1* is then the name of the function vector table for the NAU control block, and *symbol2* is the name of the function vector table for the session control blocks. If you did not specify NUMSESS, you can specify one to nine symbols.

An EXTRN statement for each unique FVT symbol must be included in the user source code that is copied into the tables during assembly. (See the SRCHI and SRCLO operands in the GENEND definition statement in Chapter 6.)

Note: Function vector tables must be preassembled and included in the user object modules. (See the INCHI operand in the GENEND definition statement.)

```
{1}
[LUNTFY={2}]
      {3}
```

(user-written code only)

Specifies use of the notify byte in user-written control blocks and whether control is passed to a user-written notify task. A value of 1 sets and resets the VR blocked bit in the notify byte of the NLB or NLX control block and passes control to the notify task. A value of 2 sets and resets the VR blocked bit and does not pass control to the notify task. A value of 3 sets and resets the VR blocked bit in the VLB and in either the NLB or NLX control blocks and does not pass control to the notify task.

This operand is valid only if you specify VIRTUAL = YES in the GROUP definition statement. If you code VIRTUAL = YES and omit LUNTFY, the default value is 1.

[MAXCOLL=nn]

Specifies the maximum number of resources on which data can be collected at one time by NPA. This operand is valid only for logical units defined within the programmed NPA resource group (NPARSC = YES in the GROUP definition statement). See the *NCP and SSP Resource Definition Guide* for more information.

Note: The range of values for nn is 1 to 5000. However, this operand reserves nn times 104 bytes of storage and uses excessive storage if the value is greater than necessary. This value must be no greater than the number of resources that are eligible for collection in this NCP. The default value is 10 plus the number of lines defined in the NCP.

[NPACOLL={ YES }
{ NO }]

Specifies whether data transmitted and received by this LU is eligible for collection by NPA. you specify NPACOLL = YES in the PU definition statement, or specify VIRTUAL = YES in the GROUP definition statement. The default for this operand is YES. See the *NCP and SSP Resource Definition Guide* for more information.

NTRI Users Only: For generation of NTRI resources, you can specify *only* NPACOLL = NO if NPA = YES is specified on the BUILD definition statement. If you do not code the NPACOLL operand, NPACOLL = NO is added to the GROUP definition statement.

[NUMSESS=n]

(user-written code only)

Specifies the number of half-session control blocks associated with the NAU control block. The valid range for *n* is 1 to 255. If you omit the NUMSESS operand, you can specify one to nine symbols (corresponding to a range of one to nine half-session control blocks) for the LUFVT and LUCB operands.

[PACING={{ {n} [, {m}] }
{ 1 } { 1 }]

Specifies pacing values for the LU you are defining. If the pacing value in the BIND command is non-zero, the non-zero pacing value in the BIND command overrides the value you specify in this operand. If the BIND value is zero, the value you specify in the PACING operand is used.

Note: The only way to avoid a session pacing value is to specify PACING = (0,0) and provide a zero BIND value in the LOGMODE table.

n

Specifies the number of requests the NCP sends to the logical unit before stopping transmission to await a pacing response from that unit. The minimum is 1; the maximum is 255.

m

Specifies in which of the *n* requests the NCP turns on the pacing bit.

The minimum is 1 (that is, the first request). The maximum is the value specified for *n*. If you omit *m*, the NCP turns on the pacing bit in the first request sent.

If you specify PACING=0, the NCP does not pace the data it sends to the logical unit.

The coded PACING value is ignored if the BIND operand contains a non-zero pacing value from the VTAM LOGMODE table.

Note: If the logical unit is associated with a type 1 physical unit (PUTYPE=1), you must specify PACING=(1,1), omit the PACING operand for the default, or ensure that the BIND operand provides a value of 1.

[UCCB=name]

(user-written code only)

Specifies the name of the user channel control block associated with this logical unit when channel operation is handled by user-written code. This operand is required if you specified CHANLNK=YES in the GROUP definition statement for this LU. Ensure that the UCCB name is unique to this LU. The UCCB name, however, is not checked against other LU names.

LUDRPOOL Definition Statement

USAGE: Dynamic reconfiguration or switched SDLC data links only.

For NTRI Users Only: If you are including NTRI resources in this generation definition, you must specify either the LUDRPOOL or LUPOOL definition statement.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the LUDRPOOL definition statement is:

```
[symbol]      LUDRPOOL [operands]
```

Operands

```
[NUMTYP1={Q      }]
           {count}
```

```
[ , NUMTYP2={Q      }]
           {count}
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. The specified symbol appears in the cross reference listing.

```
[NUMTYP1={Q      }]
           {count}
```

Specifies the number of logical units included in the LU pool for type 1 PUs.

For NCP V3: The maximum number of entries is limited by the network resources defined by the MAXSUBA operand of the BUILD definition statement minus the number of resources defined by the LINE, PU, LU, TERMINAL, LUPOOL, and PUDRPOOL definition statements.

For NCP V4: The maximum number of entries is 16 381.

To conserve controller storage, base the count on the anticipated dynamic resource requirements, not the maximum number of resources.

LUDRPOOL

[NUMTYP2={0 }]
 {count}

Specifies the number of logical units included in the LU pool for type 2 PUs. The maximum number of entries is determined the same as for the NUMTYP1 operand.

LUPOOL Definition Statement

USAGE: Code this definition statement for SDLC devices attached to switched data links only. One for each access method that will communicate with type 1 and type 2 physical units over switched SDLC links using the Assign Network Address (ANA) command. Do not code an LUPOOL definition statement for any access method that supports Request Network Address Assignment (RNAA) instead of ANA. (See the description of the LUDRPOOL definition statement.)

For NTRI Users Only: If you are including NTRI resources in this generation definition, you must specify either the LUPOOL or LUDRPOOL definition statement.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the LUPOOL definition statement is:

[symbol] LUPOOL operand

VTAM Users Only: Appearing at the end of the list of the operand below is the VTAM operand that can be coded in this definition statement. This operand provides information only to the VTAM initialization process and is not required in the card deck used as input to the NCP generation procedure. See the appropriate *VTAM Installation* manual for the description of this operand and for information on the VTAM initialization process.

TCAM Users Only: Note that TCAM supports both RNAA and ANA. Also, note that the only TCAM releases that support the LUPOOL definition statement are *TCAM V2R4 or earlier*.

Operands

NUMBER=count

VTAM Operand

[,OWNER=ownername]

LUPOOL

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. A name is required if you define more than one LUPOOL definition statement.

NUMBER=count

(required)

Specifies the number of logical unit control blocks (LUBs) to be included in the LUB pool. The minimum value is 1. *For NCP Version 3:* The maximum value is the total number of resources that can be defined in the NCP (as determined by the value specified in the MAXSUBA operand of the BUILD definition statement) minus the number of resources defined in the LINE, PU, LU, LUDRPOOL, PUDRPOOL, and other LUPOOL definition statements. *For NCP Version 4:* The maximum value is 32 768.

For example, if you specify MAXSUBA = 31, the maximum number of resources controlled by the NCP is 2045. If the total number of resources (equivalent to the total number of definition statements listed previously) is 1000, the maximum value you can specify in the NUMBER operand of all LUPOOL definition statements is 1045 (2045-1000).

To determine the highest value that you should specify in this operand, assume that (1) the NCP is communicating simultaneously with type 1 and type 2 physical units over all of the switched links associated with this access method, and (2) the physical units involved are those having the highest number of logical units. The total number of logical units in all connected physical units represents the greatest possible demand that can be placed on the LUB pool. By specifying this value, you can be sure that the pool is never depleted.

The value of NUMBER can be less, because the previous assumptions represent extreme conditions that seldom, if ever, occur. However, specifying a very low value can result in depletion of the pool. After a physical connection is established, if the NCP is unable to supply sufficient LUBs from the pool, the NCP will break the physical connection before transmission begins. Then the NCP will have to make a new connection and attempt LUB allocation again. Occasional occurrences of this type can be tolerated, but frequent occurrences demonstrate the need to increase the size of the pool.

MTALCST Definition Statement

USAGE: MTA data links only. One definition statement for each line control selection table entry to be defined.

POSITION: All MTALCST definition statements must appear together for an MTALCST group. Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the MTALCST definition statement is:

symbol MTALCST operands[,operands]

Note: In the following chart, most of the operands are valid for the IBM 3705, the IBM 3725, and the IBM 3720. For the operand that is valid only for the IBM 3705, '3705' appears in the 'Controller Type' column. If the operand is valid for all three controllers, no controller type appears in the 'Controller Type' column.

Operands	Controller Type
GROUP=entry,	
SPEED=rate	
[,ACR={ <u>NO</u> }] {YES}	
[,CLOCKNG={ <u>INT</u> }] {EXT}	
{BCD } {BCD2 } {EBCD }	
[,CODE={COR }] {COR2 } {DIC1 } {DIC3 } {ASCII}	
[,COMPARE={chars}] { <u>01</u> }	
[,CRRATE=integer]	
[,DATRATE={ <u>LOW</u> }] {HIGH}	
[,INTPRI={ <u>1</u> }] {count}	3705

Operands	Controller Type
{1050 }	
{2740A}	
[,LCTYPE={2740D}]	
{2740E}	
{2740F}	
{2741 }	
{3767 }	
{TWX }	
[,LINESIZ=integer]	
[,MASK={chars}]	
{31 }	
{m }	
[,RETRIES={2 }]	
{NONE}	
[,TRANSFR=count]	

Operand Descriptions

symbol

Provides a name for the line control selection table entry defined by this definition statement and is required. *symbol* can be any valid assembler-language symbol; the first character cannot be \$.

symbol is referred to by the LCST operand of the MTATABL definition statement.

GROUP=entry

(required)

Specifies the name of the stand-alone GROUP definition statement for any line group whose terminal characteristics are the same as the characteristics of the terminal that calls the controller over the multiple-terminal-access line. *entry* must not be the name of a GROUP definition statement that represents a group of multiple-terminal-access lines.

SPEED=rate

(required for the 3705)

Note: For a description of the SPEED operand for NCP Version 3 for the IBM 3725 or NCP Version 4, refer to the description of the SPEED operand in the list of optional operands on page 2-209.

For the IBM 3705:

Specifies the data rate (in bits per second) for the multiple-terminal-access lines associated with the entry you are specifying.

If internal clocking is used (CLOCKNG=INT), this rate must be one of the four oscillator rates specified for the communication scanner to which the lines are attached (see the SPEED operand of the CSB definition statement). Specify the line speed in bits per second, omitting any fractional part. For example, specify a line speed of 110 bps as SPEED=110; specify a line speed of 134.5 bps as SPEED=134 (omitting the decimal point and fraction).

If external clocking is used (CLOCKNG=EXT), this rate must be the clocking rate of the modem attached to the line (not necessarily one of the oscillator bit rates specified for the scanner). However, the SPEED operand of the CSB definition statement for the scanner must specify a scanner bit rate *less than one-half* of the modem clocking rate you specify in this SPEED operand.

[ACR={NO }]
 {YES}

(IBM 1050 only)

Specifies whether the IBM 1050 Data Communication System terminals that can call the controller on this line are equipped with the Accelerated Carrier Return feature. Specify ACR=YES only if all 1050 terminals that can call the controller over this line are equipped with the feature.

[CLOCKNG={INT}]
 {EXT}

Specifies whether the communication scanner or the modem (data set) provides clocking. The system designer can provide you with this information.

If the scanner provides clocking, code CLOCKNG=INT. If the modem provides clocking, code CLOCKNG=EXT.

{BCD }
 {BCD2 }
 {EBCD }
 [CODE={COR }]
 {COR2 }
 {DIC1 }
 {DIC3 }
 {ASCII}

Specifies the transmission code used to communicate with the type of terminal represented by this definition statement. Associated with each transmission code is a translation table in the NCP. The contents of the translation tables are defined in the *NCP and EP Reference Summary and Data Areas*.

Valid transmission codes for each type of terminal are as follows. (If you omit this operand, the underscored values indicate the code assumed for the type of terminal.)

MTALCST

Terminal	CODE =	Transmission Code
IBM 1050	<i>EBCD</i> BCD BCD2	Extended BCD code BCD code 1 BCD code 2
IBM 2740	<i>EBCD</i> BCD COR	Correspondence code 1
IBM 2741	<i>COR</i> COR2 BCD BCD2 EBCD	Correspondence Code 2
TWX	<i>DIC1</i> DIC3 ASCII	Data interchange code 1 Data interchange code 3 American Standard Code for Information Interchange

[COMPARE={chars}]
 {01 }

(TWX terminals only)

Specifies the hexadecimal representation of the compare character used during the line control selection table (LCST) entry selection process. The mask character specified by the MASK operand is logically ANDed with the first character received from the terminal. If the result equals the compare character specified by this COMPARE operand, the contents of the LCST entry defined by this MTALCST definition statement are used to initialize the operating characteristics for the TWX terminal.

chars should be specified as 2 hexadecimal digits.

The following table contains recommended pairs of values for the COMPARE and MASK operands.

TWX Terminal Speed	First Received Character	COMPARE =	MASK =
110 baud	@ ¹	00	7F
	N	1E	7F
	0	60	7F
	^ 1	3E	7F
300 baud	@ ¹	78	7B
	N	79	7B
	0 ¹	7A	7B
	↑ ^{2 3}	7B	7B

If you do not specify a value for the COMPARE operand, the default value is a value of 01. This value, along with the default value for the MASK operand, properly identifies the WRU character transmitted at 110 baud.

- ¹ The letter P is used for emulation mode speed selection and may be desired for compatibility reasons. If the letter P is used for 110 baud, specify COMPARE = 00, MASK = 5F, and do not use the characters @ and 0.
- ² ASCII X'5E' character. This character is represented on terminal keyboards as either ^, ¬, or ↑.
- ³ This character should not be used if a 3767 can call on the same line as a TWX terminal, because NCP cannot distinguish between this character and the initial end-of-address (circle D) character automatically sent by the 3767.

[CRRATE=integer]

Specifies the number of print positions that a carriage printer returns for each idle character the NCP sends. The minimum is 1; the maximum is 255.

If you omit this operand, the default is a rate of 40 print positions per idle character for TWX terminals; 13 for IBM 1050 terminals equipped with the Accelerated Carrier Return (ACR) feature; and 10 for IBM 2740 and 2741 terminals and for 1050 terminals without the ACR feature.

[DATRATE={LOW }]
{HIGH}]

Specifies the data rate used on the modem (data set) that attaches the multiple-terminal-access line to the controller. This operand is valid only if the modem has a dual data rate.

Code DATRATE = HIGH if the high data rate is used. Code DATRATE = LOW (or omit the operand) if the low data rate is used.

Note: DATRATE = HIGH is not valid for modems attached to line sets 1A, 1B, 1C, 2A, 3A, 4A, 4B, and 4C and, if specified, can cause a feedback-check error condition.

If the modem has only one data rate, specify DATRATE = LOW or omit the operand.

MTALCST

[INTPRI={1 }]
 {count}

(3705 only)

Specify this operand only if you are defining an NCP for the IBM 3705.

Specifies the interrupt priority for the multiple-terminal-access (MTA) lines used for communicating with the terminals represented by this entry. Priority 3 is the highest and 0 is the lowest. This operand is valid only if the scanner to which the lines are attached is a type 1 scanner (TYPE=TYPE1 in the CSB definition statement representing the scanner). For a type 2 scanner, the interrupt priority is specified in the LINE definition statement for the MTA line.

 {1050 }
 {2740A}
[LCTYPE={2740D}]
 {2740E}
 {2740F}
 {2741 }
 {3767 }
 {TWX }

Specifies the type of terminal and line control used.

<i>Entry</i>	<i>Type</i>
1050	IBM 1050
2740A	IBM 2740 basic
2740D	IBM 2740 with Transmit Control feature
2740E	IBM 2740 with Transmit Control and Record Checking features
2740F	IBM 2740 with Record Checking feature
2741	IBM 2741
3767	IBM 3767 in 2741 compatibility mode
TWX	Western Union TWX

[LINESIZ=integer]

Specifies the length of the print line, in number of print positions, for printer-type devices connected to the line represented by this MTALCST definition statement. The minimum value for *integer* is 1; the maximum is 255.

If you omit this operand, the default is a line length of 72 print positions for TWX terminals. The default is a line length of 130 for 1050, 2740, and 2741 terminals.

[MASK={chars}]
 {31 }

(TWX terminals only)

Specifies the hexadecimal representation of the mask character used during the LCST entry selection process. The mask character is logically ANDed with the first character received from the terminal. If the result equals the compare character specified by the COMPARE operand, the contents of the

LCST entry are used to initialize the operating characteristics for the TWX terminal.

chars should be specified as 2 hexadecimal digits. The mask character must never have a binary 0 specified in the same bit position that the compare character has a binary 1 specified. Refer to the COMPARE operand description for a table of recommended mask and compare character pairs.

If you do not specify a value for the MASK operand, the default is a value of 31. This value, along with the default value for the COMPARE operand, properly identifies the WRU character transmitted at 110 bps.

```
[RETRIES={m }
          {2 } ]
          {NONE}
```

Specifies the number of attempts to recover from text errors in message data sent to or received from an IBM 1050 terminal or an IBM 2740 terminal with record checking. (Other types of multiple-terminal-access terminals cannot retransmit to recover.) *m* is the number of attempts, from 1 to 255. Any value less than 255 specifies the exact number of attempts; 255 specifies unlimited attempts.

If you code RETRIES = NONE, no error recovery is attempted for read-text or write-text errors.

If you omit the operand, a maximum of two recovery attempts is made for terminals that can retransmit. If the terminal cannot retransmit, NONE is assumed and no recovery is attempted.

```
[SPEED=rate]
```

(optional for the 3725 and 3720)

Note: For a description of this operand for NCP Version 3 for the IBM 3705, refer to its description in the list of required operands on page 2-202.

For the IBM 3725 or 3720:

Specifies the data rate (in bits per second) for the multiple-terminal-access lines associated with the entry you are specifying.

If internal clocking is used (CLOCKNG = INT), this operand is *required*, and the rate must be either 134 or 300.

If external clocking is used (CLOCKNG = EXT), this operand is ignored. However, it is recommended that you code this operand for documentation purposes.

```
[TRANSFR=count]
```

Specifies a limit on the number of buffers that the NCP obtains to receive message text from a terminal before transferring filled buffers to the host processor. If the NCP receives the specified number of buffers, it transfers them to the host processor as a sub-block. However, the NCP continues to

receive message text from the terminal until it receives an end-of-block or end-of-transmission character.

The minimum value of *count* is 1. The maximum is the smaller of the following values:

- 255
- The result of multiplying the values of the MAXBFRU and UNITSZ operands of the HOST definition statement, subtracting the value of the BFRPAD operand of the HOST definition statement, and dividing the result by the buffer size specified in the BFRS operand of the BUILD definition statement.

This calculation of *count* can be expressed as the formula:

$$\text{count} \leq \frac{(\text{MAXBFRU}) (\text{UNITSZ}) - \text{BFRPAD}}{\text{BFRS}}$$

If you omit this operand, the NCP uses the smaller of 255 or the result of the calculation expressed by the preceding formula.

MTALIST Definition Statement

USAGE: MTA data links only. One definition statement for each list of line control types for MTA data links.

POSITION: Must follow group of MTALCST definition statements for switched data link or links. Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the MTALIST definition statement is:

symbol MTALIST operand

Operands

LCTYPE=(type,...)

Operand Description

symbol

Provides the required name of the multiple-terminal-access list referred to by the MTALIST operand of the LINE definition statement. *symbol* can be any valid assembler-language symbol; the first character cannot be \$.

LCTYPE=(type,...)

(required)

Specifies the terminal types included in a list of terminal identification procedures. The MTALIST operands of one or more LINE definition statements for MTA lines can refer to this list.

Specify any of the following types, singly or in combination:

LCTYPE =	Type of Terminal
1050	IBM 1050
2740A	IBM 2740 (basic)
2740D	IBM 2740 with Transmit Control feature
2740E	IBM 2740 with Transmit Control and Record Checking features
2740F	IBM 2740 with Record Checking feature
2741	IBM 2741
3767	IBM 3767 in 2741 compatibility mode
TWX	Western Union TWX

MTAPOLL Definition Statement

USAGE: MTA data links only. One definition statement for all IBM 1050 terminals that can dial the controller over any MTA link.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the MTAPOLL definition statement is:

[symbol] MTAPOLL operand

Operands

POLL=(chars,...)

Operand Description

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

POLL=(chars,...)

(required)

Specifies the list of polling characters. Code the hexadecimal representation of the EBCDIC polling characters.

For example, if the network includes four IBM 1050 terminals, each having a keyboard and tape reader as input devices and the polling characters for the eight devices are A5, A6, B5, B6, C5, C6, D5, D6, code
POLL=(C1F5,C1F6,C2F5,C2F6,C3F5,C3F6,C4F5,C4F6). Each of the eight hexadecimal sequences represents one of the EBCDIC polling sequences.

MTATABL Definition Statement

USAGE: MTA data links only. One definition statement for each unique combination of line control types and transmission codes for MTA links.

POSITION: Must precede first GROUP definition statement.

After a call is established on a multiple-terminal-access (MTA) line and the NCP has identified the terminal type, the terminal operator can select a unique combination of terminal operating characteristics from the MTA table. The table is composed of names of 1 to 10 MTALCST definition statements, each of which specifies a unique combination of terminal operating characteristics. However, the table can contain only names of MTALCST definition statements that have the same line control and code combination as specified on the MTATABL definition statement.

For IBM terminals, selection of the appropriate combination of terminal operating characteristics is determined from the repeated character entered by the terminal operator during the terminal sign-on. For TWX terminals, selection is based upon the results of applying mask and compare characters to the first character entered by the TWX terminal operator. The mask and compare characters used are those specified for MTALCST definition statements named by the LCST operand and their order of use is determined by the order that the MTALCST definition statements are named.

For example, if you coded a single MTALCST definition statement representing a 2741 using BCD code:

```
MTA1 MTALCST LCTYPE=2741, CODE=BCD, . . .
```

you code one MTATABL definition statement that specifies the same line control and code:

```
MTATABL LCST=(MTA1), LCTYPE=2741, CODE=BCD
```

If, on the other hand, you coded two MTALCST definition statements, both representing a 2741 using BCD code but each defining a different set of operating parameters:

```
MTA1 MTALCST LCTYPE=2741, CODE=BCD, LINESIZ=72, . . .
MTA2 MTALCST LCTYPE=2741, CODE=BCD, LINESIZ=90, . . .
```

you code an MTATABL definition statement that specifies the same line control and transmission code and that names both MTALCST definition statements:

```
MTATABL LCST=(MTA1, MTA2), LCTYPE=2741, CODE=BCD
```

Code only one MTATABL definition statement for a given combination of line control type and transmission code. In one MTATABL definition

MTATABL

statement you can specify the names of up to ten MTALCST definition statements.

See the *NCP and SSP Resource Definition Guide* for an example of how this and other MTA definition statements are used to establish multiple-terminal-access operations.

FORMAT AND OPERANDS: The format of the MTATABL definition statement is:

```
[symbol]      MTATABL operand[,operands]
```

Operands

```
LCST=(mtalcst name,...)
```

```
      {BCD }
[,CODE={EBCD}]
      {COR }

      {1050 }
      {2740A}
      {2740D}
[,LCTYPE={2740E}]
      {2740F}
      {2741 }
      {3767 }
      {TWX }
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

LCST=(mtalcst name,...)

(required)

Specifies the name of one to ten MTALCST definition statements.

Name only those MTALCST definition statements that have the same combination of code and line control as this MTATABL definition statement. This restriction does not apply for TWX line control. You can name any MTALCST definition statement with LCTYPE = TWX specified here regardless of whether its CODE operand is specified as CODE = DIC1, CODE = DIC3, or CODE = ASCII.

Consider COR2 equivalent to COR, and BCD2 equivalent to BCD for purposes of this operand specification. For example, suppose that you specified two MTALCST definition statements with LCTYPE = 2741, but one with CODE = COR and the other with CODE = COR2. If you specify LCTYPE = 2741 and CODE = COR for this MTATABL definition statement, you can name both MTALCST definition statements on this operand.

```
{BCD }
[CODE={EBCD}]
{COR }
```

Specifies the transmission code used by the type of terminals represented in this table. Specify the same type of code you specified in the MTALCST definition statement named in the LCST operand of this definition statement.

Do not specify this operand if LCTYPE = TWX is specified.

This operand defaults according to the LCTYPE specification (or LCTYPE default) as follows:

LCTYPE =	CODE DEFAULT
1050	EBCD
2740	EBCD
2741	COR
3767	COR

```
{1050 }
{2740A}
{2740D}
[LCTYPE={2740E}]
{2740F}
{2741 }
{3767 }
{TWX }
```

Specifies the type of line control used by the terminals represented in this table. Specify the same line control type you specified in the MTALCST definition statements named in the LCST operand of this MTATABL definition statement.



NCPNAU Definition Statement

USAGE: User-written code only. One for each user-defined network addressable unit.

POSITION: Must follow SYSCNTRL definition statement.

FORMAT AND OPERANDS: The format of the NCPNAU definition statement is:

```
symbol      NCPNAU operands[,operands]
```

Operands

```
NAUFVT=(symbol1[,symbol2]...[,symbol9])
[,NAUCB=(symbol1[,symbol2]...[,symbol9])]
[,NOTIFY={1}]
          {2}
[,NUMSESS=n]
[,TYPE={SSCP }
        {NCPLU}]
[,VIROWNER=name]
```

Operand Descriptions

symbol

Specifies the resource name for the network addressable unit. *symbol* can be any valid assembler-language symbol, but it cannot begin with a \$ as the first character. A symbol is required on all NCPNAU definition statements.

```
NAUFVT=(symbol1[,symbol2]...[,symbol9]) (required)
```

Specifies the names of the functional vector tables (FVTs) associated with this network addressable unit. If you specified the NUMSESS operand, you *must* use two symbols here. The first symbol is the name of the function vector table for this NAU. The second symbol is the name of the function vector table extension. If you have not specified the NUMSESS operand, you can specify from one to nine symbols. At least one functional vector table is required. The symbols in this operand are related by position to the symbols in the NAUCB operand.

An EXTRN statement for each unique FVT symbol must be included in the user source code that is copied into the tables during assembly. (See the SRCHI and SRCLO operands in the GENEND definition statement.)

Note: Functional vector tables must be preassembled and included in the user object modules. (See the INCHI and INCLO operands in the GENEND definition statement.)

[NAUCB=(symbol1[,symbol2]...[,symbol9])]

Specifies the names of user-defined control blocks associated with this network addressable unit. The symbols in the NAUCB operand are related by position to the symbols in the NAUFVT operand. If you specify a symbol in NAUCB, you *must* specify a corresponding symbol in the same symbol position in the NAUFVT operand. If you specified the NUMSESS operand, you must use two symbols. If you omitted the NUMSESS operand, you can specify from one to nine symbols.

[NOTIFY={1}]
{2}

Specifies use of the notify byte in user-written control blocks and whether control is passed to a user-written notify task. 1 sets and resets the VR blocked bit in the notify byte of the NLB or NLX control block and passes control to the notify task. 2 sets and resets the VR blocked bit but does not pass control to the notify task.

The default for this operand is 1.

[NUMSESS=n]

Specifies the number of half-session control blocks associated with the resource being defined. If you specify the NUMSESS operand, you *must* specify two symbols for the NAUFVT and NAUCB operands. The valid range for *n* is 1 to 255.

[TYPE={SSCP }]
{NCPLU}

Specifies whether the network addressable unit functions as a system services control point or as an NCP logical unit. If you omit this operand, the generation procedure assumes SSCP.

[VIROWNER=name]

(For NCP V4R2 only)

Specify this operand only if you are defining an NCP V4R2.

Specifies the name of the user-written generation load module that owns this NCPNAU definition statement. The name can be 3 to 8 characters long. The name must match one of the user-written generation load module names specified on the USERGEN operand of the OPTIONS definition statement. The user-written generation load module must have indicated in the start record of its statement/keyword vector table (SKVT) that it is valid for VIROWNER.

NETWORK Definition Statement

Note: The NETWORK definition statement is not valid for the NCP V4 Subset.

USAGE: SNA network interconnection users only. One for each network, other than the native network, that the gateway NCP joins.

POSITION: Must follow device definition statements (CLUSTER, TERMINAL, COMP, PU, and LU) for native resources attached to the gateway NCP.

Each NETWORK definition statement is followed by GWNAU definition statements defining cross-network resources and by PATH definition statements defining paths in this network. No boundary function (BF) resources can be defined under a NETWORK definition statement. They must be defined in the native NCP, under the BUILD definition statement.

FORMAT AND OPERANDS: The format of the NETWORK definition statement is:

symbol NETWORK [operands]

VTAM Users Only: Appearing at the end of the following list of operands is the VTAM operand that can be coded in this definition statement. This provides information only for the VTAM initialization process and is not required in the card deck used as input for the NCP generation procedure. See the appropriate *VTAM Installation* manual for a description of this operand and for information on the VTAM initialization process.

Operands

MAXSUBA=n,

NETID=name,

SUBAREA=n

[,ACTPU={YES}]
 {NO }

[,NETLIM=n]

[,NUMHSAS=n]

[,SESSLIM={255}]
 {n }

NETWORK

VTAM Operand

[, COSTAB=name]

Operand Descriptions

symbol

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

MAXSUBA=n

(required for NCP V3)
(not valid for NCP V4 Subset)

Note: Although the MAXSUBA operand is not required for generating an NCP V4, it must be coded if the network you are defining is to communicate with a network not capable of extended network addressing.

Specifies the upper limit of the range of subarea addresses used within the network you are defining. MAXSUBA is used to determine the partitioning of the 16-bit network address into subarea address and element address fields. This operand has the same specification as the MAXSUBA operand of the BUILD definition statement. The value can be different for each network.

NETID=name

(required)
(not valid for NCP V4 Subset)

Specifies the name of the non-native network being defined by this NETWORK definition statement. *name* is used in communications between the gateway SSCP and the gateway NCP to address a specific adjacent network represented in the gateway NCP. The maximum length of *name* is 8 characters.

For proper operation of the gateway NCP, every network in an interconnected network must use the same name to refer to a given network. Although this name is required for proper operation, system generation cannot enforce it.

SUBAREA=n

(required)
(not valid for NCP V4 Subset)

Specifies the subarea address of the gateway NCP as it is known in the non-native network you are defining. The gateway NCP's subarea address as it is known in the native network is specified in the SUBAREA operand of the BUILD definition statement. The gateway NCP can be known by the same subarea address in each network that it joins. However, its address in one particular network must be a unique address in that network.

[ACTPU={YES}]
{NO }

(not valid for NCP V4 Subset)

Specifies whether access methods in the non-native network you are defining can activate the gateway NCP. That is, the gateway NCP accepts ACTPUs from SSCPs in this non-native NETWORK. If you omit the operand, YES is the default.

[NETLIM=n]

(not valid for NCP V4 Subset)

Specifies the total number of half-session control blocks (HSCBs) that can be assigned at any given time to all addresses in the non-native network you are defining. This limit is used to prevent a single network from using all the HSCBs in the HSCB pool.

The range for *n* is from 0 to 5000. The default value is 5000 unless you specified SESSLIM as 0 in which case NETLIM defaults to 0. If SESSLIM is 0, no HSCBs can be drawn from the HSCB pool, so *n* also must be specified as 0. The limit defined by NETLIM includes HSCBs from the pool that are assigned to predefined resources and resources not predefined.

Note: If you specified a value in the NUMSESS operand of the GWNAU definition statement less than the value you specify in the SESSLIM operand of the NETWORK definition statement, the gateway NCP allocates additional control blocks from the pool to the SSCP or LU until the number of control blocks taken from the pool reaches the value you specify in the NETLIM or the SESSLIM operand, whichever value is lower. Remember that the NUMSESS operand of the GWNAU definition statement defines a permanent assignment for a specific SSCP or LU and that the SESSLIM operand of this definition statement defines a pool of control blocks to be dynamically assigned.

If you specified a value in the NUMSESS operand of the GWNAU definition statement greater than or equal to the value you specified in the SESSLIM operand of the NETWORK definition statement, the gateway NCP allocates the requested number of control blocks, but does not allocate additional control blocks from the pool, even if needed.

[NUMHSAS=n]

(not valid for NCP V4 Subset)

Specifies the number of subareas in the non-native network you are defining that can communicate with the gateway NCP. The value you specify in this operand should equal the number of subareas in the non-native network you are defining that have virtual routes ending in the gateway NCP. NUMHSAS has the same specification as the NUMHSAS operand of the BUILD definition statement, where the value of MAXSUBA is obtained from the NETWORK definition statement. The minimum value for the NUMHSAS operand is 1 and the maximum is 255. The default is the value of MAXSUBA divided by 2.

NETWORK

[SESSLIM={255}]
 {n }

(not valid for NCP V4 Subset)

Specifies the maximum number of half-session control blocks (HSCB) that can be assigned to any address in the non-native network you are defining. Recall that although the address resides in the non-native network, the SSCP or LU that it represents resides in another network. The value for SESSLIM can range from 0 to 255. The default value is 255.

Note: In some cases, SESSLIM also specifies the maximum number of sessions in which a predefined resource can participate. See the NETLIM operand for further explanation.

OPTIONS Definition Statement

USAGE: Used to include or exclude one of the following options: (1) verifying generation definition without table building for increased speed, (2) printing a variety of NDF trace information, (3) loading a user-written generation load module that uses the NDF standard attachment facility, or (4) creating a new generation definition.

POSITION: Any position in the definition statement stream, unless you specify the USERGEN operand or the NEWDEFN operand. If you specify NEWDEFN or USERGEN, the OPTIONS definition statement must be first in the generation input job stream.

FORMAT AND OPERANDS: The format of the OPTIONS definition statement is:

```
[symbol]    OPTIONS  [operands]
```

Operands

[FASTRUN=ON]

[,NEWDEFN={YES}]
 {NO }

[,TRDATA=([subcomponent, ...] [,LEX] [,PARSE] [,DISPATCH] [,LINKEDIT])]

[,NOTRDATA=([subcomponent, ...] [,LEX] [,PARSE] [,DISPATCH] [,LINKEDIT])]

[,TRPARAM=([subcomponent, ...] [,SK])]

[,NOTRPARAM=([subcomponent, ...] [,SK])]

[,TRPROC=([subcomponent, ...] [,SK])]

[,NOTRPROC=([subcomponent, ...] [,SK])]

[,TRSAP=([KVT] [,SYMBOLS] [,DATABASE])]

[,USERGEN=(name, ...)]

OPTIONS

Operand Descriptions

The following is a list of the NDF subcomponents that you can specify for the following operands: TRDATA, NOTRDATA, TRPARM, NOTRPARM, TRPROC, NOTRPROC.

- * ICNCR - Cross Reference
- * ICNCV - Consistency and Validity Checking
- * ICNER - Error Processor
- ICNIO - Input/Output
- ICNIP - Input Processor
- ICNLE - Link Edit
- ICNMN - Main Processor
- ICNOB - Object Generation
- ICNOT - Options Processor
- * ICNRP - Report Generation
- * ICNSM - String Manipulation
- ICNST - Storage Manager
- * ICNSY - Symbol Table
- * ICNTC - Type Conversion
- * ICNUS - User Generation Utilities
- ICNUT - Operating System Utilities

Notes:

1. The asterisk (*) indicates that the subcomponent is not valid for TRDATA or NOTRDATA.
2. Other NDF modules, not falling under the categories above, are statement keyword routines specified by SK.

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

[FASTRUN=ON]

Specifies that you want the generation procedure to validate the syntax of the input generation definition but bypass the emission of table and link-edit source. If you specify FASTRUN=ON, NDF checks only the validity and the syntax of the definition statements.

To use the FASTRUN option, use job control language (JCL) or EXECs that call only the NCP/EP Definition Facility (NDF). See the *NCP and SSP Generation and Loading Guide* for examples of the JCL or EXECs.

[NEWDEFN={YES }
{NO }]

(For NCP V4R2 only)

Specifies whether you want NDF to create a new generation definition consisting of the NCP generation definition and the definition statements and operands passed from NTRI or the generation load modules specified on the USERGEN operand.

If you specify the NEWDEFN operand, the OPTIONS definition statement must be first in the generation input job stream.

If you omit the NEWDEFN operand a new generation definition is not created.

For NTRI Users: You must code NEWDEFN = YES.

[TRDATA=([subcomponent, ...] [,LEX] [,PARSE] [,DISPATCH] [,LINKEDIT])]

Specifies the subcomponent or data areas for which the data trace is activated. Specify this operand if your IBM support representative instructs you to run a data trace for diagnostic purposes.

(subcomponent, ...)

Specifies the name of each subcomponent for which the data trace is activated. For example, if you specify TRDATA=(ICNIO,ICNOB), the data trace is activated for all of the modules in the IO subcomponent and all of the modules in the OB subcomponent. A list of the valid subcomponents is provided at the beginning of the OPTIONS definition statement after 'Operand Descriptions'.

LEX

Specifies that you want NDF to print each lexical token, length and type as soon as it is known.

PARSE

Specifies that you want NDF to print the parsed representation of each statement as soon as it is known.

DISPATCH

Specifies that you want NDF to print an identifying message for each routine in the keyword vector table (KVT) that is called.

LINKEDIT

Specifies that you want NDF to trace the generation of the linkage editor control cards.

[NOTRDATA=([subcomponent, ...] [,LEX] [,PARSE] [,DISPATCH] [,LINKEDIT])]

Specifies the subcomponent or data areas for which the data trace is deactivated. Specify this operand if your IBM support representative instructs you to run a data trace for diagnostic purposes.

(subcomponent, ...)

Specifies the name of each subcomponent for which the data trace is deactivated. For example, if you specify NOTRDATA=(ICNIO,ICNOB), the data trace is deactivated for all of the modules in the IO subcomponent and all of the modules in the OB subcomponent. A list of the valid subcomponents is provided at the

OPTIONS

beginning of the OPTIONS definition statement after 'Operand Descriptions'.

LEX

Specifies that you do not want NDF to print each lexical token, length and type as soon as it is known.

PARSE

Specifies that you do not want NDF to print the parsed representation of each statement as soon as it is known.

DISPATCH

Specifies that you do not want NDF to print an identifying message for each routine in the keyword vector table (KVT) that is called.

LINKEDIT

Specifies that you do not want NDF to trace the generation of the linkage editor control cards.

[TRPARAM=([subcomponent, ...] [,SK])]

Specifies the subcomponent or statement keyword routines for which the input and output parameter trace is activated. Specify this operand if your IBM support representative instructs you to run a parameter trace for diagnostic purposes.

(subcomponent, ...)

Specifies the name of each subcomponent for which the input and output parameter trace is activated. For example, if you specify TRPARAM=(ICNSM,ICNSY), the input and output trace is activated for all modules in the SM subcomponent and for all modules in the SY subcomponent. A list of the valid subcomponents is provided at the beginning of the OPTIONS definition statement after 'Operand Descriptions'.

SK

Specifies that you want NDF to trace input and output parameters for the statement keyword routines.

[NOTRPARAM=([subcomponent, ...] [,SK])]

Specifies the subcomponent or statement keyword routines for which the input and output parameter trace is deactivated. Specify this operand if your IBM support representative instructs you to run a parameter trace for diagnostic purposes.

(subcomponent, ...)

Specifies the name of each subcomponent for which the input and output parameter trace is deactivated. For example, if you specify

NOTRPARM=(ICNSM,ICNSY), the input and output trace is deactivated for all modules in the SM subcomponent and for all modules in the SY subcomponent. A list of the valid subcomponents is provided at the beginning of the OPTIONS definition statement after 'Operand Descriptions'.

SK

Specifies that you do not want NDF to trace input and output parameters for the statement keyword routines.

[TRPROC=([subcomponent , ...] [,SK])]

Specifies the subcomponent or statement keyword routines for which the procedure entry and exit trace is activated. Specify this operand if your IBM support representative instructs you to a procedure trace for diagnostic purposes.

(subcomponent , ...)

Specifies the name of each subcomponent for which the entry and exit trace is activated. For example, if you specify TRPROC=(ICNSM,ICNSY), the entry and exit trace is activated for all modules in the SM subcomponent and for all modules in the SY subcomponent. A list of the valid subcomponents is provided at the beginning of the OPTIONS definition statement after 'Operand Descriptions'.

SK

Specifies that you want NDF to trace procedure entry and exit for the statement keyword routines.

[NOTRPROC=([subcomponent , ...] [,SK])]

Specifies the subcomponent or statement keyword routines for which the procedure entry and exit trace is deactivated. Specify this operand if your IBM support representative instructs you to a procedure trace for diagnostic purposes.

(subcomponent , ...)

Specifies the name of each subcomponent for which the entry and exit trace is deactivated. For example, if you specify NOTRPROC=(ICNSM,ICNSY), the entry and exit trace is deactivated for all modules in the SM subcomponent and for all modules in the SY subcomponent. A list of the valid subcomponents is provided at the beginning of the OPTIONS definition statement after 'Operand Descriptions'.

SK

Specifies that you do not want NDF to trace procedure entry and exit for the statement keyword routines.

OPTIONS

[TRSNAP=([KVT] [,SYMBOLS] [,DATABASE])]

Specifies that you want NDF to print the major data structure specified.

KVT

Specifies that you want NDF to print all keyword vector tables (KVT) in a readable format.

SYMBOLS

Specifies that you want NDF to print the Symbol Table in a readable format.

DATABASE

Specifies that you want NDF to print the Storage Manager control structures and data sets in a readable format.

[USERGEN=(name, . . .)]

(For NCP V4R2 only)

Specify this operand only if you are defining an NCP V4R2.

Specifies the names of the user-written generation load modules which use the NDF standard attachment facility. Each user-written generation application must have a separate generation load module to process its statements and keywords and to generate table source statements. You can specify a maximum of 25 user-written generation load modules in a single generation. The module name must be from 3 to 8 characters long. The first 3 characters of each user-written generation load module name must be unique and cannot be 'ECL' or 'ICN.'

If you specify the USERGEN operand, the OPTIONS definition statement must be first in the generation input job stream.

Note: The start record in the statement/keyword validation table (SKVT) of each generation load module indicates to NDF if the load module name will be valid on the VIROWNER or LNKOWNER operands. See the NCP Customization manual for more information on user-written generation applications.

PATH Definition Statement

USAGE: Required. One for each destination subarea that NCP routes data to within a particular network. If you are defining a gateway NCP, these destination subareas include subareas in the native network and in the other networks that the NCP joins.

POSITION: Must precede first GROUP definition statement. If defining a gateway NCP, and when defining routes to destination subareas in the native network, must follow GWNAU definition statements defining cross-network session specifications for resources in another network that can participate in sessions with resources in the native network. When defining routes to destination subareas in a network other than the native network, this definition statement must follow GWNAU definition statements defining cross-network session specifications for resources in the native network that can participate in sessions with resources in the other network.

FORMAT AND OPERANDS: The format of the PATH definition statement is:

[symbol] PATH operand[,operands]

PATH

Operands

```
DESTSA=(sa1[,sa2][,sa3]....)

[,ER0=(adjsa,[[tgn]],[[lothresh]],[[medthresh]],[[hithresh]],[[totthresh]])]
           {1 }   {5000 }   {5000 }   {5000 }   {20000 }
.
.
.
[,ER7=(adjsa,[[tgn]],[[lothresh]],[[medthresh]],[[hithresh]],[[totthresh]])]
           {1 }   {5000 }   {5000 }   {5000 }   {20000 }

[,VR0=ern]

[,VRPWS00=( [min] [,max] )]

[,VRPWS01=( [min] [,max] )]

[,VRPWS02=( [min] [,max] )]

[,VR1=ern]

[,VRPWS10=( [min] [,max] )]

[,VRPWS11=( [min] [,max] )]

[,VRPWS12=( [min] [,max] )]

[,VR2=ern]
.
.
.

[,VR7=ern]

[,VRPWS70=( [min] [,max] )]

[,VRPWS71=( [min] [,max] )]

[,VRPWS72=( [min] [,max] )]
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

DESTSA=(sa1[,sa2][,sa3]....)

(required)

Specifies the subarea address of one or more destination subareas, which also can be adjacent subareas, to which this NCP routes PIUs using *all* of the explicit routes defined in this definition statement. The value you specify must be numeric. All subareas specified in this operand must have

identical ER0 through ER7 operand specifications. Any subarea specified in this operand must not appear in any other DESTSA operand within this network.

If you are defining a gateway NCP, you cannot specify more than one destination subarea that is an endpoint of a virtual route that this NCP can activate.

At least one subarea address is required. The lowest allowable address is 1. The highest is 255.

Note: Although you can specify more than one subarea address, it is recommended that you specify only one subarea address with the DESTSA operand and that you code one PATH definition statement for each destination subarea.

```
[ER0=(adjsa, [{tgn}], [{lothresh}], [{medthresh}], [{hithresh}], [{totthresh}])]
      {1 } {5000 } {5000 } {5000 } {20000 }
```

Specifies the adjacent subarea and the transmission group number that is used for explicit route 0. Also permits the specifications of the flow-control thresholds associated with a transmission group. *adjsa* is the address of an adjacent subarea (host or NCP) to receive PIUs on this explicit route bound for one of the destination subareas defined in the DESTSA operand. A subarea can be both a destination subarea and an adjacent subarea. The lowest subarea address that you can specify is 1; the highest address is 255.

tgn is the transmission group number that is used to identify the transmission group for this explicit route. With the exception of a channel connection, the transmission group number is an arbitrary number that you assign to a transmission group for identification. The value of *tgn* can be from 1 through 255. If the *adjsa* parameter of this operand specifies a host subarea, the *tgn* must be 1. If you omit the *tgn* parameter, the default value is 1.

Also use the value chosen for the *tgn* parameter for an explicit route in the adjacent subarea that communicates with this subarea. The same transmission group can be used for any or all of the remaining explicit routes, depending on the network configuration. *lothresh*, *medthresh*, *hithresh*, and *totthresh* are used to specify the transmission group flow-control thresholds. The default values are 5000, 5000, 5000, and 20000, respectively. You can specify these thresholds only on the first occurrence of a given *adjsa-tgn* pair because the first occurrence defines the transmission group. If the thresholds are defined on a subsequent *adjsa-tgn* pair, a warning message is issued and the thresholds are ignored.

Note: ER0 must be used for all explicit routes that connect this NCP with a Release 2.0 or 2.1 NCP in an adjacent subarea.

PATH

```
[ER1=(adjsa, [{tgn}], [{lothresh}], [{medthresh}], [{hithresh}], [{totthresh}])]
      {1 } {5000 } {5000 } {5000 } {20000 }
```

through

```
[ER7=(adjsa, [{tgn}], [{lothresh}], [{medthresh}], [{hithresh}], [{totthresh}])]
      {1 } {5000 } {5000 } {5000 } {20000 }
```

ER1 through ER7 define explicit routes 1 through 7, respectively. These operands also permit the specifications of the flow-control thresholds associated with a transmission group. Specify the parameters of these operands in the same manner as ER0 (explicit route 0).

```
[VR0=ern][,VR1=ern]...[,VR7=ern]
```

This operand lets you specify the virtual route to explicit route (VR-to-ER) mapping that the NCP uses when activating VRs. The explicit route number (*ern*) must be one that you coded on the ER operand.

For V3 and V4R1: Code these operands (or a subset of them as needed) when you code VRACT= YES on the BUILD definition statement, or if the NCP is a gateway NCP. Failure to code them causes NCP VR activation to fail.

For V4R2: Code these operands (or a subset of them as needed) if you want the NCP to be able to activate this virtual route, or if the NCP is a gateway NCP. The default is a null mapping.

```
[VRPWS00=( [min] [,max] )]
```

through

```
[VRPWS72=( [min] [,max] )]
```

These operands let you specify the minimum and maximum pacing window size for a particular VR that the NCP can activate. The VR must be one that you specified by the previous operand. The last two digits of these operands VRPWS mn specify the following: m specifies the virtual route number, and n specifies the priority of the virtual route.

PCCU Definition Statement

USAGE: VTAM users only. One for each VTAM that can activate the NCP. (Required only for VTAM initialization.)

POSITION: Must precede BUILD definition statement.

FORMAT AND OPERANDS: The format of the PCCU definition statement is:

```
[symbol] PCCU [operands]
```

See the appropriate *VTAM Installation* manual for a complete description of the PCCU definition statement and its operands.

Operands

```
[AUTODMP={YES}]
           {NO }

[,AUTOIPL={YES}]
           {NO }

[,AUTOSYN={YES}]
           {NO }

[,BACKUP={YES}]
           {NO }

[,CDUMPDS=dumpname]           (3725 or 3720)

[,CHANCON={COND } ]
           {UNCOND}

[,CONFIGDS=name]

[,CONFIGPW=password]

[,CUADDR=channel device address]

[,DUMPDS=dumpname]

[,DUMPSTA=link station name]

[,GWCTL={ONLY}]
           {SHR }

[,INITEST={YES}]
           {NO }

[,LOADSTA=link station name]
```

Operands

[,MAXDATA={size }]
 {65535}

[,MDUMPDS=dumpname] (3725 or 3720)

[,NCPLUB=lubname] (VSE only)

[,NETID=host network id]

[,OWNER=ownername]

[,RNAME=link station name]

[,SUBAREA=n]

[,VFYLM={YES}]
 {NO }

PU Definition Statement

USAGE: SDLC devices only. One for each device and link station.

POSITION: Must follow SERVICE definition statement or LU definition statement for another device. If defining link station, must follow LINE definition statement.

FORMAT AND OPERANDS: The format of the PU definition statement is:

symbol PU [operands]

Specifying Lower-Level Operands in a Higher-Level Definition Statement

Statement: In addition to the following operands, you can specify some operands of the LU definition statement in the PU definition statement instead of in the LU definition statement. Also, you can specify most operands of the PU definition statement in the LINE or GROUP definition statement. Figure 2-1 on page 2-4 shows which of the lower-level operands you can specify at a higher level.

*Note: If you specify NPARSC= YES and are **not** including NTRI resources on the GROUP definition statement directly preceding this PU definition statement, all operands specified on this PU definition statement will be ignored.*

NTRI Users Only: Appearing in the list of operands below, under the 'NTRI' column, are the operands that you code in this definition statement if you want NCP/Token-Ring interconnection (NTRI) resources included in your generation. The descriptions for these operands are included in alphabetical order along with the NCP operands.

For the optional operands (●) listed under the 'NTRI' column, if you do not specify the operand, NDF adds the operand and a value appropriate for NTRI to the generation definition.

VTAM Users Only: Appearing at the end of the following list of operands are the VTAM operands that can be coded in this definition statement. The VTAM operands provide information only for the VTAM initialization procedure and are not required as input for the NCP generation procedure. See the appropriate *VTAM Installation* manual for descriptions of these operands and for information on the VTAM initialization process. (Depending on what product you are using, see either the *NetView Administration Reference* manual or the *NCCF Installation Manual* for the description of the SPAN operand.)

Operands	Switched		NTRI
	YES	NO	
[ADDR=chars]		•	•
{STOP }	•	•	
[,ANS={CONTINUE}]			
{CONT }			
[,AVGPB=n]	•	•	
[,BNNSUP=3270]		•	
[,DATMODE={HALF}]		•	
{FULL}			
[,IRETRY={YES}]		•	
{NO }			
[,LPDA={BLOCK}] (NCP V4)	•	•	
{ALLOW}			
[,MAXDATA=size]		•	
[,MAXLU=count]	•	•	•
[,MAXOUT=n]		•	
[,NETID=name]		•	
[,NPACOLL={YES}]	•	•	•
{NO }			
[,PASSLIM=n]		•	
[,PUCB=symbol]	•	•	
[,PUDR={NO }]		•	•
{YES}			
[,PUFVT=symbol]	•	•	
{1}			
[,PUNTFY={2}]			
{3}			
{1 }	•	•	•
{2 }			
[,PUTYPE={{(1,2)}}]			
{4 }			
[,RETRIES=([,t][,n])]		•	
[,SRT={({m },{n })}]	•	•	
{32768} {32768}			
[,SUBAREA=n]		•	

Operands	Switched		NTRI
	YES	NO	
[,TGN={ <u>1</u> }] {(ANY[, {m}])} { <u>1</u> }		•	

VTAM Operands

```

{NO }
[,DISCNT={{(YES[, {E }])}}]
{NF}

[,DLOGMOD=default logon mode entry]

{REQD}
[,ENCR={SEL }] (MVS only)
{OPT }
{NONE}

[,FEATUR2=(operand,operand...)]

[,ISTATUS={ACTIVE }]
{INACTIVE}

[,LOGAPPL=application program name]

[,LOGTAB=interpret table name]

[,MODETAB=logon mode table name]

[,SPAN=spanname] (NetView or NCCF only)

{USSCS }
{USS3270}
[,SSCPFM={FSS }]
{USS3275}
{USS3780}
{USSNTO }

[,SECNET={YES}] (NCP Version 4 / VTAM Version 3)
{NO }

[,TERM=type]

[,USSTAB=USS definition table name]

{0}
[,VPACING={2}]
{n}

```


Operand Descriptions

symbol

Provides a resource name for the physical unit and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

[ADDR=chars]

(nonswitched link only)

Specifies the hexadecimal representation of the 8-bit address of the physical unit represented by this PU definition statement. Any bit configuration except hexadecimal 00 or FF is valid. This operand is not valid if you specify PUTYPE=4 in this definition statement, or DIAL=YES in the GROUP definition statement.

This operand is required if the communications facility is nonswitched (DIAL=NO) and the physical unit is type 1 or 2.

For NCP V4R2: Do not code ADDR=FD for this physical unit if you have coded LPDATS=LPDA2 on the LINE definition statement.

NTRI Users Only: For generation of NTRI physical resources, you can specify *only* ADDR=01. If you do not code the ADDR operand, NDF adds it to the generation definition.

{STOP }
[ANS={CONTINUE}]
{CONT }

Specifies whether the device represented by this PU definition statement continues to operate or stops if the NCP enters automatic network shutdown.

If you specify ANS=STOP (valid only for type 1 and 2 physical units), the NCP stops all communication with the device upon entering automatic shutdown. When the device detects that it can no longer communicate with the NCP, it goes offline regardless of whether it is currently participating in sessions with non-adjacent subareas. ANS=STOP is the only valid choice for a device on a switched SDLC link if that link is not defined as user line control (that is, if VIRTUAL=YES or the LEVEL2 operand on the GROUP definition statement is coded).

If you specify ANS=CONTINUE (or ANS=CONT), the NCP, though in shutdown mode with respect to the access method with which it can no longer communicate, continues to service the link on which the device is located as long as the link and device remain operational. The device then can continue to participate in sessions with access methods and application programs other than those affected by the shutdown.

Warning: If you have specified ANS=CONT for a device on a switched link, the NCP does not automatically deactivate the link even if no sessions are active. You *must* use forced deactivation to disable the link. Any attempts to reactivate the link without first using forced deactivation results in a

negative response because the link is still active. Also notice that because the link is not deactivated automatically by the NCP—and thus can stay active for an indefinite period of time—increased switched-link connection costs are likely to occur.

If this PU definition statement represents a communication controller (that is, a type 4 physical unit), only ANS = CONTINUE (or ANS = CONT) is valid. ANS = CONTINUE also is the default if you omit this operand. For type 1 and 2 physical units, ANS = STOP is the default if you omit this operand.

If this PU is to participate in Extended Recovery Facility (XRF) sessions, then you must code ANS = CONTINUE.

[AVGPB=*n*]

Specifies the number of bytes used to control NCP buffer space for polled SDLC devices.

For NCP V4R2:

For BNN SDLC devices, the value you use for AVGPB is the maximum number of bytes expected from an SDLC device when it is polled. For INN resources, the value you use for AVGPB is the maximum number of bytes expected during a single data transfer operation. For optimal performance on INN lines, ensure that the value of AVGPB equals the number of bytes specified on the TRANSFR operand of either the BUILD or LINE definition statement.

The minimum value for *n* is the value of BFRS on the BUILD definition statement. The maximum value for *n* is 65 535. If you omit this operand, the default is seven times the value specified in the BFRS operand of the BUILD definition statement.

For NCP V4R1 and V3:

For BNN SDLC devices, you select a value for AVGPB by doing the following:

1. Determine the maximum number of bytes expected from the SDLC device when it is polled.
2. Divide this number by seven.

For INN resources, you select a value for AVGPB by doing the following:

1. Determine the maximum number of bytes expected during a single data transfer.
2. Divide this number by seven.

For optimal performance on INN lines, ensure that seven times the value of AVGPB equals the number of bytes specified on the TRANSFR operand on either the BUILD or LINE definition statement.

The value of n can range from the BFRS value specified on the BUILD definition statement up to 65 535 bytes.

If you omit this operand, the default is the value specified on the BFRS operand on the BUILD definition statement.

[BNNSUP=3270]

(type 1 PU on nonswitched link only)

Specifies that the physical unit represented by this PU definition statement is a type 1 physical unit (PUTYPE = 1) 3270 (operating in SDLC mode.)

This operand is not valid if the line is switched (DIAL = YES in the GROUP definition statement) or if the 3270 is a type 2 physical unit (PUTYPE = 2 in this definition statement).

[DATMODE={HALF}
{FULL}]

(nonswitched link only)

For the IBM 3705, the IBM 3725 and the IBM 3720:

Specifies whether the NCP communicates in half-duplex or full-duplex data mode with a PU on a nonswitched SDLC link. This operand is valid only if this nonswitched SDLC link is defined in the ADDRESS operand of the LINE definition statement as capable of transferring data in the duplex mode. That is, if for an IBM 3725 or IBM 3720, you specify FULL as the second parameter of the ADDRESS operand of the corresponding LINE definition statement; or for an IBM 3705, you specify both a receive and transmit address in the ADDRESS operand of the LINE definition statement.

For the IBM 3725 and the IBM 3720:

For a type 4 PU, if you omit this operand and specify FULL for the second parameter of the ADDRESS operand of the corresponding LINE definition statement, then DATMODE = FULL is the default. DATMODE = HALF is the default for type 2 PUs. This operand is not valid for a type 1 PU.

For the IBM 3705:

For a type 4 PU, if you omit this operand and specify both a receive and a transmit address in the LINE definition statement, then DATMODE = FULL is the default. DATMODE = HALF is the default for type 2 PUs. This operand is not valid for a type 1 PU.

For the IBM 3705, the IBM 3725, and the IBM 3720:

DATMODE = FULL is not valid if you specified DIAL = YES in the GROUP definition statement. You must specify DATMODE = FULL for PU type 2 duplex devices (such as IBM 3776-3, 3776-4, and 3777-3).

Minimizing Line-Turnaround Delay

Each reversal in the direction of message transmission over an SDLC link causes a line-turnaround delay of several milliseconds if the carrier signal transmitted by the modem is interrupted. Efficiency of the link is therefore lower than if the carrier signal is transmitted continuously, because no message data can be transmitted during these intervals.

Interruption of the carrier signal, and therefore line-turnaround delays, are inherent and unavoidable if the communication facility (including lines and modems) is half-duplex. Turnaround delays also can occur in a duplex facility. In that case you can prevent line turnaround delays by ensuring that the carrier signal is transmitted continuously. Continuous carrier transmission results from one of the following:

- Continuous activation of the request-to-send signal sent from the communication controller to the modem
- Strapping (internally connecting) the modem to transmit a carrier signal continuously, independent of whether the request-to-send signal is activated.

The request-to-send signal (and therefore the carrier sent by the modem) is activated continuously if:

- The communication facility is duplex.
- The line set to which the SDLC link is attached is duplex.
- For the IBM 3725 or 3720, you specified FULL as the second parameter of the ADDRESS operand of the corresponding LINE definition statement. For the IBM 3705, you specified separate receive and transmit addresses in the ADDRESS operand of the LINE definition statement.
- You specified DATMODE = FULL in the LINE definition statement.

The request-to-send signal is not activated continuously if the line set is half-duplex *or* if you specified DATMODE = HALF in the LINE definition statement. The line-turnaround delay still can be minimized or eliminated, however, if the modem is strapped for continuous carrier operation. Consult the supplier or installer of the modem to determine if it is capable of continuous carrier operation and, if so, have the modem connected this way.

[IRETRY={YES}]
 {NO }

(nonswitched link only)

Specifies whether the NCP will repoll a given secondary station before advancing to the next station in the service order table. If the primary station detects an error during a poll cycle, IRETRY = YES causes the NCP to repoll the secondary station before advancing to the next station in the service order table. While errors persist, the NCP continues to poll a given

station up to m times, where the number of repolls is determined by the m parameter of the RETRIES operand of the LINE definition statement.

This operand is valid only if you specified DIAL=NO in the GROUP definition statement. If you omit this operand, IRETRY=NO is the default.

Note: You can specify IRETRY in a PU definition statement associated with either the principal or the backup SDLC link.

[LPDA={BLOCK}]
 {ALLOW}

(NCP Version 4 only)

Specify this operand only if you are defining an NCP Version 4. Do not specify this operand if you specify PUTYPE=4.

Specifies whether LPDA tests can be run for the PU on the line. Note that the default is NO for the LPDATS operand.

Specify BLOCK if you do not want to run LPDA tests; specify ALLOW if you do want to run LPDA tests. The default is ALLOW.

[MAXDATA=size]

(type 1 and 2 PUs on nonswitched link only)

Specifies the maximum amount of data, in bytes (including the transmission header and request/response header), that the physical unit can receive in one data transfer; that is, one entire PIU or a PIU segment. Do not make this value less than the value specified in the BFRS operand of the BUILD definition statement.

To determine the amount of data that the physical unit can receive, consult the publications for the specific type of SDLC device represented by this PU definition statement.

The maximum amount of user data the NCP sends to the physical unit in one data transfer is the value of MAXDATA minus 5 bytes (for a type 1 physical unit) or minus 9 bytes (for a type 2 physical unit). These subtracted values represent the lengths of the request/response header (3 bytes) and the transmission header (2 bytes for a type 1 physical unit; 6 bytes for a type 2 physical unit).

The value you specify for MAXDATA, divided by the NCP buffer size (specified in the BFRS operand of the BUILD definition statement), determines the amount of data sent in one data transfer to the physical unit represented by this PU definition statement. If the result is not an integer, it is rounded down to the next lower integer. For example, if you specify MAXDATA=265 and BFRS=72, then 265 divided by 72 is 3.68, which is rounded down to 3.

This operand is valid only for a nonswitched type 1 or type 2 SDLC physical unit. The operand is not valid if you specified DIAL=YES in the GROUP definition statement. If you omit this operand, BFRS plus 2 is assumed as the maximum amount of data for a type 1 PU, and BFRS plus 6 is assumed for a type 2 PU.

[MAXLU=count]

(switched lines or dynamic reconfiguration only)

Specifies the maximum number of logical units that can be associated with this physical unit. If you omit this operand, the count defaults to the value of MAXLU in the PUDRPOOL definition statement or the number of LUs defined for this PU, whichever is larger. For a PU type 1, the actual maximum number of LUs is *count* plus 1.

If you specify PUDR= YES in this PU definition statement, the value specified in this MAXLU operand must be equal to, or greater, than the MAXLU value in the PUDRPOOL definition statement. The maximum value is 255. If dynamic reconfiguration is supported, additional logical units can be added to this physical unit up to *count* minus 1 for a type 1 PU and up to *count* for a type 2 PU.

If this PU is on a switched link, MAXLU is required.

NTRI Users Only: For generation of NTRI resources, you can specify *only* MAXLU=1. If you do not code the MAXLU operand, NDF adds it to the generation definition.

[MAXOUT=n]

(nonswitched link only)

For the IBM 3725 or 3720:

For a PU type 1 or PU type 2:

Specifies the maximum number of frames the NCP sends to the physical unit represented by this PU definition statement before requesting a response from the physical unit.

This operand is not valid for a physical unit on a switched link (that is you specified DIAL= YES in the GROUP definition statement). For a switched link, NCP uses the value provided by the XID.

For a PU type 4:

Specifies the number of frames that you want the NCP to receive from the physical unit represented by this PU definition statement before a response is required.

During the contact procedure, while the controllers are configurable devices, the NCPs on the subarea link exchange the MAXOUT values specified on their respective PU definition statements. After the NCPs determine which NCP is the secondary, the secondary NCP uses the value of the MAXOUT operand on the PU definition statement of the adjacent NCP as the number of frames to send before an acknowledgement is received. The exchange is concluded by the secondary NCP. The secondary NCP sends to the primary NCP the value of the MAXOUT operand on the SDLCST definition statement with MODE=SECONDARY specified. The primary NCP uses this value as the number of frames to send before an acknowledgement is received. For documentation purposes, it is recommended that you specify for this operand the same value as the

value specified in the MAXOUT operand of the primary SDLCST definition statement.

If this PU is attached to a line operating as a modulo 8 line, the following statements are true:

- The value of n can range from 1 to 7.
- The default value for this operand is 7 for a type 4 PU, and is 1 for a type 1 or 2 PU.

If this PU is attached to a line operating as a modulo 128 line, the following statements are true:

- The value of n can range from 8 to 127.
- The default value for this operand is 8.

For more information see the description of the MODULO operand of the LINE definition statement.

For the IBM 3705:

Specifies the maximum number of path information units (PIUs) or PIU segments the NCP sends to the physical unit represented by this PU definition statement before requesting a response from the physical unit. The minimum is 1; the maximum is 7. The default for this operand is 7 for a type 4 PU, and is 1 for a type 1 or 2 PU.

This operand is not valid for a physical unit on a switched link (that is you specified DIAL= YES in the GROUP definition statement).

[NETID=name]

(gateway NCP only)
(not valid for NCP V4 Subset)

Specifies the name of the network that contains the adjacent NCP represented by the link station you are defining. Use this operand *only* if you are defining a link station (PUTYPE=4 is coded). If you do not specify this operand, it defaults to the name of the native network.

Note: If one gateway NCP is connected to another gateway NCP, the names specified in the NETID operands of the PU definition statements for each gateway NCP must be the same.

[NPACOLL={YES}]
{NO }

Specifies whether data transmitted and received by this PU is eligible for collection by NPA. NPACOLL= YES is valid only if you specify NPA= YES in the BUILD definition statement, NPACOLL= YES in the LINE definition statement, and PUTYPE= 1, 2, or (1,2) in this PU definition statement. The default for this operand is YES. See the *NCP and SSP Resource Definition Guide* for more information.

NTRI Users Only: For generation of NTRI resources, you can specify *only* NPACOLL=NO if NPA= YES is specified on the BUILD definition statement. If you do not code the NPACOLL operand, NPACOLL=NO is added to the GROUP definition statement.

[PASSLIM=n]

(nonswitched link only)

Specifies the maximum number of consecutive path information units (PIUs) or PIU segments the NCP sends at one time to the physical unit represented by this PU definition statement.

If this physical unit is a PU type-4 and is associated with a LINE definition statement in which you specified MODE= PRI in the GROUP definition statement, the NCP services the device represented by the next entry in the service order table when the pass limit value is reached.

If this PU definition statement represents a primary communication controller, the secondary controller NCP stops sending to the primary controller when the pass limit is reached. Transmission to the primary controller resumes when the primary NCP again polls the secondary controller.

The minimum is 1 PIU or segment; the maximum is 254. The default is 254 for a type 4 PU, and is 1 for a type 1 or 2 PU.

This operand is not valid for a physical unit on a switched link (that is you specified DIAL= YES in the GROUP definition statement).

Note: For a physical unit that is associated with a line operating in duplex mode (you specify FULL for the second parameter of the ADDRESS operand of the LINE definition statement), if the value you specify for the PASSLIM operand is less than the MAXOUT value, the line is forced to operate in half-duplex mode.

[PUCB=symbol]

(user-written code only)

Specifies the name of a user-defined control block associated with a virtual physical unit. This operand is valid only if you specified VIRTUAL= YES in the GROUP definition statement.

[PUDR={NO }
{YES}]

(dynamic reconfiguration on a nonswitched link only)

Specifies whether the physical unit can be deleted from the network by using the dynamic reconfiguration function. This operand is not valid if dynamic reconfiguration is not supported, the PU is a type 4, or the PU is on a switched link.

If you specify PUDR= YES, the value specified in the MAXLU operand must be equal to, or greater than the MAXLU value in the PUDRPOOL definition statement. The MAXLU operand requires 8 bytes per entry. If this PU will not be deleted, specify PUDR= NO.

If dynamic reconfiguration is supported, the PU is not a PU type 4, and the PU is on a nonswitched line, the default is YES.

NTRI Users Only: For generation of NTRI resources, you can specify *only* PUDR=NO. If you do not code the PUDR operand, NDF adds PUDR=NO to the generation definition.

[PUFVT=symbol]

(user-written code only)

Specifies the name of the function vector table associated with a virtual physical unit. This operand is required if you specified VIRTUAL=YES in the GROUP definition statement. This operand is not valid if you specify VIRTUAL=NO.

An EXTRN statement for each unique FVT symbol must be included in the user source code that is copied into the tables during assembly. (See the SRCHI operand in the GENEND definition statement.)

Note: The function vector table must be preassembled and included in the user object modules. (See the INCHI operand in the GENEND definition statement.)

{1}
[PUNTFY={2}]
{3}

(user-written code only)

Specifies use of the notify byte in user-written control blocks and whether control is passed to the user-written notify task. A value of 1 sets and resets the VR blocked bit in the notify byte of the NPB control block and passes control to the notify task. A value of 2 sets and resets the VR blocked bit and does not pass control to the notify task. A value of 3 sets and resets the VR blocked bit in the VLB and NPB control blocks and does not pass control to the notify task.

This operand is valid only if you specify VIRTUAL=YES in the GROUP definition statement. If you code VIRTUAL=YES and omit PUNTFY, the default value is 1.

{1 }
{2 }
[PUTYPE={{1,2}}]
{4 }

Specifies the physical unit type of the SDLC device represented by this PU definition statement. PUTYPE=(1,2) specifies, only for a group of switched SDLC links, that physical units of either type 1 or type 2 can communicate with the communication controller over the same link.

PUTYPE=1 and PUTYPE=2 are valid for links that use either nonswitched or switched line control procedures (DIAL=NO or DIAL=YES in the GROUP definition statement).

PUTYPE=4 represents a communication controller containing an NCP (adjacent subarea) with which this NCP can communicate. One PU definition statement with PUTYPE=4 specified is coded for each subarea link following the LINE definition statement for the link. A SERVICE definition statement is not needed for this type of link.

PUTYPE = 4 is not valid if:

- You specify VIRTUAL = YES in the GROUP definition statement for this PU
- You specify CHNLZ = YES or TAILING = YES in the LINE definition statement
- **For NCP V4R2:** You specify LPDATS = LPDA2 and CHNLZ = YES in the LINE definition statement.

If you omit this operand, the default values are as follows:

- If you specify DIAL = YES in the GROUP definition statement, PUTYPE = (1,2) is the default.
- If you specify DIAL = NO or CHANLNK = YES in the GROUP definition statement, PUTYPE = 2 is the default.

NTRI Users Only: For generation of NTRI logical resources, you can specify *only* PUTYPE = 2. For generation of NTRI physical resources, you can specify *only* PUTYPE = 1. If you do not code the PUTYPE operand, NDF adds the appropriate value to the generation definition.

[RETRIES=([,t] [,n])]

(nonswitched link only)

Specifies, with the RETRIES operand of the LINE definition statement, the number of attempts to recover from errors occurring during transmission to or from the physical unit represented by this PU definition statement. See the description of the RETRIES operand on the LINE definition statement for an explanation of the uses of the *t* and *n* values.

Note: (This note applies only to a channel-attached controller.) To avoid losing contact with a link-attached controller while it accesses its disk (for example, when the link-attached controller storage is being dumped), specify RETRIES and REPLYTO (GROUP definition statement) for a minimum retry time of 30 seconds. The meaning of the t and n parameters is the same as for those parameters in the RETRIES operand of the LINE definition statement.

This operand is not valid if you specified DIAL = YES in the GROUP definition statement.

[SRT=({m } , {n })]
 {32768} {32768}

Specifies a threshold value for the total number of transmissions and for the total number of error retries associated with this physical unit. When either of these thresholds is reached, the NCP generates a record maintenance statistics (RECMS) PIU to inform the host of the condition. *m* is the transmission threshold and *n* is the error retry threshold. The values of each threshold can range from 1 to 32768, with a default value of 32768.

This operand is not valid if you specified LEVEL5 = USER in the GROUP definition statement.

Note: The thresholds specified by this operand do not apply to PUs added using dynamic reconfiguration. Dynamically added PUs use the default value.

[SUBAREA=*n*]

(PU type 4 only)

Specifies the subarea address assigned to the NCP in a distant communication controller (type 4 physical unit) represented by this PU definition statement. (The NCP in each controller in the network must have a unique subarea address.) The value of *n* specified in this SUBAREA operand and the SUBAREA operand of the BUILD definition statement for the NCP in the distant controller must be identical.

This operand is valid only if you specify PUTYPE=4 in this PU definition statement. This operand is not valid if you specified DIAL=YES in the GROUP definition statement.

The minimum valid subarea address is 1; that is, SUBAREA=1. The maximum address is the same value you specify in the MAXSUBA operand of the BUILD definition statement.

The SUBAREA operand is necessary only if this PU definition statement and its associated LINE definition statement represent a subarea link to an NCP that is Version 1, Release 2.1 or an NCP that communicates with VTAM Version 1 Release 2 or earlier.

Note: If any access method for this NCP is VTAM, the number specified for SUBAREA cannot appear in any other PU definition statement in this NCP unless you code this PU definition statement for a backup line and this PU definition statement represents a communication controller containing an NCP Release 2.1 or earlier. If the only access method is TCAM, the same subarea address can be specified in multiple PU (type 4) definition statements so that TCAM can use the display link information commands. See the TCAM Installation Guide.

{*n* }
 [TGN={1 }]
 { (ANY[, {*m* }]) }
 {1 }

(PU type 4 only)

Specifies the transmission group number of the subarea link associated with this physical unit. This operand is valid only for type 4 PUs representing link stations. *n* is a specific transmission group number and you must have specified this value in one of the ER*n* operands in at least one PATH definition statement in this generation. The transmission group number is used during the contact procedure to associate the PU control blocks with the transmission group. The value of *n* can range from 1 to 255. If you omit this operand, the default value is 1.

ANY can be substituted for the numeric value. This specifies that the transmission group number is assigned during the contact procedure with an adjacent subarea. This group number is the value specified in the TGN operand of the PU definition statement in the adjacent subarea. Therefore, either this PU definition statement or the PU definition statement in the

adjacent subarea's NCP must have a valid non-zero transmission group number defined in the TGN operand. A value in the m parameter along with ANY, specifies a transmission group number used for communication with an NCP Version 1 Release 2.1 or earlier. m can be any value from 1 to 255. The default is 1. (You can omit this operand for communication with an NCP Version 1 Release 2.1 or earlier.)

Note: To establish two-way communication between adjacent NCPs, the TGN for a particular link must be the same at both ends of the link. Therefore, you must ensure that the transmission group numbers for this NCP correspond to the numbers in all adjacent NCPs. ANY can be used at either end of the link to simplify coding, but not at both ends. Do not try to switch dynamically any link within a transmission group without deactivating that link.

Ensure that the values of the TRANSFR operands are identical for all the links within the same transmission group. Failure to do this will result in link activation problems.

PUDRPOOL Definition Statement

USAGE: Dynamic reconfiguration only.

POSITION: Must precede first GROUP definition statement.

FORMAT AND OPERANDS: The format of the PUDRPOOL definition statement is:

```
[symbol]          PUDRPOOL [operands]
```

Operands

```
[NUMBER={0    }]  
          {count}
```

```
[ ,MAXLU={1    }]  
          {count}
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. The specified symbol appears in the cross reference listing of the generation process.

All of the address assigned to the pool of addresses for dynamic reconfiguration are associated with this symbol and appear in the cross reference listing of the generation process.

[NUMBER={0 }]
 {count}

Specifies the number of physical units included in the PU pool. *For NCP Version 3:* The maximum number of entries is the difference between the number of resources specified by the MAXSUBA operand of the BUILD definition statement and the number of resources defined by the LINE, PU, LU, TERMINAL, LUPOOL, and LUDRPOOL definition statements. *For NCP Version 4:* The maximum value is 32 768.

To conserve controller storage, base the count on the anticipated dynamic resource requirements, not the maximum number of subareas.

Note: If a terminal originally defined during NCP generation will ever be moved from one link to another on the same 3725 or 3720 using dynamic reconfiguration, increase the value of count by 2.

PUDRPOOL

[MAXLU={1 }]
 {count}]

Specifies the maximum number of logical units that can be attached to one of the physical units in the dynamic reconfiguration pool. The maximum number of logical units is 255.

Note: The local address of any logical unit added to a type 1 PU cannot exceed the value of count minus 1. The local address of any logical unit added to a type 2 PU cannot exceed the value of count.

REMOVCTL Definition Statement

USAGE: SS devices only. One allowed for each block handler. The REMOVCTL definition statement specifies whether the NCP removes the ending control characters from incoming data blocks for TWX terminal types. This definition statement only removes characters from control blocks in which an ending sequence has been detected. A block handler routine must be specified to execute at point 2.

POSITION: Can appear in any sequence between the STARTBH and ENDBH definition statements.

FORMAT AND OPERANDS: The format of the REMOVCTL definition statement is:

[symbol] REMOVCTL

Operands

This definition statement has no operands.

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembly-language symbol. The generation procedure does not check the symbol for validity.

SDLCST Definition Statement

USAGE: SDLC subarea links connecting two communication controllers only. One definition statement for the NCP when it is in a primary state, and one for when it is in a secondary state.

POSITION: Must precede first GROUP definition statement.

For an example of the primary and secondary roles of the NCP, refer to Figure 2-12. For an example and sample coding for the SDLCST definition statement, see the *NCP and SSP Resource Definition Guide*. The parameters specified in the GROUP, LINE, and PU definition statements govern operation of the subarea link as long as the present NCP operates controller A as a configurable device. When the controllers exchange IDs during the contact procedure, they determine which controller will be the primary device and which one will be secondary. The controller with the highest subarea number becomes the primary device. The NCP then replaces the subarea link parameters with those you have specified or those that default in the SDLCST definition statement for that device type (primary or secondary), with the exception of the MAXOUT operand (see the description).

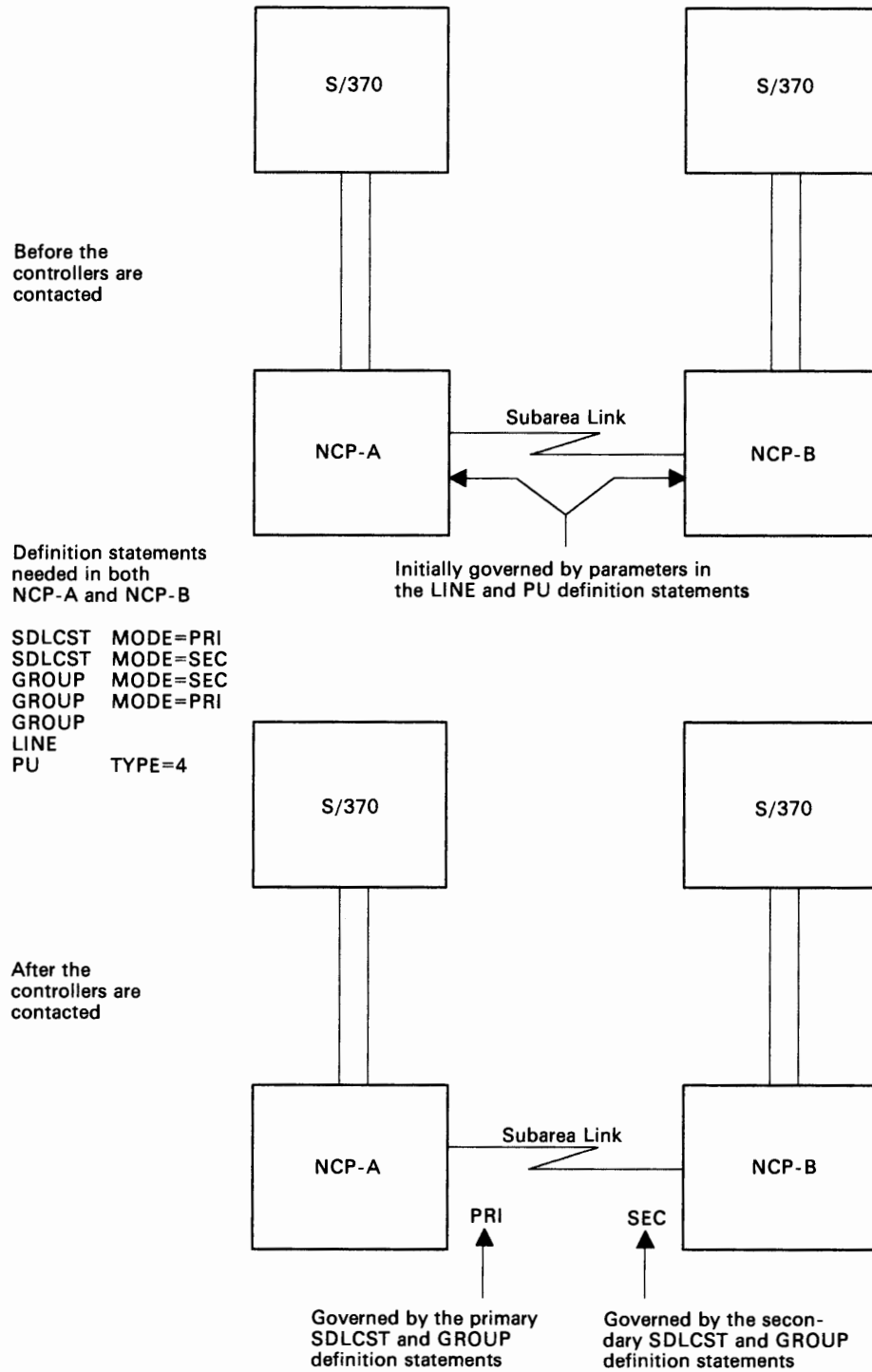


Figure 2-12. Determination of Primary and Secondary Roles by Communication Controllers on a Subarea Link

FORMAT AND OPERANDS: The format of the SDLCST definition statement is:

```
symbol          SDLCST  operand[,operands]
```

Operands

GROUP=group name

```
[ ,MAXOUT={7} ]
           {n}
```

```
[ ,MODE={PRIMARY | PRI} ]
           {SECONDARY | SEC}
```

```
[ ,PASSLIM={254} ]
           {n }
```

```
[ ,RETRIES={NONE      } ]
           {(m[,t[,n]])}
```

```
[ ,SERVLIM={4      } ]
           {count}
```

```
[ ,TADDR=chars ]
```

Operand Descriptions

symbol

Provides a name for the line control selection table entry. *symbol* can be any valid assembler-language symbol. The first character cannot be a \$. This field is required and is referred to by the SDLCST operand of the LINE definition statement.

GROUP=group name

(required)

Specifies the name of the GROUP definition statement that contains the link parameters associated with the SDLC selection table entry defined by this SDLCST definition statement. The parameters of the GROUP definition statement associated with the table entry are LNCTL, DIAL, ACTIVTO, and REPLYTO. The GROUP definition statement must specify LNCTL=SDLC and DIAL=NO. Both the GROUP and the SDLCST definition statements must specify MODE=PRIMARY or MODE=SECONDARY, as appropriate.

group name can be the name of either a regular GROUP definition statement (followed by LINE and other lower-level definition statements) or a stand-alone GROUP definition statement (discussed at the beginning of the GROUP definition statement description).

[MAXOUT={7}]
{n}

(secondary mode only)

For the IBM 3725 or the IBM 3720:

Specifies the number of frames that you want the NCP to receive on the line before a response is required.

If you specify MODE = PRIMARY, the NCP uses the value you specify for the MAXOUT operand of the PU definition statement. However, it is recommended for documentation purposes, that you specify the same value as the value specified for the MAXOUT operand of the PU definition statement.

During the contact procedure, while the controllers are configurable devices, the NCPs on the subarea link exchange the MAXOUT values specified on their respective PU definition statements, and determine whether they are to operate in modulo 8 or modulo 128 mode. After the NCPs determine which NCP is the secondary, the secondary NCP uses the value of the MAXOUT operand on the PU definition statement of the adjacent NCP as the number of frames to be sent before an acknowledgement is received. The exchange is concluded by the secondary NCP. The secondary NCP sends to the primary NCP the value of the MAXOUT operand on the SDLCST definition statement with MODE = SECONDARY specified. The primary NCP uses this value as the number of frames to send before an acknowledgement is received. For detailed examples of the exchange of MAXOUT values, see the *NCP and SSP Resource Definition Guide*.

The valid range for *n* is 1 to 127. For lines operating as modulo 8 lines, specify a value from 1 to 7. For lines operating as modulo 128 lines, specify a value from 8 to 127. For more information see the description of the MODULO operand on the LINE definition statement.

[MAXOUT={7}]
{n}

(primary mode only)

For the IBM 3705:

Specifies the maximum number of PIUs (or PIU segments if the program divides PIUs into segments) the NCP sends to the adjacent NCP before requesting a response from the PU.

The valid range for *n* is 1 to 7, with a default of MAXOUT = 7.

[MODE={PRIMARY | PRI}]
{SECONDARY | SEC}

Specifies whether the selection table entry being defined by this SDLCST definition statement is used when the controller is functioning as a primary or a secondary device. This operand determines the mode of the line group specified in the GROUP operand. You can specify the primary mode as either PRIMARY or PRI; the secondary mode as SECONDARY or SEC.

You must code the **MODE** operand in the associated **GROUP** definition statement the same as this operand. The default for this operand is **MODE = PRIMARY**.

```
[PASSLIM={254}
        {n }]
```

Specifies the maximum number of consecutive PIUs the NCP sends at one time to the adjacent NCP.

The minimum is 1 PIU; the maximum is 254. If you omit this operand, the default value is 254.

*Note: For a physical unit that is associated with a line operating in duplex mode (you specify **FULL** for the second parameter of the **ADDRESS** operand of the **LINE** definition statement), if the value you specify for the **PASSLIM** operand is less than the **MAXOUT** value, the line is forced to operate in half-duplex mode.*

```
[RETRIES={NONE      }
        {(m[,t[,n]])}]
```

Specifies the number of attempts to recover from errors occurring during transmission over the link associated with this SDLCST definition statement.

*Note: To avoid losing contact with a link-attached controller while it accesses its disk (for example, when the link-attached controller storage is being dumped), specify **RETRIES** and **REPLYTO** in the **GROUP** definition statement for a minimum retry time of 30 seconds.*

An error condition occurs when the NCP does not receive a positive indication that a frame it sent has been successfully received. The NCP retransmits that frame. If the error recurs, the NCP retransmits again. The NCP persists in retransmitting until it successfully sends the frame or until a maximum number of retries has been attempted.

When an error occurs while the NCP is receiving from a device, the NCP sends the device a command that causes the device to retransmit the frame in error. If the error recurs, the NCP repeats this command. The program persists in this way until (1) it has successfully received the frame, (2) it has retried the received operation a user-specified maximum number of times, or (3) the device sends an abnormal response; for example, a request for initialization.

The repetitive retries (retransmissions of data or control commands) are called a retry sequence. The maximum number of retries in the sequence is specified as *m*, which can be from 0 to 128. (**RETRIES**=0 is equivalent to **RETRIES**=**NONE**, resulting in no retry attempts at all.)

You also can specify that the NCP pause after completing the retry sequence and then begin a new retry sequence. This second sequence continues until the frame is successfully transmitted or received, or the maximum, *m*, is again reached.

Alternation of retry sequence and pause continues until the error is cleared or the maximum number of retry sequences is reached. The pause, specified by the *t* parameter, can be from 1 to 255 seconds. The maximum number of retry sequences, specified by *n*, can be from 1 to 127. See the RETRIES operand of the LINE definition statement for additional information on coding this operand.

```
[SERVLIM={4    }]  
        {count}
```

(primary SCLC subarea link only)

Specifies the maximum number of regular scans of the service order table that the NCP will make for normal servicing of the PU on the link before it makes a special scan of the table. The regular scan of the table accommodates normal transmission of PIUs between the access method or host application programs and the PU on the link.

In the special scan of the service order table, the NCP determines whether any outstanding commands exist from the access method to interrogate or alter the online status of any PUs on the link. If so, the program fulfills the first such command and then resumes regular scans of the table to perform normal servicing. If no status commands are outstanding, the program immediately resumes regular scans unless, in the previous regular scan, the program found the PU was not in the contacted state (not currently active). In this case, regular scans resume after a delay of 2.2 seconds. If more than one status command is outstanding, only one is honored each time the special scan is made. The remaining status commands are fulfilled one at a time, in turn, during subsequent special scans of the table.

Upon completing a regular scan, the program begins the special scan when:

- In the regular scan just completed, the program found that the device was not active.
- The maximum number of regular scans specified by SERVLIM has been reached.

Specifying a low value in SERVLIM gives the NCP more frequent opportunities to fulfill accumulated status commands than does specifying a higher value. Such status commands can be fulfilled more promptly, but at the cost of frequent interruptions to normal servicing. Conversely, specifying a higher value in SERVLIM causes fewer interruptions to normal servicing of devices than does a lower value, but delayed fulfillment of the status commands is more likely.

Base your selection of a value for the SERVLIM operand on:

- The relative number of status commands the access method issues for the link served by the service order table
- The relative importance of the alternatives described above
- Experience.

Warning: The NCP performs a time-out for any status command issued for the physical unit of an SDLC device whose power is off. The duration of this time-out interval is as specified in the REPLYTO operand of the GROUP definition statement.

If you omit this operand, and specify MODE=PRI, a value of 4 (four regular scans of the service order table) is the default.

This operand is valid only if you specify MODE=PRI in this definition statement.

[TADDR=chars]

(secondary SDLC subarea link only)

Specifies the 2-digit hexadecimal representation of a single EBCDIC SDLC device address; that is, the address of the secondary controller in which the NCP resides. You can assign as the address any bit configuration except hexadecimal 00 or FF. However, the address you specify in the PU definition statement of the NCP running in the primary controller must be identical to the address you specify in this TADDR operand. This operand is valid only if MODE=SEC.

SERVICE Definition Statement

USAGE: Nonswitched data links only. One for each data link, except for subarea links connecting two NCPs. For a line operating in network control mode, NDF automatically generates the service order table if you omit the SERVICE definition statement or code the SERVICE definition statement and omit the ORDER operand.

For NTRI Users Only: You do not need to code SERVICE definition statements, because they are generated automatically for every NTRI physical line. The statement labels are formed by concatenating the letter J, a base 32 representation of the SUBAREA on the BUILD definition statement, a hexadecimal representation of an NTRI physical line counter, and the letter S.

POSITION: Must follow LINE definition statement.

FORMAT AND OPERANDS: The format of the SERVICE definition statement is:

```
[symbol] SERVICE operand[,operand]
```

Operands

[MAXLIST=n]

[,ORDER=(entry,...)]

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. If more than one definition statement is required, specify a name on the first definition statement only.

Note: This symbol is required for BSC and SS lines.

[MAXLIST=n]

Specifies the maximum *number* of entries in the service order table. The maximum value for *n* is 254. If the number you specify in MAXLIST exceeds the number of entries you code in the ORDER operand, you can add more entries (up to the MAXLIST limit) during NCP execution through the dynamic reconfiguration procedure. If the number you specify on MAXLIST is less than the number of entries coded on the ORDER operand, the number of entries on ORDER is used as the MAXLIST value.

SERVICE

If you omit this operand, n is assumed to equal the number of entries in the ORDER operand or the number of resources if you do not specify the ORDER operand, and no further entries can be added while the NCP is running. (You can *change* entries, however, with the dynamic reconfiguration function.)

[ORDER=(entry,...)]

Specifies the order in which the devices on the line are serviced.

entry is the name of a device, clustered terminal, component, or link-attached communication controller. These names appear on the TERMINAL, CLUSTER, COMP, or PU definition statements associated with the line for which this service order table is being generated. A device or component name can appear in the list more than once.

You can code a maximum of 255 characters in the ORDER operand, including the beginning and ending parentheses and all commas. This limit applies regardless of how many entries you code within the operand. If you need to specify more than 255 characters, code one or more additional SERVICE definition statements following the first. Specify the remaining entries in the ORDER operand and omit the MAXLIST operand in the additional definition statements. The maximum number of entries is 256.

Note: The generation procedure checks the entries of the service order table to determine if the devices represented by CLUSTER, TERMINAL, COMP, or PU definition statements are associated with this line. Also, each CLUSTER, TERMINAL, COMP, and PU definition statement associated with the LINE definition statement is checked to determine if it is represented in the service order table.

If you omit the ORDER operand, NDF automatically generates the service order table for a line operating in network control mode. The order of the subvalues is the same order in which the physical units are specified.

Note: For user line control, the ORDER and MAXLIST operands default as described only if the SERVICE definition statement is coded.

STARTBH Definition Statement

USAGE: BSC or SS devices only. One for each block handler.

POSITION: Must appear at the beginning of the block handler.

FORMAT AND OPERANDS: The format of the STARTBH definition statement is:

```
symbol    STARTBH [operand]
```

Operands

```

                {PT1}
[BHEXEC={PT2}]
                {PT3}

```

Operand Descriptions

symbol

Provides a name for the block-handler set and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$. (*symbol* is referred to by the BHSET definition statement.)

```

                {PT1}
[BHEXEC={PT2}]
                {PT3}

```

Specifies the point at which this block handler is run.

Data Sent to a Device:

If you want the data received from the access method to be processed *after* the NCP has contacted the device, code BHEXEC = PT2.

Note: If you specify BHEXEC = PT2, a logical connection between the NCP and the device must exist before the block handler is run. The interval during which the line is not available for communication with other devices is extended by the run time of the block handler.

You can include date and time block-handling routines or any user-provided block-handling routines in a block handler that processes outgoing data. Therefore, a STARTBH definition statement that specifies BHEXEC = PT1 or PT2 can be followed by DATETIME or UBHR definition statements.

If the block handler processes incoming data, as well as outgoing data (possible only if you code BHEXEC = PT2), you can also include the EDIT definition statement. However, the block-handling routine invoked by the EDIT definition statement processes only the *incoming* data.

STARTBH

Block handlers process outgoing data only if the data transfer command is not in error.

If you omit the BHEXEC operand, the block handler is run as if you specified BHEXEC = PT1.

Data Received from a Device:

If you want communication over the line to continue while the block handler is processing the received data, code BHEXEC = PT3.

If you want the NCP to suspend further communication over the line until the block handler has processed the received data, code BHEXEC = PT2.

Note: If you specify BHEXEC = PT2, the line is not available for further communication with devices during the time occupied by block handler execution.

The block-handling routines you can include in a block handler that processes incoming data are date and time, edit, or any user-provided block-handling routines. Therefore, a STARTBH definition statement that specifies BHEXEC = PT2 or PT3 can be followed by a DATETIME, EDIT, or UBHR definition statement.

Except for the date and time routine and any user block-handling routines, block handlers process incoming data only if the data block was correctly received (that is, a data-check error did not occur).

The ACCESS operand of the UBHR definition statement determines whether a user-written routine processes only error-free blocks or only blocks containing errors.

If you omit the BHEXEC operand, the block handler is run as if you specified BHEXEC = PT1.

SYSCNTRL Definition Statement

USAGE: Required.

POSITION: Must follow the BUILD definition statement.

FORMAT AND OPERANDS: The format of the SYSCNTRL definition statement is:

[symbol] SYSCNTRL operand

Operands

OPTIONS=(entry,...)

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol.

OPTIONS=(entry,...)

(required)

Specifies which of the dynamic control facilities are included in the NCP. *entry* can be any value listed in Figure 2-13.

SYSCNTRL

Entry	Facility
BACKUP	Switched network backup
BHSASSC	Modify block-handler set
DLRID	Display line resource ID
DVSINIT	Change device session initiation information
ENDCALL	Physical disconnect (switched lines only)
LNSTAT	Display line status
MODE	Set destination mode
NAKLIM	Change line negative-polling response limit
RCNTRL	Request control mode reset
RCOND	Reset conditional
RDEVQ	Reset device queues
RECMD	Reset at end of command
RIMM	Reset immediate
SESINIT	Change line session initiation information
SESSION	Change session limit
SSPAUSE	Change service-seeking pause
STORDSP	Display contents of controller storage
XMTLMT	Change device transmission limit

Notes:

- 1. The STORDSP operand applies only to non-BSC/SS NCP definitions. All other operands apply only to BSC/SS definitions.*
- 2. Refer to the appropriate access method installation guide or to the appropriate NTO Installation Guide to determine whether a particular facility applies, is required, or is optional for this NCP.*

Figure 2-13. Dynamic Control Facilities Used by VTAM and TCAM

TERMINAL Definition Statement

USAGE: BSC or SS devices only. One for each device, including those attached to cluster controllers. Represents first or only input or output component of a device.

POSITION: Must follow SERVICE definition statement or other device definition statement (CLUSTER, TERMINAL, or COMP).

Each SS and BSC device attached to a nonswitched point-to-point or multipoint line must be represented in the NCP by a separate TERMINAL definition statement. All terminals attached to an IBM 3270 series control unit must be represented by TERMINAL definition statements.

Note: TERMINAL definition statements also are required for unused terminal addresses on certain BSC control units. See the topic 'IBM 3270 series except 3275' under the GPOLL operand of the CLUSTER definition statement.

Devices that call the communication controller over the switched telephone network are not represented individually by TERMINAL definition statements. Instead, a TERMINAL definition statement is required for each of the controller's connections (ports) that are used for receiving calls. The control blocks generated by each TERMINAL definition statement are used to represent whichever device is connected to the controller for the duration of any given call.

Devices that are called by the controller are represented either by individual TERMINAL definition statement or by a common TERMINAL definition statement that represents whichever device the controller is connected to during any given call.

Code an individual TERMINAL definition statement for each device whose telephone number is maintained within the controller. Specify the telephone number of the device in the DIALNO operand.

Code a single TERMINAL definition statement to represent all devices for which VTAM supplies the telephone number.

Each TERMINAL definition statement coded generates a resource name and applies only to lines operating in network control mode.

If the device specified in this TERMINAL definition statement is an IBM 3275 or a device attached to an IBM 3270 series (except 3275) control unit, the control unit must be represented by a CLUSTER definition statement. (See the CUTYPE operand of the CLUSTER definition statement for requirements regarding use of TERMINAL definition statements.) Do not code a TERMINAL definition statement for a printer attached to an IBM 3275 (TERM = 3275).

TERMINAL

FORMAT AND OPERANDS: The format of the TERMINAL definition statement is:

symbol TERMINAL operand[,operands]

Specifying Lower-Level Operands in a Higher-Level Definition

Statement: In statement addition to the previous operands, you can specify most operands of the COMP definition statement in the TERMINAL definition statement or in the LINE or GROUP definition statement instead of in the COMP definition statement. Figure 2-1 on page 2-4 shows which of the COMP definition statement operands you can specify in the TERMINAL definition statement.

VTAM Users Only: Appearing at the end of the following list of operands are the VTAM operands that you can code in this definition statement. The VTAM operands provide information only to the VTAM initialization process and are not required as input to the NCP generation procedure. See the appropriate *VTAM Installation* manual for descriptions of these operands and for information on the VTAM initialization process.

Operands	Line Control		Switched	
	BSC	SS	YES	NO
TERM=type	R	R	R	R
{addr chars } [,ADDR={selection chars }] {([normal addr chars] [,alt addr chars])}	•	•	•	•
[,ATTN={ <u>DISABLED</u> }] {ENABLED }		•	•	•
[,BFRDLAY=count]	•	•	•	•
[,BHEXEC={ <u>ALL</u> }] {([PT1][,PT2][,PT3])}	•	•	•	•
{ <u>NONE</u> } [,BHSET={ <u>DYNAMIC</u> }] {setname}	•	•	•	•
[,CONV={ <u>NO</u> }] {YES}	•	•	•	•
[,CRDLAY={ <u>NO</u> }] {YES}		•	•	•
[,CRITSIT={ <u>NO</u> }] {YES}	•	•	•	•

Operands	Line Control		Switched	
	BSC	SS	YES	NO
[,CTERM={ <u>NO</u> }] {YES}	•	•	•	
{n } [,CUIDLEN={TWX}] {ALL} {Q }	•	•	•	
[,DIALNO=(chars[,count])]	•	•	•	
[,DIALSET={NONE }] {dialset name}	•	•	•	
[,ENDTRNS={ <u>EOT</u> }] {EOB}		•	•	•
[,EXEC={ <u>YES</u> }] {NO }	•	•	•	•
[,FANOUT=terminal name]	•		•	•
[,FEATURE=([{ACR }][,{ATTN }] { <u>NOACR</u> } { <u>NOATTN</u> }] [,{BREAK }][,{CHECK }] { <u>NOBREAK</u> } { <u>NOCHECK</u> }] [,{SCTL }][,{TOSUPPR}] { <u>NOSCTL</u> } { <u>NOTOSUP</u> }] [,{XCTL }]]) { <u>NOXCTL</u> }]		•	•	•
{symbol} [,IDSEQ={ <u>NONE</u> }] {PASS } {IGNORE}	•	•	•	
[,INHIBIT=([{TEXTTO}[,{TIMEFILL}[,{WACKCNT} [,{SUBBLOCK}[,{ERPR}[,{ERPW}]]]) { <u>NONE</u> }]]	•	•	•	•
[,ITBMODE=([{YES}][,{YES}])] {NO } {NO }	•		•	•
[,LCST={ <u>NONE</u> }] {mtalcst name}		•	•	
[,LGRAPHS=([{ <u>REJECT</u> }][,{ <u>REJECT</u> }] {ACCEPT} {ACCEPT})]	•	•	•	•
[,NPACOLL={ <u>NO</u> }] {YES}	•			•
[,POLL=chars]	•	•	•	•

TERMINAL

Operands	Line Control		Switched	
	BSC	SS	YES	NO
[,PT3EXEC={NO }] {YES}	•	•	•	•
[,SRT=({65535 },{255})] {m } {n }]	•		•	•
[,VPRINT={YES}] {NO }	•		•	•
[,XTWXID={YES}] {NO }	•		•	

VTAM Operands

[,DLOGMOD=default logon mode entry name]
[,FEATUR2=(operand,operand...)]
[,ISTATUS={ACTIVE }]
 {INACTIVE}
[,LOGAPPL=application program name]
[,LOGTAB=interpret table name]
[,USSTAB=USS definition table name]

Operand Descriptions

symbol

Provides a resource name for the device and is required. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

TERM=type

For the IBM 3705, the IBM 3725, and the IBM 3720:

Specifies the type of device represented by this TERMINAL definition statement. The device type must be one of those listed in Figure 2-14.

If the line the device is attached to operates in emulation mode *and* in network control mode, specify the TERM operand in the LINE (or GROUP) definition statement and in the TERMINAL definition statement.

If this TERMINAL definition statement defines a call-in logical-connection station (CTERM = YES) representing more than one type of BSC device, specify any of the types in this operand. For example, if this logical-connection station represents IBM 1130, 2780, and System/370 Model 135 devices, you can specify TERM = 1130, TERM = 2780, or TERM = 3135.

This operand is required. You can code it in this TERMINAL definition statement or in a higher-level (LINE or GROUP) definition statement.

Note: If the SPEED operand on the LINE definition statement is coded as either AUTOICC1 or AUTOICC2, you must code TERM = TWX.

<i>If type of device is</i>	<i>Code TERM =</i>
IBM 1050 Data Communication System	1050
IBM 1130 Computing System	1130
IBM 1800 Data Acquisition and Control System	1800
IBM System/360 Model 20	2020
IBM System/360 Model 25	2025
IBM 2701 Data Adapter Unit	2701
IBM 2703 Transmission Control	2703 ¹
IBM 2715 Communications Terminal Model 1	2715
IBM 2740 Transmission Control Unit Model 2	2740-1
IBM 2740 Communications Terminal Model 2	2740-2
IBM 2741 Communications Terminal	2741
IBM 2770 Data Communications System	2770
IBM 2780 Data Transmission Terminal	2780
IBM 2972 General Banking Terminal System:	
IBM 2980 Teller Station Models 1 and 4	2980 ¹
IBM 2980 Administrative Station Model 2	2980 ¹
IBM 3270 Information Display System:	
IBM 3275 Display Station	3275
IBM 3276 Control Unit Display Station	3277
IBM 3277 Display Station	3277
IBM 3278 Display Station	3277
IBM 3284 Printer	3284
IBM 3286 Printer	3286
IBM 3287 Printer	3284
IBM 3288 Line Printer	3286
IBM 3289 Line Printer	3286
IBM 3650 Retail Store System (in BSC mode)	SYS3
IBM 3660 Supermarket System (in BSC mode)	SYS3
IBM 3704 Communications Controller	3704
IBM 3705 Communications Controller	3705
IBM 3735 Programmable Buffered Terminal	3735
IBM 3740 Data Entry System:	
IBM 3741 Data Station	3741
IBM 3747 Data Converter	3747
IBM 3767 Communications Terminal (in SS mode):	
Supported as 2740 Model 1	2740-1
Supported as 2740 Model 2	2740-2
Supported as 2741	2741

¹Valid for the IBM 3705 Communications Controller only

Figure 2-14 (Part 1 of 2). Values for TERM Operand of TERMINAL Definition Statement

TERMINAL

<i>If type of device is</i>	<i>Code TERM=</i>
IBM 3770 Data Communications System (in BSC mode)	2770
IBM 3780 Data Communications Terminal ¹	3780
IBM System/370 Model 125	3125
IBM System/370 Model 135	3135
IBM System/3	SYS3
IBM System/7 ² (BSC version)	(Footnote ³)
IBM System/7 (SS version)	2740-1
IBM System/32 (BSC version)	SYS3
IBM Communicating Magnetic Card Selectric Typewriter	2741
83B3 Selective Calling Station	83B3 ⁴
Western Union Plan 115A Outstations	115A ⁴
Western Union Teletypewriter Exchange Service	TWX
World Trade Teletypewriter Terminals ³	WTTY
Multiple Terminal Access (IBM 1050,2740,2741;TWX) ³	MTA

¹Specify this type if the line operates only in network control mode.

²Specify a System/7 (BSC version) as follows: (1) Specify TERM = SYS3 in the TERMINAL (or LINE or GROUP) definition statement if the line operates only in network control mode. (2) Specify TERM = SYS3 in the LINE (or GROUP) definition statement if the line operates in both network control and emulation modes (alternately). (3) Specify TERM = SYS7 in the LINE (or GROUP) definition statement if the line operates only in emulation mode.

³Not supported on switched lines.

⁴Valid for the IBM 3705 Communications Controller only

Figure 2-14 (Part 2 of 2). Values for TERM Operand of TERMINAL Definition Statement

```
{addr chars }
[ADDR={selection chars } ]
{([normal addr chars][,alt addr chars])}
```

Specifies the hexadecimal addressing or selection characters assigned to the device represented by this TERMINAL definition statement.

For NCP V4R2 Users Only: If you have coded LPDATS = LPDA2 in the LINE definition statement for this device, then the first 2 characters in the value you specify on ADDR cannot be FD or FF.

addr chars

Specifies the addressing characters for an SS or BSC device on a multipoint line or an IBM 1050 on a switched point-to-point line (POLLED = YES in the LINE or GROUP definition statement).

This operand is not valid if:

- This TERMINAL definition statement represents a call-in, multiple-terminal-access, logical-connection station (TERM = MTA and CTERM = YES).

- You specified POLLED=NO in the LINE definition statement and LNCTL=SS in the GROUP definition statement for the line to which this device is attached.

If this definition statement represents a *call-out* MTA terminal (TERM=MTA, CTERM=NO), and if any of the MTALCST definition statements named in the LCST operand represent IBM 1050 terminals, specify the 1050 polling and/or addressing characters in the POLL and ADDR operands.

Code only the alphanumeric addressing characters, omitting any control characters. For example, for an IBM 2740 with station control whose address is A, you code the hexadecimal representation of the EBCDIC character A (ADDR=C1). Do not include the start-of-address character that is transmitted before the addressing character or the space character transmitted following it (S A SP).

Note: The character specified for a tributary controller on a multipoint line must have the same bit pattern as the corresponding polling character specified in the POLL operand, except that the third bit from the left (bit 2) must be 1. (Bit 2 in the polling character always is 0.)

selection chars

Specifies (if component selection is required) the component selection characters for one of the output components attached to the device on a BSC point-to-point line. For an IBM 2780, specify the alphanumeric component selection character but not the escape (ESC) character that precedes it. For an IBM 2770, specify the device control character (DC1, DC2, or DC3) that serves as the component selection character. For all BSC devices, specify all characters except ENQ, ESC, and ETB.

([normal addr chars][,alt addr chars])

Specifies the normal and/or alternate addressing characters used for an IBM 2980 terminal.

The system designer determines the addressing character (escape sequence) assigned to the station.

[ATTN={DISABLED}
{ENABLED }]

*(IBM 1050, 2741; TWX; World Trade
teletypewriter terminals)*

Specifies whether the NCP accepts (ENABLED) or ignores (DISABLED) the attention signal of the terminal. When you specify ATTN=ENABLED, an attention signal received from the terminal stops the NCP from sending to the terminal and notifies the host processor. When you specify ATTN=DISABLED, the NCP ignores the attention signal.

ATTN=ENABLED is valid only if you specify FEATURE=ATTN in this TERMINAL definition statement.

TERMINAL

[BFRDLAY=count]

(buffered terminals only)

Specifies the delay, in seconds, between successive transmissions to the device represented by this TERMINAL definition statement. The maximum value for *count* is 255; the minimum is 0 (no delay). This operand is valid only for the following IBM buffered devices:

2740-2 (Model 2 with the Buffer Receive feature)

2770

3275

3284

3286

3780

2980 (valid for the 3705 Communications Controller only)

If you specify TERM = 3275 and a printer is attached, or if you specify TERM = 3284 or TERM = 3286, make the buffer delay 13 seconds or more. The 13 seconds are required to print a message that fills half the device's print buffer. Average messages that are shorter or longer require either a shorter or longer delay. BFRDLAY = 0 is not valid if you specify TERM = 3284 or TERM = 3286.

The terminal types listed return a busy response if addressed while printing. No loss of data occurs, but additional NCP overhead is required to handle the busy response and then resend the message.

If you omit this operand and specify TERM = 3284 or TERM = 3286, the default is a 13-second delay. If you omit this operand for any other device, the default is no delay.

This operand is valid only for a nonswitched multipoint line.

Note: If you specify TERM = 3275 and a printer is attached to the terminal, you must specify this operand.

[BHEXEC={ALL }]
{ ([PT1] [,PT2] [,PT3]) }

(block-handling routines only)

Specifies which block-handling routines the NCP uses from the block-handler set defined by the BHSET. Code this operand only if you specify *setname* in the BHSET operand of this definition statement. BHEXEC is ignored if you code BHSET = NONE or BHSET = DYNAMIC, or if you omitted the BHSET operand.

If you omit this operand and specify BHSET = *setname*, ALL is the default.

You must specify at least one execution point if you code BHSET = *setname*.

[PT1]

Specifies that the NCP uses the PT1 block-handler. The NCP invokes this block-handler upon receiving a contact or write request from the host processor *but* before it determines whether the line is available to contact the device.

[PT2]

Specifies that the NCP uses the PT2 block-handler. The NCP invokes this block-handler upon receiving a contact or write request from the host processor *or* after message data is received from the line. The NCP invokes the block-handler while the line is available for sending to or receiving from the device.

[PT3]

Specifies that the NCP uses the PT3 block-handler. The NCP invokes this block-handler after receiving a block, message, or transmission from the device.

ALL

Specifies that each block-handler in the set is used at the appropriate time.

[BHSET={NONE }
{DYNAMIC}]
{setname}

(block-handling routines only)

Specifies the name of a set of block-handlers associated with this device.

NONE

Specifies that no block-handler set is assigned to this device.

DYNAMIC

Specifies that no block-handler set is assigned initially to this device, but one can be assigned dynamically from the host processor.

setname

Specifies a block-handler set assigned to this device. *setname* must be the name of a BHSET definition statement.

[CONV={NO }]
{YES}

(network control mode only)

Specifies whether the NCP, upon receiving a message block from a device, sends the device a message block (instead of a positive acknowledgment) in response. Sending a message block in response (conversational response) is possible only if the program currently holds a request-to-send to the device. If the NCP has no request, it sends the usual positive acknowledgment.

TERMINAL

Devices capable of accepting conversational responses are:

IBM 1050
IBM 2740 with Record Checking feature
IBM 2770 with Conversational Mode feature
All other BSC devices except IBM 2715 and 2780

[CRDLAY={NO }]
{YES}

(SS lines only)

Specifies whether the NCP delays processing a write operation after receiving a carriage-return signal. This delay does not occur if a Read command is queued in the NCP as the next operation for the device.

CRDLAY = YES is valid only if this definition statement represents an IBM 1050, 2740 Model 1, 2741, or TWX terminal or a multiple-terminal-access (MTA) terminal.

Note: No delay occurs if (1) a carriage return signal is followed by an EOT and (2) the terminal type is a 1050 multipoint or is in a group of MTA terminals that includes a 1050 multipoint terminal.

[CRITSIT={NO }]
{YES}

Specifies whether the NCP notifies this device, if logically active, when the NCP is about to close down the network because of a critical situation.

Note: A critical situation message cannot be sent from a tributary controller to its control device. Therefore, if the NCP is running in a tributary controller and this definition statement represents the control device to which the tributary controller is connected, CRITSIT = YES is not valid. (If you coded the TADDR operand in the LINE definition statement preceding this TERMINAL definition statement, do not code CRITSIT = YES.)

If you code CRITSIT = YES, also specify the text of the message in the CSMSG operand of the BUILD definition statement. If you omit the CSMSG operand, all CRITSIT operands are ignored.

The NCP sends the notification message to the output component represented by the TERMINAL definition statement, not to any output component represented by a COMP definition statement.

If this TERMINAL definition statement represents a device on a multipoint line or an IBM 1050 on a switched point-to-point line, you must specify the addressing characters of the device in the ADDR operand in order for the critical situation message to be sent.

[CTERM={NO }]
 {YES}

(switched lines only)

Specifies that this TERMINAL definition statement represents devices that call the controller over the switched line associated with this definition statement. The TERMINAL definition statement generates control fields to hold information about the devices. The NCP uses these control fields successively for various devices that call over the line represented by the LINE definition statement preceding this TERMINAL definition statement.

Only one TERMINAL definition statement with CTERM = YES is required following each LINE definition statement in which you coded CALL = IN or CALL = INOUT for a switched line. The CTERM operand is not required and you omit it for a LINE definition statement in which CALL = OUT is coded.

TERMINAL definition statements that represent devices called over switched call-out lines have no required positional relationship to the LINE definition statement for such lines. The association of devices and call-out lines in this case is made using DIALSET operands that specify the names of logical groups. The DIALSET definition statement defines dial sets. The TERMINAL definition statement can appear following any LINE definition statement representing a switched line whose line control matches that used by the terminals called. For example, the following definition statements specify two switched lines used for call-out only, one line used for call-in and call-out, and four devices. All three lines are included in one dial set. Five TERMINAL definition statements are required. One, in which CTERM = YES is coded, represents the logical-connection station. The remaining definition statements represent each of the four devices called over lines in the dial set.

DSET	DIALSET	LINES=(A,B,C)
G	GROUP	DIAL=YES,...
A	LINE	CALL=OUT,DIALSET=DSET,...
T1	TERMINAL	DIALSET=DSET,DIALNO=(5142),...
T2	TERMINAL	DIALSET=DSET,DIALNO=(7615),...
T3	TERMINAL	DIALSET=DSET,DIALNO=(8204),...
T4	TERMINAL	DIALSET=DSET,DIALNO=(7382),...
B	LINE	CALL=OUT,DIALSET=DSET,...
C	LINE	CALL=INOUT,DIALSET=DSET,...
LOGCON	TERMINAL	CTERM=YES,...

(In this example, one or more of the TERMINAL definition statements can follow LINE definition statement B or LINE definition statement C. The resulting configuration is identical.)

Note: If you specify CTERM = YES, no operand in any definition statement can refer to the name of this TERMINAL definition statement. For example, this TERMINAL definition statement cannot be named in the IDSEQ operand of the IDLIST definition statement.

TERMINAL

[CUIDLEN={n }
{TWX }
{ALL }
{0 }]

(switched BSC or TWX device only)

Specifies the length of the ID sequence the NCP sends to the device represented by this definition statement when the device initiates the connection.

n

Specifies the length of the ID sequence the NCP sends as EBCDIC characters.

If this TERMINAL definition statement represents a BSC device, *n* must be less than or equal to the length of the EBCDIC characters specified on the *chars* parameter of the CUID operand of the BUILD definition statement.

If this TERMINAL definition statement represents a switched TWX device, *n* must equal the length of the *inchars* parameters specified by the TWXID operand of the BUILD definition statement.

The maximum value for *n* is 20.

TWX

Specifies that the NCP sends the TWX ID to a TWX terminal represented by this definition statement. If you specified CTERM=NO, the NCP sends the entire sequence specified by the *outchars* parameter of the TWXID operand. If you specified CTERM=YES, the NCP sends the entire sequence specified by the *inchars* parameter of the TWXID operand.

ALL

Specifies that the NCP sends all of the appropriate ID sequence (TWXID for TWX terminals, CUID for BSC devices) to the device represented by this TERMINAL definition statement.

0

Specifies that the NCP sends no ID sequence to the device represented by this TERMINAL definition statement.

Note: This operand is valid only if the GROUP definition statement specifies DIAL=YES and the LINE definition statement specifies POLLED=NO; and either (1) the GROUP definition statement specifies LNCTL=SS and this TERMINAL (or higher-level) definition statement specifies TERM=TWX or (2) the GROUP definition statement specifies LNCTL=BSC.

[DIALNO=(chars[,count])]

(switched lines only)

Specifies the numerals and the length of a telephone number the NCP uses to call the device represented by this TERMINAL definition statement.

chars

Specifies the telephone number of the device. *chars* represents dial digits (EBCDIC numeric characters) the NCP uses to contact the device over a switched line. You can specify this parameter either if the device is reached by a switched connection or if the switched connection is an alternate to the primary nonswitched point-to-point line.

[count]

Specifies the number of bytes reserved to hold the telephone number. The minimum value is 1; the maximum value is 32.

Use these two suboperands as follows:

- If the NCP always calls the device using the dial digits you specify in this operand, code *chars* and omit *count*. For example, DIALNO = 19195678888.
- Code *chars* if the host processor updates the dial digits using the dynamic control facility. Also code *count* if the number of replacement digits can exceed the number of digits originally specified. For example, DIALNO = (19195678888,12). Otherwise, you can omit the *count* suboperand.

This operand is not valid if CTERM = YES or DIALSET = NONE.

Separator and end-of-number characters: The sequence of dial digits can include separator or end-of-number characters if the auto-call unit at the communication controller is designed to accept these characters. A separator character causes the auto-call unit to delay sending the next dial digit on the communication line until the auto-call unit receives a secondary dial tone. An end-of-number character sent to the auto-call unit after the last dial digit signals the auto-call unit that it has received the last digit of the telephone number and causes it to start monitoring the line for an answer tone from the distant device. Use of the end-of-number character can reduce the time needed to establish a connection, thus increasing line utilization.

You can code the separator character in the dial-digit sequence wherever a pause for a secondary dial tone is needed. You must code the end-of-number character at the end of the sequence.

The communication controller sends the auto-call unit only the 4 low-order bits of the digits specified in the sequence. The end-of-number bit pattern is 1100 (hexadecimal C). You can use any EBCDIC characters whose 4 low-order bits equal this pattern. The separator character, if needed, must be an underline character _ (hexadecimal 6D).

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Programmed dialing pause: If the auto-call unit is not equipped to use separator characters, you can introduce a programmed dialing pause into the dialing action to allow time to receive a secondary dial tone. At the point in the sequence where the pause is required, code one vertical bar character (hex FA) for each second of the pause. For instance, code 3 such characters if a 3-second pause is required. For example, DIALNO = (8|||5799).

```
[DIALSET={NONE          }]           (call-out switched line only)
      {dialset name}
```

Specifies the name of the DIALSET definition statement that defines the primary dial set associated with the device. This operand is required if the NCP can call the device. This operand is not required if the NCP cannot call the device.

Each time the NCP receives a call-out request for the device, it tries to call that device over one of the switched lines in the specified dial set.

Rules for use of this operand are:

- If you want the NCP to call the device using the same dial set specified by the LINE definition statement preceding this TERMINAL definition statement, omit the DIALSET operand in this definition statement. The DIALSET operand of the LINE definition statement specifies the dial set used.
- If you want the NCP to call the device using a dial set different from the one specified by the LINE definition statement this TERMINAL definition statement, specify the desired dial set in the DIALSET operand of this TERMINAL definition statement.
- If you don't need a dial set associated with this device, code DIALSET = NONE. DIALSET = NONE is appropriate when the device can call the communication controller but the NCP cannot call the device.

Note: The lines in the dial set specified by this operand must have the same operating characteristics as those specified by the LINE definition statement that precedes this TERMINAL definition statement.

```
[ENDTRNS={EOT} ]           (SS lines only)
      {EOB}
```

Specifies whether the NCP considers a transmission ended by an end-of-transmission character (EOT) or by an end-of-block character (EOB).

Note: This operand is valid only for SS terminals that can transmit an EOB EOT ending sequence. This operand, however, is not valid for an IBM 2740 Model 2.

[EXEC={YES}]
{NO }

Specifies whether the block-handler set can be used without being activated by the host. If EXEC = YES, the block-handler is activated during initialization of the NCP. If EXEC = NO, the block-handler must be activated by a request from the host.

[FANOUT=terminal name]

(BSC terminals only)

Specifies that this TERMINAL definition statement is the first of a sequence of TERMINAL definition statements representing devices attached to the same modem, and specifies the name of the last TERMINAL definition statement in the sequence. (The modem is called a *fanout* modem because several devices can be attached to it. The modem referred to is the modem at the distant end of the communication line, not the modem attached to the communication controller.)

For example, assume that four terminals represented by four TERMINAL definition statements named T1, T2, T3, and T4 are attached to a fanout modem. In the FANOUT operand of the first TERMINAL definition statement, you specify the name of the last TERMINAL definition statement representing a terminal attached to the same modem this way:

```
T1 TERMINAL FANOUT=(T4) , . . .
T2 TERMINAL . . .
T3 TERMINAL . . .
T4 TERMINAL . . .
```

The FANOUT operand appears only in the first TERMINAL definition statement, as shown. If only one terminal is attached to the fanout modem, omit the FANOUT operand.

All TERMINAL definition statements representing devices attached to the same modem must appear in a single sequence, with no other intervening TERMINAL definition statements for other devices.

This operand is valid only for devices attached to a BSC line (you specified LNCTL = BSC in the GROUP definition statement).

[FEATURE=([{ACR }] [, {ATTN }] . . .)]
{NOACR} {NOATTN}

(SS lines in network control mode only)

Specifies the machine features with which certain types of terminals can be equipped. All parameters of this operand are optional.

[{ACR }]
{NOACR}

(IBM 1050 only)

Specifies whether the device is equipped with the Accelerated Carrier Return feature. (The NCP makes use of the Accelerated Carrier Return feature only if you specify FEATURE = ACR in *all* TERMINAL definition statements following the LINE definition statement. If you omit FEATURE = ACR in any TERMINAL definition statement, the NCP ignores the presence of the feature when sending to any device

TERMINAL

on the line.) For an IBM 1050 terminal accessed through MTA, refer to the ACR operand of the MTALCST definition statement.

[{ATTN }]
{NOATTN} *(IBM 1050, 2741, 3767 (in 2741 mode);
TWX; World Trade teletypewriters;
and MTA lines only)*

Specifies whether the terminal can send attention signals to the controller. For IBM 1050 or 2741 terminals, specify FEATURE = ATTN only if the terminal is equipped with the Receive Interrupt (1050) or Interrupt (2741) feature.

For the IBM 3705: This suboperand is valid also for 83B3 and WU 115A terminals.

[{BREAK }]
{NOBREAK} *(IBM 1050, 2741, 3767 (in 2741 mode);
TWX; World Trade teletypewriters;
and MTA lines only)*

Specifies whether the NCP can interrupt a transmission from the device by sending a break signal. For IBM 1050 or 2741 terminals, specify FEATURE = BREAK only if the terminal is equipped with the Transmit Interrupt feature. FEATURE = BREAK is valid only if you specify DUPLEX = FULL or SCLSET = YES in the LINE definition statement and specify XBREAK = integer in the BUILD definition statement. An exception is that for a 3767 specified as a 2741 (in TERM operand of the TERMINAL definition statement), FEATURE = BREAK also is valid if you specify DUPLEX = HALF.

For the IBM 3705: This suboperand is valid also for 83B3 and WU 115A terminals.

[{CHECK }]
{NOCHECK} *(IBM 2740 only)*

Specifies whether the device is equipped with the Record Checking feature.

[{SCTL }]
{NOSCTL} *(IBM 2740 Model 1 only)*

Specifies whether the device is equipped with the Station Control feature. (This feature is optional for the IBM 2740 Model 1 but standard for the Model 2.)

[{TOSUPPR }]
{NOTOSUP} *(IBM 1050 only)*

Specifies whether the IBM 1050 terminal represented by this TERMINAL definition statement is equipped with the Time Out Suppression feature.

[{XCTL }]
 {NOXCTL}

(IBM 2740 Model 1 only)

Specifies whether the terminal is equipped with the Transmit Control feature.

{symbol}
 [IDSEQ={NONE }]
 {PASS }
 {IGNORE}

(BSC and TWX devices switched lines only)

Specifies whether the device or devices represented by this TERMINAL definition statement can transmit identification (ID) sequences when calling or being called by the controller and, if so, how the NCP reacts to the sequence.

The IDSEQ operand is valid only if both of the following apply:

- The device is a BSC or TWX device on a switched line (GROUP definition statement specifies LNCTL=BSC or LNCTL=SS, DIAL=YES; LINE definition statement specifies POLLED=NO [or POLLED operand is omitted]; and this TERMINAL definition statement specifies a BSC or TWX device in TERM).
- The controller can expect an ID sequence from a device it calls (this TERMINAL definition statement specifies a telephone number in DIALNO).

symbol

Specifies that the NCP expects and verifies ID sequences received from devices. *symbol* also names the identification list (IDLIST definition statement) with which the program checks the sequences it receives. *symbol* is valid whether this TERMINAL definition statement represents a call-in logical-connection station (CTERM=YES) or a call-out station (CTERM=NO), but *symbol* is valid only if the type of device is not a multiple-terminal-access station (TERM operand does not specify MTA).

NONE

Specifies that no ID sequences are expected from devices that call the controller or are called by the controller.

PASS

Specifies that the NCP expects ID sequences from devices and passes to VTAM all ID sequences it receives. IDSEQ=PASS is valid only if this TERMINAL definition statement represents a call-in logical-connection station (you specified CTERM=YES).

IGNORE

Specifies that the NCP ignores—that is, neither checks nor passes to the host processor—any ID sequences it receives. IDSEQ=IGNORE is valid only if the controller calls the device represented by this

TERMINAL

TERMINAL definition statement. If devices are to call the controller (you specified CTERM = YES), IDSEQ = IGNORE is not valid.

```
[INHIBIT={ ( [TEXTTO] [ ,TIMEFILL] [ ,WACKCNT] [ ,SUBBLOCK] [ ,ERPR] [ ,ERPW] ) } ]  
{ NONE }
```

Specifies which of the NCP facilities are inhibited from functioning initially; that is, when the NCP begins running after being loaded into the controller.

Note: For BSC 3270 lines, it is recommended that you code INHIBIT = SUBBLOCK.

[TEXTTO]

Specifies that the NCP used the interval specified in the ITEXTTO operand of the BUILD definition statement, rather than the value specified by the TEXTTO operand of the GROUP definition statement, as the time limit between receipt of successive text characters.

[TIMEFILL] (SS lines only)

Specifies that automatic insertion of idle characters following carriage return and horizontal tab characters is inhibited. That is, no idle characters are sent. This parameter is valid only if you specified LNCTL = SS in (or omitted the LNCTL operand from) the GROUP definition statement.

[WACKCNT] (BSC lines only)

Specifies that the WACK limit specified by the WACKCNT operand of the GROUP definition statement is to be inhibited. That is, the first WACK received from the device causes the NCP to return the request to the host processor rather than to respond to that and subsequent WACKs with an ENQ character. This parameter is valid only if you specified LNCTL = BSC in the GROUP definition statement.

[SUBBLOCK]

Specifies that the sub-blocking indicated by the TRANSFR operand of the LINE (or GROUP) definition statement is inhibited. That is, if the number of buffers specified by the TRANSFR operand is filled by received text, the NCP terminates the receiving operation as if the cutoff limit (specified by the CUTOFF operand) had been reached.

[ERPR]

Specifies that recovery procedures for text-read errors (as specified by the RETRIES operand of the LINE definition statement) are inhibited. That is, the NCP does not attempt recovery for text-read errors.

[ERPW]

Specifies that recovery procedures for text-write errors (as specified by the RETRIES operand of the LINE definition statement) are inhibited. That is, the NCP does not attempt recovery for text-write errors.

NONE

Specifies that none of the NCP facilities are inhibited. That is, all NCP facilities become effective when the program starts to run.

```
[ITBMODE=( [{YES}] [, {YES}] ) ]           (BSC lines only)
             {NO }   {NO }
```

Specifies, for a BSC station, how the NCP initially handles intermediate text block (ITB) characters in text received from the station or the host processor.

The first suboperand specifies whether the program inserts an error information block (EIB) character following each ITB character received from the station.

The second suboperand specifies whether an EIB character follows each ITB character received from the access method. If you specify YES, the NCP removes the first character following each ITB character from the data before sending the data to the station.

This operand is valid only if you code LNCTL=BSC in the GROUP definition statement.

```
[LCST={NONE           } ]           (MTA lines only)
      {mtalcst name}
```

Specifies the name of the MTALCST definition statement representing the set of device characteristics used by the NCP when calling the device represented by this TERMINAL definition statement.

Code LCST = mtalcst name in the TERMINAL definition statement for each device that the NCP calls using a multiple-terminal-access line.

Code LCST = mtalcst name only if:

- You specify DIAL = YES and LNCTL = SS (or you omit the LNCTL operand) in the GROUP definition statement
- You specify TERM = MTA in the TERMINAL definition statement (or a higher-level definition statement)
- You specify CTERM = NO in (or omit CTERM operand from) the TERMINAL definition statement
- You specify a telephone number in the DIALNO operand of the TERMINAL definition statement.

Code LCST = NONE (or omit the operand) if you don't need to specify any MTALCST definition statements.

TERMINAL

```
[LGRAPHS=( [ {REJECT} ] [ , {REJECT} ] ) ]  
           {ACCEPT}   {ACCEPT}
```

Specifies whether leading graphics received from the device are accepted by the NCP or rejected (treated as an error condition).

The first parameter specifies acceptance or rejection of leading graphics for read operations. The second parameter specifies acceptance or rejection for write operations.

Note: For a 2740 Model 2, the second parameter must be ACCEPT.

```
[NPACOLL={YES} ]  
         {NO }
```

Specifies whether data transmitted and received by this terminal is eligible for collection by NPA. This operand is valid only if NPACOLL = YES in the CLUSTER definition statement and TERM = 3275, 3277, 3284, or 3286 in this definition statement. The default for this operand is NO. See the *NCP and SSP Resource Definition Guide* for more information.

```
[POLL=chars]
```

Specifies the hexadecimal representation of the EBCDIC polling characters assigned to this device.

For NCP V4R2 Users Only: If you have coded LPDATS = LPDA2 in the LINE definition statement for this device, then the first 2 characters in the value you specify on POLL cannot be FD or FF.

Code only the alphanumeric polling character, omitting any control characters. For example, for an IBM 2740 with station control whose polling character is A, you code the hexadecimal representation of the EBCDIC character A; thus POLL = C1. Do not code the space character that is transmitted after the polling character.

Note: If you coded TERM = 3275, 3277, 3284, or 3286 and the ADDR operand specifies the addressing character, the POLL operand must specify the polling character.

If this TERMINAL definition statement represents a call-in, logical-connection, IBM 1050 station (CTERM = YES, TERM = 1050), you must specify polling characters in at least one of the definition statements representing this station (that is, in the TERMINAL definition statement or in one of the COMP definition statement, if any, representing station components).

This operand is not valid if this TERMINAL definition statement represents an IBM 2470 without station control, a 2741, or a 2980, because these types of terminals cannot be polled individually.

This operand also is not valid if this TERMINAL definition statement represents a call-in, multiple-terminal-access, logical-connection station (TERM = MTA, CTERM = YES).

If this TERMINAL definition statement represents an MTA station (TERM = MTA) that is not a call-in MTA station (CTERM = NO), you can specify or omit the POLL or ADDR operands. An exception is that if any of the MTALCST definition statements named in the LCST operand of this TERMINAL definition statement represent IBM 1050 terminals, you must specify either POLL or ADDR, or both, in this TERMINAL definition statement.

Note: The character you specify in this POLL operand for a tributary controller must conform to the requirements described under the TADDR operand of the LINE definition statement.

[PT3EXEC={NO }]
{YES}

(block-handling routines only)

Specifies whether a block-handler set that runs at point 3 (see the BHSET definition statement) is associated with the device represented by this TERMINAL definition statement.

This operand is ignored if you omit the BHSET operand or if you code BHEXEC = NONE, BHEXEC = PT3, or BHEXEC = ALL in this TERMINAL definition statement.

[SRT={{65535 }},{255}]
{m } {n }

Specifies a threshold for the traffic count and for the number of temporary errors associated with this terminal. The traffic count is the total number of PIUs sent to or received from the terminal. When either of these thresholds is reached, the NCP generates a record maintenance statistics (RECMS) PIU to inform the host of the condition. *m* is the traffic count threshold and *n* is the error count threshold. The value of *m* can range from 1 to 65 535, with a default value of 65 535. The value of *n* can range from 1 to 255, with a default value of 255.

This operand is not valid if you specified LEVEL5 = USER in the GROUP definition statement.

[VPRINT={YES }]
{NO }

Specifies whether this device is treated as a virtual printer. In other words, specify VPRINT = YES for devices that require special printer processing but may not be true printers. For example, specify VPRINT = YES for graphic devices that are coded with TERM = 3286 or TERM = 3284 on the LINE definition statement.

VPRINT = YES is valid only if you specify the BFRDLAY operand and BFRDLAY is not zero.

If you omit this operand, NO is the default.

TERMINAL

[XTWXID={YES}]
 {NO }

(TWX switched lines only)

Specifies whether, at line activation time, the NCP will transmit the **ID** defined by the **TWXID** operand in the **BUILD** definition statement.

*Note: Remember that the **TWXID** sequence is referred to as an **ID** at line activation time and a **PROMPT** at **READ** time.*

If you omit this operand, **YES** is the default.

UBHR Definition Statement

USAGE: BSC or SS devices only. No limit on number allowed.

POSITION: Can appear in any sequence between the STARTBH and ENDBH definition statements.

Note: Use of the UBHR definition statement forces storage boundary alignment to the next 2K boundary because of the storage-protect feature of the communication controller. Therefore, up to 2K bytes of storage can be unused when the NCP is loaded into the controller.

See the *NCP and SSP Resource Definition Guide* for more information on these routines.

FORMAT AND OPERANDS: The format of the UBHR definition statement is:

```
[symbol]    UBHR    operand[,operands]
```

Operands

NAME=member name

```
[ ,ACCESS={GOOD } ]
           {ERROR}
```

```
           {BOTH  }
[ ,COMMAND={INVITE} ]
           {READ  }
```

```
[ ,ENTRY=entry point name]
```

```
[ ,PT2EXEC={BEFORE} ]
           {AFTER }
```

Operand Descriptions

[symbol]

Provides a name for the definition statement. *symbol* can be any valid assembler-language symbol. The first character cannot be \$.

NAME=member name

(required)

Specifies the name of a user-written module. The module name must be contained in the data set specified by the OBJ3725. For MVS, this data set can also be concatenated to OBJ3725. For VSE, the module name must be in a library within the LIBDEF chain.

UBHR

```
[ACCESS={GOOD }]  
        {ERROR}
```

Specifies whether the user block-handling routine processes only good (error-free) blocks or only blocks containing errors.

You can code the ACCESS operand only if the UBHR definition statement follows a STARTBH definition statement in which you specified BHEXEC = PT2 or BHEXEC = PT3. If you specified BHEXEC = PT2, you also must code PT2EXEC = AFTER in the UBHR definition statement. If this UBHR definition statement follows a STARTBH definition statement that specifies BHEXEC = PT1, this operand is not valid and must be omitted.

```
        {BOTH }  
[COMMAND={INVITE}]  
        {READ }
```

Specifies whether the user-written routine processes data received in response to a Read request, an Invite request, or both. This specification applies only for incoming data when the UBHR definition statement follows a STARTBH definition statement that specifies BHEXEC = PT2 or BHEXEC = PT3.

This operand is valid only if you specify ACCESS = GOOD in this definition statement, or omit the ACCESS operand.

If this UBHR definition statement follows a STARTBH definition statement that specifies BHEXEC = PT1, this COMMAND operand is not valid and must be omitted.

```
[ENTRY=entry point name]
```

Specifies the name of the entry point within the user-written module identified by the NAME operand.

If you omit the ENTRY operand, the entry-point name is assumed to be the same as the module name.

```
[PT2EXEC={BEFORE}]  
        {AFTER }
```

Specifies the user-written routine is to process outgoing message data *before* the I/O operation (PT2EXEC = BEFORE) or *after* the I/O operation (PT2EXEC = AFTER).

This operand is valid only in a UBHR definition statement that follows a STARTBH definition statement that specifies BHEXEC = PT2.

Appendix A. Hierarchy of Network Configuration Definition Statements

The network configuration definition statements specify characteristics and functions for particular resources attached to the NCP. You can view a network configuration as a logical arrangement of elements. Each kind of element occupies a different hierarchical level within the arrangement. A specific definition statement represents each element.

The highest element is the *telecommunication line*. A LINE definition statement represents each line in the network whether SS, BSC, or SDLC devices are connected to the line, and whether the line is nonswitched multipoint, nonswitched point-to-point, or switched point-to-point.

If the line operates only in emulation mode, no other definition statements are required to represent the devices connected to the line. Operation in network control mode, however, requires that a definition statement for each of the remaining elements in the hierarchy follow the LINE definition statement.

SS Terminals and Nonclustered BSC Devices

A TERMINAL definition statement generally represents each SS terminal and each BSC device (exclusive of cluster-type stations). A COMP definition statement can represent each pollable or addressable component of a terminal.

Consider a network consisting of three lines, six devices, and 17 components arranged as shown in Figure A-1.

If all the lines operate only in emulation mode, only LINE definition statements are required to represent the network:

Definition Statement	Represents
LINE	Line 1
LINE	Line 2
LINE	Line 3

On the other hand, if all lines operate in network control mode, or sometimes in emulation mode, **TERMINAL** definition statements are required as well:

Definition Represents	Statement
LINE	Line 1
TERMINAL	Device A, components A1, A2, A3, A4
TERMINAL	Device B, components B1, B2
TERMINAL	Device C, components C1, C2
LINE	Line 2
TERMINAL	Device D, components D1, D2
LINE	Line 3
TERMINAL	Device E, components E1, E2, E3, E4, E5
TERMINAL	Device F, components F1, F2

The preceding definition statement sequence sufficiently represents the network if only one polling sequence and one addressing sequence are required for each device. This **TERMINAL** definition statement works if the device is:

- A computer
- A transmission control unit (such as an IBM 2701)
- A terminal having only one input component and one output component, typically a keyboard and a printer (for instance, IBM 2741) or a keyboard and a display screen.

One **TERMINAL** definition statement also suffices to represent a terminal having multiple input and/or output components if only a general polling and a general addressing sequence are required.

If more than one polling or addressing sequence (or both) is required, each additional pair of polling and addressing sequences must be specified by a **COMP** definition statement. The conditions under which **COMP** definition statements are required are explained further in the description of the **COMP** definition statement.

Each **COMP** definition statement can represent one input component and one output component. Therefore, assuming that components A3 and E3 are input (polled) components and A4 and E4 are output (addressed) components, one **COMP** definition statement for each **TERMINAL** definition statement is required to accommodate these added components. The third additional component of device E (component E5) requires another **COMP** definition statement.

Assume now that individual polling and addressing sequences are needed for each device in the configuration of Figure A-1. Three COMP definition statements must be added to the preceding definition statement sequence, resulting in this sequence:

Definition Statement	Represents
LINE	Line 1
TERMINAL	Device A, components A1, A2
COMP	Components A3, A4
TERMINAL	Device B, components B1, B2
TERMINAL	Device C, components C1, C2
LINE	Line 2
TERMINAL	Device D, components D1, D2
LINE	Line 3
TERMINAL	Device E, components E1, E2
COMP	Components E3, E4
COMP	Component E5
TERMINAL	Device F, components F1, F2

Code COMP definition statements only if they are needed to specify polling and addressing sequences beyond the first polling and addressing sequences specified in the TERMINAL definition statement. Avoiding COMP definition statements where possible conserves storage space within the communication controllers.

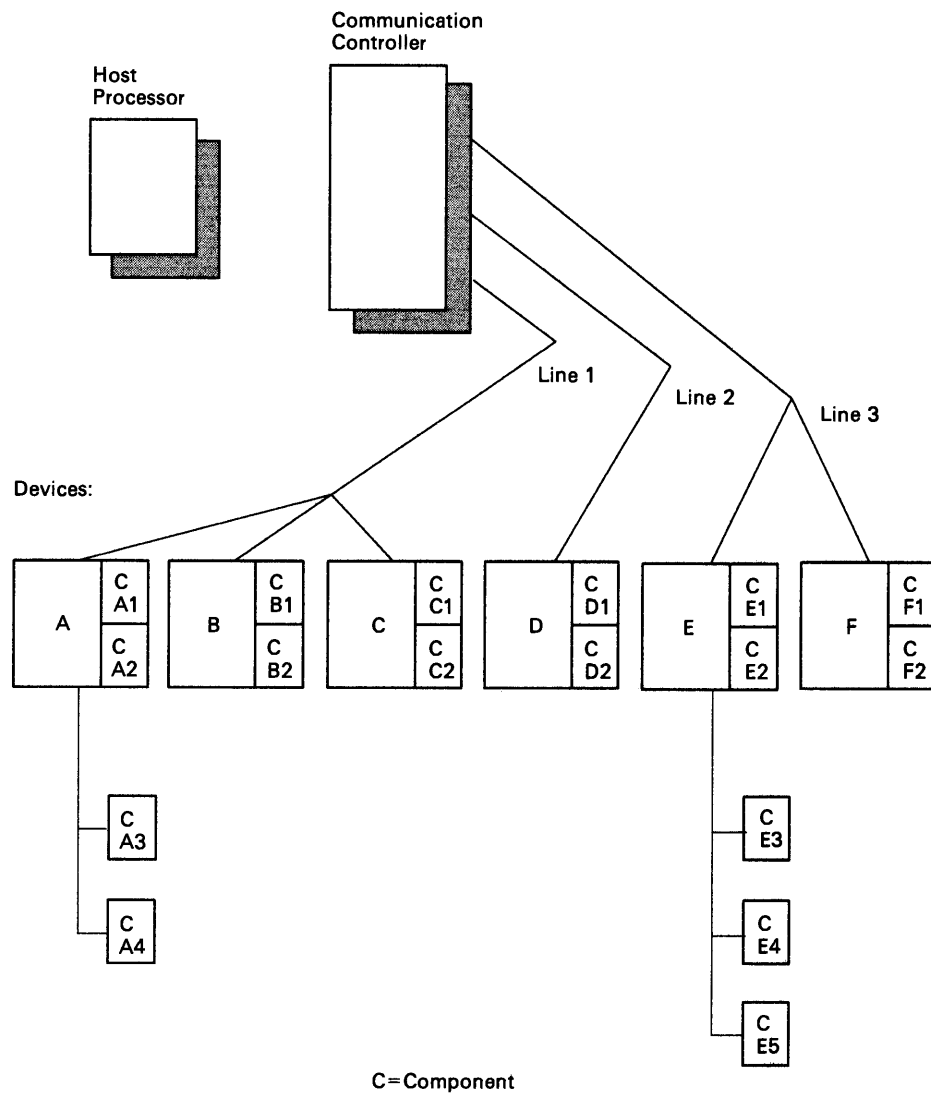


Figure A-1. Example of Line Groups

Clustered BSC Stations

The preceding arrangement differs for clustered BSC stations such as the IBM 3270 and 2972. For such stations, the definition statement sequence is LINE, CLUSTER, and TERMINAL, rather than LINE, TERMINAL, and COMP.

Consider, for example, a line connected to two terminal control units (for example, 2972), to each of which are attached three terminals (for example, 2980).

You represent this configuration by the sequence:

```
LINE
  CLUSTER
  TERMINAL
  TERMINAL
  TERMINAL
  CLUSTER
  TERMINAL
  TERMINAL
```

The highest level in the hierarchy (telecommunication lines) is represented by the LINE definition statement, the next level (cluster controller) by CLUSTER definition statements and the lowest by the TERMINAL definition statements.

SDLC Devices

The definition statement hierarchy for SDLC devices other than communication controllers (for example, IBM 3600, 3767, 3771, 3776) is LINE, PU, LU for nonswitched links; and LINE, PU for switched links. A single PU definition statement represents the physical unit of the SDLC device.

If the NCP communicates with the physical unit over a *nonswitched* SDLC link, one or more LU definition statements following the PU definition statement represent the logical units associated with the physical unit. (A logical unit is an application program within the physical unit together with the devices associated with that program.)

For example, if one physical unit having four logical units is attached to a nonswitched SDLC link, the following sequence is required:

```
LINE
  PU
  LU
  LU
  LU
  LU
```

If the NCP communicates with the physical unit over *switched* facilities, the logical units are not represented by LU definition statements, and the definition statement sequence is simply LINE, PU. The NCP control blocks representing logical units are allocated dynamically from the pool of control blocks defined by the LUPPOOL and LUDRPOOL definition statements.

Communication Controller Attached to SDLC Link

Each communication controller connected by an SDLC link to another communication controller is represented by a PU definition statement following the LINE definition statement.

For example, if controller A is connected by an SDLC link to controller B, the NCP for controller A requires:

```
LINE  
PU (represents controller B)
```

The NCP for controller B:

```
LINE  
PU (represents controller A)
```

Line Groups

A communication line group consists of lines that have the following characteristics in common:

- All lines in the group are nonswitched point-to-point, nonswitched multipoint, or switched point-to-point.
- All lines in the group are polled, or none are polled.
- All devices connected to lines in the group are SS devices, all are BSC, or all are SDLC devices.
- If the devices are binary synchronous, they can be different types--for example, IBM 2770, IBM 2780, and IBM 1130--but all must use the same transmission code. All BSC devices use a uniform line control scheme.
- If the devices are SDLC, they can be different types. All SDLC devices use a uniform transmission code and line control scheme.
- If the devices are SS, all must be of the same type--for example, they can be IBM 1050 or IBM 2741, but not both--and all must use the same transmission code. If they are IBM 2740 terminals, they must have certain features in common. For example, a line group cannot include both 2740s with the Record Checking feature and 2740s without this feature. An exception is a line group consisting of multiple-terminal-access lines. These lines can accommodate IBM 1050, 2740, and 2741 terminals, using the same or different transmission codes, and Western Union TWX terminals.

One or more GROUP definition statements must be added to the hierarchies of LINE, PU, LU, TERMINAL, and COMP definition statements. The GROUP definition statement, unlike the others, represents not a physical element of the network but a grouping of lines having certain

characteristics in common. The grouping is referred to as a *physical* line group because it contains lines having certain physical attributes in common, such as the type of devices attached to them.

Each LINE definition statement in the foregoing definition statement sequences must be associated with a GROUP definition statement that precedes it. Assume, for example, that in the configuration shown in Figure A-1, the first two lines have similar attributes allowing them to be in the same line group, but that the third line has different characteristics, which require it to be in a different line group. (A single line can constitute a line group.)

Furthermore, a SERVICE definition statement must directly follow each LINE definition statement representing a line on which polling and addressing are required. Since this condition is true of all three lines in the example, each requires a SERVICE definition statement. The complete definition statement sequence then is:

```
GROUP
  LINE
  SERVICE
  TERMINAL
  COMP
  TERMINAL
  TERMINAL
  LINE
  SERVICE
  TERMINAL
GROUP
  LINE
  SERVICE
  TERMINAL
  COMP
  COMP
  TERMINAL
```

If all of the lines are dissimilar, each of the three LINE definition statements must be preceded by a GROUP definition statement. If all are alike, all can be in the same line group, with only one GROUP definition statement immediately preceding the first LINE definition statement.

For the clustered BSC devices, adding the GROUP and SERVICE definition statements gives the sequence:

```
GROUP
  LINE
  SERVICE
  CLUSTER
  TERMINAL
  TERMINAL
  TERMINAL
  CLUSTER
  TERMINAL
  TERMINAL
  TERMINAL
```

Adding the GROUP and SERVICE definition statements to the LINE, PU, LU sequence shown above under "SDLC Devices" results in:

```
GROUP
LINE
SERVICE
PU
  LU
  LU
  LU
  LU
```

Similarly, SDLC links between the communication controllers are represented as follows, assuming that the NCP in controller A controls (performs polling and addressing on) the link:

In NCP for controller A:

```
GROUP
LINE
SERVICE
PU
```

In NCP for controller B:

```
GROUP
LINE
PU
```

Notice that the SERVICE definition statement appears only in the NCP that controls the link (its communication controller is the primary device on the link). You must omit the SERVICE definition statement following the LINE definition statement in the other NCP, which runs in the controller serving as the secondary device on the link.

Note: For a subarea SDLC link, either of the controllers can serve as the primary device. The other controller then serves as the secondary device on the link.

See the description of the GROUP definition statement chapter for the attributes that telecommunication lines must have in common in order to appear within the same line group.

Example of Network Configuration Definition Statements

Refer to the network configuration shown in Figure A-2. The network attached to communication controller A comprises the following telecommunication lines and devices:

- Line L1: Nonswitched multipoint line, five IBM 1650 terminals, with each having a keyboard/printer and one 1656 card reader (SS terminals).
- Lines L2 and L3: Nonswitched point-to-point lines, each communicating with an IBM 2701 (nonclustered BSC device).
- Line L4: Switched point-to-point line over which the communication controller can call two IBM 1130s and one IBM 2780 (nonclustered BSC devices).
- Line L5: Nonswitched multipoint SDLC link, two IBM 3600 systems, with four logical units each (SDLC devices).
- Line R0 and R1: Nonswitched point-to-point SDLC link, one 3705 communication controller (B).

The network attached to communication controller B comprises:

- Line R2: Nonswitched multipoint line, two IBM 3270 systems, each comprising a 3271 controller, four 3277 displays, and a 3284 printer.
- Line R3: Switched point-to-point line over which any number of IBM 2741 terminals can call the controller.
- Line R4: Nonswitched multipoint SDLC link, three IBM 3790 systems, with three logical units each.

The network configuration definition statements required to represent the network attached to communication controller A are:

Note: Not all required operands are shown.

```
G1      GROUP      LNCTL=SS
L1      LINE              POLLED=YES,TERM=1050
S1      SERVICE ORDER=(T1,C1,T2,C2,T3,C3,T4,C4,T5,C5)
T1      TERMINAL
C1      COMP
T2      TERMINAL
C2      COMP
T3      TERMINAL
C3      COMP
T4      TERMINAL
C4      COMP
T5      TERMINAL
C5      COMP

G2      GROUP      LNCTL=BSC
L2      LINE              TERM=2701
T6      TERMINAL
L3      LINE              TERM=2701
T7      TERMINAL

G3      GROUP      LNCTL=BSC,DIAL=YES
L4      LINE
T8      TERMINAL TERM=1130
T9      TERMINAL TERM=1130
T10     TERMINAL TERM=2780

G4      GROUP      LNCTL=SDLC
L5      LINE
SERVICE ORDER=(PU1,PU2)
PU1     PU PUTYPE=2
LU1     LU
LU2     LU
LU3     LU
LU4     LU
PU2     PU PUTYPE=2
LU5     LU
LU6     LU
LU7     LU
LU8     LU

G5      GROUP      LNCTL=SDLC
R0      LINE
PU3     PU PUTYPE=4,TGN=1
R1      LINE
PU4     PU PUTYPE=4,TGN=1
```

The NCP defined for communication controller B includes:

```
RG1  GROUP      LNCTL=BSC
RL2  LINE        POLLED=YES,CUTYPE=3271
RS1  SERVICE ORDER=(RCL1,RT1,RT2,RT3,RT4,RT5,RCL2,RT6, X
      RT7,RT8,RT9,RT10)
RCL1 CLUSTER TERM=3277
RT1  TERMINAL
RT2  TERMINAL
RT3  TERMINAL
RT4  TERMINAL
RT5  TERMINAL TERM=3284
RCL2 CLUSTER TERM=3277
RT6  TERMINAL
RT7  TERMINAL
RT8  TERMINAL
RT9  TERMINAL
RT10 TERMINAL TERM=3284

RG2  GROUP      LNCTL=SS
RL3  LINE
RT11 TERMINAL TERM=2741,CTERM=YES

RG3  GROUP      LNCTL=SDLC
RL4  LINE
RS3  SERVICE ORDER=(RPU1,RPU2,RPU3)
RPU1 PU PUTYPE=2
RLU1A LU
RLU1B LU
RLU1C LU
RPU2 PU PUTYPE=2
RLU2A LU
RLU2B LU
RLU2C LU
RPU3 PU PUTYPE=2
RLU3A LU
RLU3B LU
RLU3C LU

RG0  GROUP      LNCTL=SDLC
RLO  LINE
RNO  PU PUTYPE=4,TGN=1
RL1  LINE
RN1  PU PUTYPE=4,TGN=1
```

These network examples include each of the types of hierarchical arrangements, as well as the three types of line connections available: nonswitched point-to-point, nonswitched multipoint, and switched point-to-point.

See the *NCP and SSP Resource Definition Guide* for other sample programs that illustrate definition statement coding sequences.

Coding Operands on Higher Level Definition Statements

The principal advantage of coding operands on higher level definition statements is saved effort. For example, five characteristics common to 15 terminals on a line can be specified once in the LINE definition statement rather than in each of the 15 individual TERMINAL definition statements. Five operands are coded instead of 75 (15 x 5).

The characteristic need not be identical for *all* of the elements at a level to specify it at a higher level. You can code the exceptions at the lower level. Any characteristic you code at the lower level automatically overrides the characteristic specified at a higher level.

If, for example, only 12 of the 15 terminals mentioned previously have the same characteristic in common, you still can specify that characteristic in the LINE definition statement. Then you specify the differing characteristics in the TERMINAL definition statements for the three exceptional terminals.

If you code one parameter in an operand that can have two or more parameters, that operand completely overrides an equivalent operand specified in a higher-level definition statement. The default values are assumed for the parameters omitted at the lower level.

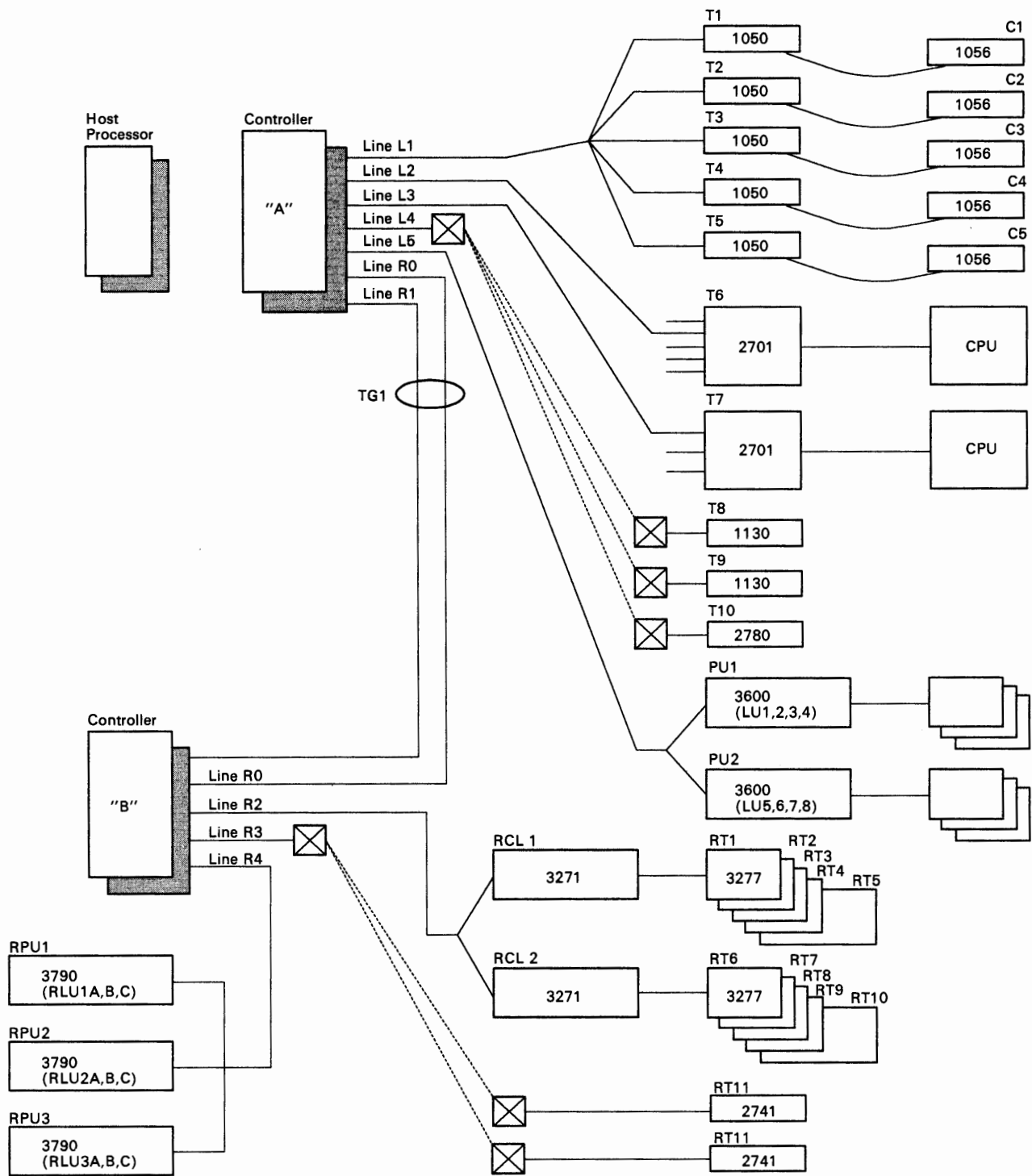


Figure A-2. Example of Network Configuration

Appendix B. Procedure for Determining Line Interrupt Priorities

This appendix only applies if you are defining an NCP for the 3705.

This appendix gives a recommended procedure for determining the interrupt priorities for lines serviced by type 2 and type 3 communication scanners.

You can achieve optimum servicing of communication lines and maximum protection from overruns (1) by using the priority registers associated with all four interrupt priorities and (2) by evenly distributing the total bit rate (bits per second) of the network among the four different priorities. This is the case whether lines in the network operate in network control mode or emulation mode.

The following procedure ensures that the four interrupt priorities are evenly distributed among lines in the network.

Note: If you are calculating line interrupt priorities for any duplex lines, keep in mind that a duplex line requires double the scanner service. Therefore, you must double the value specified in the SPEED operand of the LINE definition statement for each duplex line before proceeding with your calculations.

Example Three illustrates the procedure for a network containing a duplex line.

1. Divide by 8 the speed (as specified by the SPEED operand of the LINE definition statement) of each line serviced by a type 3 communication scanner. The result is the adjusted line speed for such lines and is to be used in the remaining steps of the procedure. For lines serviced by a type 2 scanner, the adjusted line speed is the same as the speed specified in the SPEED operand.
2. For each speed category, multiply the adjusted speed by the number of lines to which that speed applies. The result is the bit rate for each speed category.
3. Calculate the total bit rate (bits per second) for all lines by adding up the values calculated in step 2. Then divide the result by 4 to determine one-fourth of the bit rate.
4. List all lines in the network in the sequence of their adjusted line speeds. Those lines having the highest adjusted speed should appear at

the top of the list and those having the lowest adjusted speed should appear at the bottom. Within any speed category, the sequence of lines does not matter.

5. Divide the list of lines into four sections such that the bit rate for each section is roughly the same as one-fourth of the total bit rate.
6. Assign priority 3 to each line in the first section of the list, priority 2 to the lines in the second section, priority 1 to those in the third section, and priority 0 to those lines in the last section.
7. Specify the assigned priority in the INTPRI operand of the LINE definition statement representing each line.

For purposes of the foregoing procedure, approximately the same proportion of lines in each section of the list are assumed to be active at any given moment. If the planned use of the network or experience shows that the proportions are markedly different, you may wish to adjust the distribution of lines to the sections of the list to compensate, then re-specify the values in the INTPRI operands for the affected lines.

For instance, if experience shows that several of the lines in the last section of the list are relatively inactive compared to lines in the other sections, you could adjust each of the section boundaries upward so that more lines appear in the last group and fewer in each of the other sections.

The use of the procedure is illustrated by the following examples.

Example One:

The network has six lines rated at 9600 bps and serviced by a type 3 scanner. The network also contains thirteen lines, seven rated at 2400 bps and six rated at 600 bps, serviced by a type 2 scanner. Determine the total bit rate and one-fourth of the total:

Line ID (Name of LINE Def. Statement)	Line Speed (LINE: SPEED)	Type of Scanner	Adjusted Line Speed	Number of Lines	Bit Rate
			(Step 1)		(Step 2)
LH1-LH6	9 600	3	1 200	6	7 200
LM1-LM7	2 400	2	2 400	7	16 800
LL1-LL6	600	2	600	6	3 600
			Total bit rate (Step 3)		27 600
			One-fourth of total		6 900

List lines in order of adjusted speed (step 4), divide list into four sections (step 5), and assign priorities to each section (step 6):

Line ID (Name of Line Def. Statement)	Adjusted Line Speed	Total Bit Rate for Section	Interrupt Priority
LM1	2 400	7 200	3
LM2	2 400		
LM3	2 400		
LM4	2 400	7 200	2
LM5	2 400		
LM6	2 400		
LM7	2 400	6 000	1
LH1	1 200		
LH2	1 200		
LH3	1 200		
LH4	1 200	7 200	0
LH5	1 200		
LH6	1 200		
LL1	600		
LL2	600		
LL3	600		
LL4	600		
LL5	600		
LL6	600		

As step 7, specify the priority values in the INTPRI operands of the LINE definition statements.

Example Two:

The network has eleven lines serviced by a type 3 scanner, three lines at 19 200 bps, three at 9 600 bps, and five at 2 400. The network also contains the following lines serviced by a type 2 scanner: ten lines at 1 200 bps, nine at 600 bps, seven at 150 bps, and eight at 134.5 bps.

As in example one, first determine the total bit rate and one-fourth of that value, then list the lines in order of adjusted line speed, divide into four sections, and assign priorities.

Line ID (Name of Line Def. Statement)	Line Speed (LINE: SPEED)	Type of Scanner	Adjusted Line Speed	Number of Lines	Bit Rate
LA1-LA3	19 200	3	2 400	3	7 200
LB1-LB3	9 600	3	1 200	3	3 600
LC1-LC5	2 400	3	300	5	1 500
LD1-LD10	1 200	2	1 200	10	12 000
LE1-LE9	600	2	600	9	5 400
LF1-LF7	150	2	150	7	1 050
LG1-LG8	134.5	2	134*	8	1 072

***Decimal fraction dropped as insignificant**

Total bit rate	31 822
One-fourth of total	7 956

Line ID (Name of Line Def. Statement)	Adjusted Line Speed	Total Bit Rate for Section	Interrupt Priority
LA1	2 400		
LA2	2 400	7 200	3
LA3	2 400		
LB1	1 200		
LB2	1 200		
LB3	1 200		
LD1	1 200	8 400	2
LD2	1 200		
LD3	1 200		
LD4	1 200		
LD5	1 200		
LD6	1 200		
LD7	1 200		
LD8	1 200	8 400	1
LD9	1 200		
LD10	1 200		
LE1	600		
LE2	600		
LE3	600		
LE4	600		
LE5	600		
LE6	600		
LE7	600		
LE8	600		
LE9	600		
LC1	300		
LC2	300		
LC3	300		
LC4	300		
LC5	300		
LF1	150		
LF2	150	7 822	0
LF3	150		
LF4	150		
LF5	150		
LF6	150		
LF7	150		
LG1	134		
LG2	134		
LG3	134		
LG4	134		
LG5	134		
LG6	134		
LG7	134		
LG8	134		

Example Three:

This network is the same as the network in Example One except Line LH1 is a *duplex* line. The network has six lines rated at 9 600 bps and serviced by a type 3 scanner. The network also contains thirteen lines, seven rated at 2 400 bps and six rated at 600 bps, serviced by a type 2 scanner. Double the line speed for line LH1 because it is a duplex line. Determine the total bit rate and one-fourth of the total:

Line ID (Name of LINE Def. Statement)	Line Speed (LINE: SPEED)	Line Speed for Duplex Line	Type of Scanner	Adjusted Line Speed	Number of Lines	Bit Rate
				(Step 1)		(Step 2)
LH1	9 600	19 200	3	2 400	1	2 400
LH2-LH6	9 600		3	1 200	5	6 000
LM1-LM7	2 400		2	2 400	7	16 800
LL1-LL6	600		2	600	6	3 600
				Total bit rate (Step 3)		28 800
				One-fourth of total		7 200

List lines in order of adjusted speed (step 4), divide list into four sections (step 5), and assign priorities to each section (step 6):

Line ID (Name of LINE Def. Statement)	Adjusted Line Speed	Total Bit Rate for Section	Interrupt Priority
LH1	2 400		
LM1	2 400	7 200	3
LM2	2 400		
LM3	2 400		
LM4	2 400	7 200	2
LM5	2 400		
LM6	2 400		
LM7	2 400	7 200	1
LH2	1 200		
LH3	1 200		
LH4	1 200		
LH5	1 200		
LH6	1 200		
LL1	600		
LL2	600	7 200	0
LL3	600		
LL4	600		
LL5	600		
LL6	600		

As step 7, specify the priority values in the INTPRI operands of the LINE definition statements.

Appendix C. Upper Scan Limits, Address Substitution, and High Speed Select Options

This appendix only applies if you are defining an NCP for the **3705**.

The maximum data rate, or speed, at which a communication line can operate is limited by the frequency at which that line's interface address is scanned by the communication scanner. In the absence of upper scan limits, address substitution, and high speed select options, each line interface address associated with a type 2 or type 3 communication scanner is scanned once per scanning cycle. The maximum line speed in this case is 4800 bits per second (bps). (The type of line set and oscillator or modem clocking rate determines the actual line speed.) To accommodate higher maximum line speeds requires the imposition of upper scan limits or the application of the address substitution or high speed select technique.

Upper Scan Limits

Imposing an upper scan limit is a means of increasing the frequency at which a selected range of line addresses is scanned, at the expense of not scanning the remaining addresses associated with the scanner. (No lines attached to the unscanned addresses can be active while the upper scan limit is in effect.) By not scanning some addresses, the communication scanner can scan the others more often within each scanning cycle, thus raising the maximum line speed. (The number of scans per cycle is constant regardless of how they are distributed to the line addresses.)

Upper scan limits can be specified individually for each of the type 2 and type 3 scanners in the communications controller. Figure C-1 shows for each scan limit value (from 0 to 3, as specified in the GENEND macro of the emulation program or network control program), the range of addresses that are scanned (light boxes) and those not scanned (dark boxes). Also given is the maximum line speed for the addresses scanned (disregarding any lower limit that may be imposed by choice of line set and oscillator speeds).

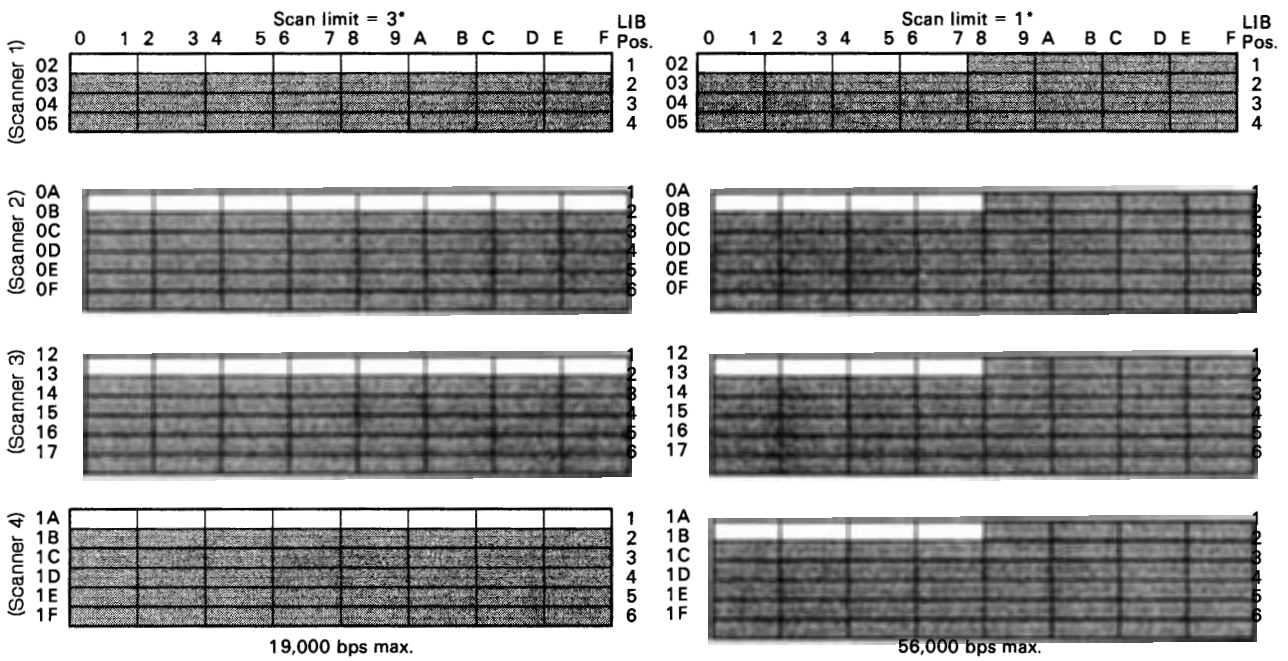
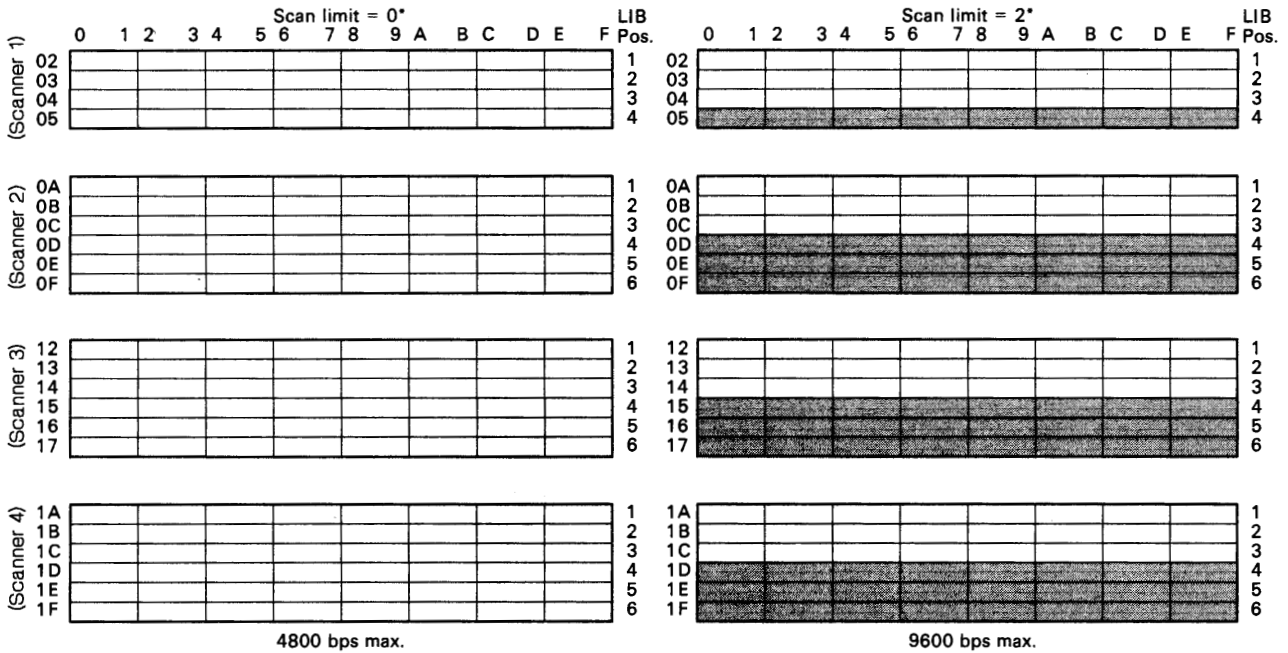
Address Substitution

A technique similar to the use of upper scan limits alters the scanning pattern so that a single, predetermined address is scanned several times per scanning cycle, again at the expense of not scanning other addresses. In this technique, however, only one address, of the range of addresses scanned, receives the benefit of increased scanning frequency. Further, address substitution applies uniformly to *all installed type 2 (and type 3) scanners*, rather than being specified separately for the individual scanners. Address substitution should not be specified if the controller contains one or more type 3 scanners.

Figure C-2 shows, for each bit position in the address substitution mask (specified in the GENEND macro of the emulation program), the selected addresses that will be scanned more often, and the group of addresses that will not be scanned. As is the case for upper scan limits, no lines attached to the unscanned addresses can be active while address substitution is in effect.

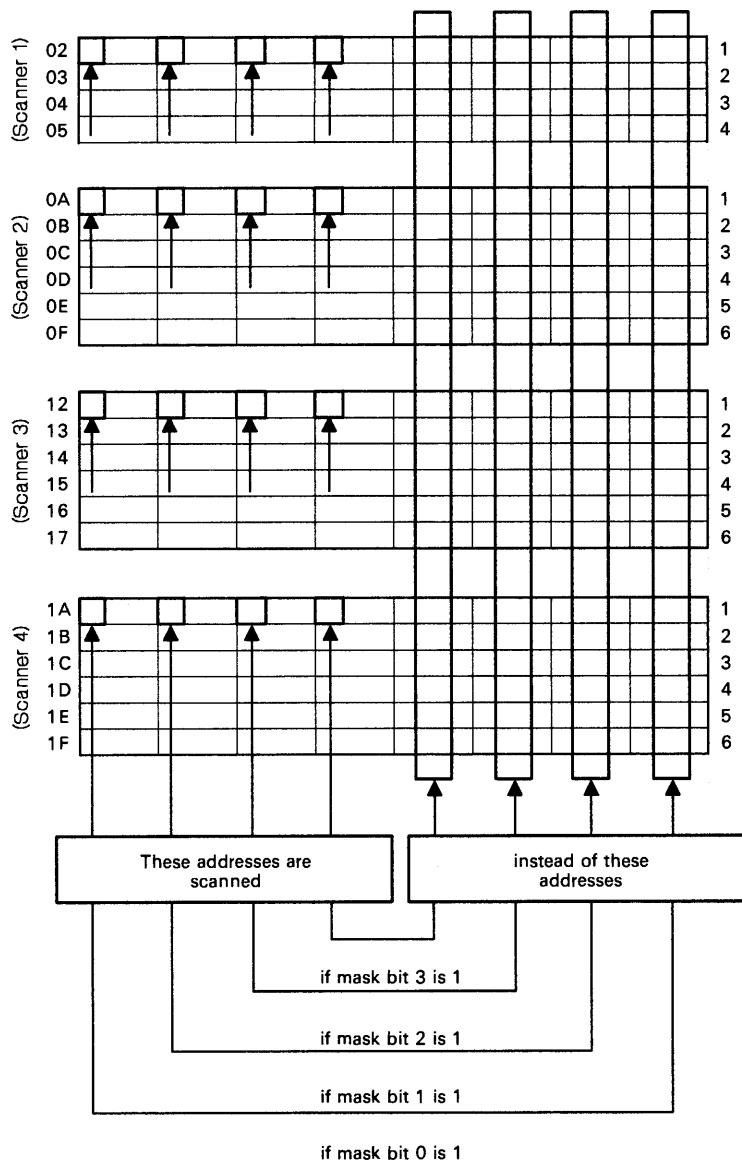
High Speed Select Option

The high speed select option is similar to address substitution in that bit settings within a mask alter the scanning pattern so that a predetermined address is scanned several times per scanning cycle, at the expense of not scanning other addresses. This option differs from address substitution, however, in that (1) up to eight addresses serviced by the scanner can receive the increased scanning frequency, and (2) masks are individually specified for each of the installed scanners, thus allowing more flexibility in selecting addresses to receive the increased scanning. Figure C-3 shows, for each bit position in the high speed select mask (specified in the GENEND macro) the selected addresses that will be scanned more often and the group of addresses that will not be scanned. No lines attached to the unscanned addresses can be active while the high speed select mask is in effect.



* Scan limits can be specified independently for each type 2 and/or type 3 scanner.

Figure C-1. Addresses Scanned and Not Scanned When Upper Scan Limits Are Used



Note: A single address substitution mask can be specified, the mask affects all type 2 and/or type 3 scanners.

Figure C-2. Addresses Scanned and Not Scanned When Address Substitution Mask Is Used

		LIB																Pos.
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
(Scanner 1)	02	0		1		2		3		4		5		6		7		1
	03																	2
	04																	3
(Scanner 2)	0A	0		1		2		3		4		5		6		7		1
	0B																	2
	0C																	3
	0D																	4
(Scanner 3)	12	0		1		2		3		4		5		6		7		1
	13																	2
	14																	3
	15																	4
(Scanner 4)	1A	0		1		2		3		4		5		6		7		1
	1B																	2
	1C																	3
	1D																	4
		0	1	2	3	4	5	6	7									

n = the address scanned at increased frequency when mask bit n equals 1;
all other addresses within the LIB portion are not scanned.

Note: High speed mask can be specified independently for each type 3 scanner.

Figure C-3. Addresses Scanned and Not Scanned When High Speed Select Mask Is Used

Glossary

This glossary defines important CCP, NCP, NetView, SSP, and VTAM abbreviations and terms. It includes information from the *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699. Definitions from the *American National Dictionary for Information Processing* are identified by an asterisk (*). Definitions from draft proposals and working papers under development by the International Standards Organization, Technical Committee 97, Subcommittee 1 are identified by the symbol **(TC97)**. Definitions from the *CCIT Sixth Plenary Assembly Orange Book, Terms and Definitions* and working documents published by the Consultative Committee on International Telegraph and Telephone of the International Telecommunication Union, Geneva, 1980 are preceded by the symbol **(CCITT/ITU)**. Definitions from published sections of the *ISO Vocabulary of Data Processing*, developed by the International Standards Organization, Technical Committee 97, Subcommittee 1 and from published sections of the *ISO Vocabulary of Office Machines*, developed by subcommittees of ISO Technical Committee 95, are preceded by the symbol **(ISO)**.

For abbreviations, the definition usually consists only of the words represented by the letters; for complete definitions, see the entries for the words.

Reference Words Used in the Entries

The following reference words are used in this glossary:

Contrast with. Refers to a term that has an opposed or substantively different meaning.

Deprecated term for. Indicates that the term should not be used. It refers to a preferred term, which is defined.

See. Refers to multiple-word terms that have the same last word.

See also. Refers to related terms that have similar (but not synonymous) meanings.

Synonym for. Appears in the commentary of a less desirable or less specific term and identifies the preferred term that has the same meaning.

Synonymous with. Appears in the commentary of a preferred term and identifies less desirable or less specific terms that have the same meaning.

ABEND. Abnormal end of task.

abnormal end of task (ABEND). Termination of a task before its completion because of an error condition that cannot be resolved by recovery facilities while the task is executing.

ACB name. (1) The name of an ACB macro instruction. (2) A name specified in the ACBNAME parameter of a VTAM APPL statement. Contrast with *network name*.

accept. For a VTAM application program, to establish a session with a logical unit (LU) in response to a CINIT request from a system services control point (SSCP). The session-initiation request may begin when a terminal user logs on, a VTAM application program issues a macro instruction, or a VTAM operator issues a command. See also *acquire (1)*.

access method. A technique for moving data between main storage and input/output devices.

accounting exit routine. In VTAM, an optional installation exit routine that collects statistics about session initiation and termination.

ACF. Advanced Communications Function.

acquire. (1) For a VTAM application program, to initiate and establish a session with another logical unit (LU). The acquire process begins when the application program issues a macro instruction. See also *accept*. (2) To take over resources that were formerly controlled by an access method in another domain, or to resume control of resources that were controlled by this domain but released. Contrast with *release*. See also *resource takeover*.

activate. To make a resource of a node ready to perform the functions for which it was designed. Contrast with *deactivate*.

active. (1) The state a resource is in when it has been activated and is operational. Contrast with *inactive*, *pending*, and *inoperative*. (2) Pertaining to a major or minor node that has been activated by VTAM. Most resources are activated as part of VTAM start processing or as the result of a VARY ACT command.

adapter control block (ACB). In NCP, a control block that contains line control information and the states of I/O operations for BSC lines, start-stop lines, or SDLC links.

adjacent NCPs. Network control programs (NCPs) that are connected by subarea links with no intervening NCPs.

adjacent subareas. Two subareas connected by one or more links with no intervening subareas. See also *subarea*.

Advanced Communications Function (ACF). A group of IBM program products (principally VTAM, TCAM, NCP, and SSP) that use the concepts of Systems Network Architecture (SNA), including distribution of function and resource sharing.

application program. (1) A program written for or by a user that applies to the user's work. (2) A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

ASCII. American National Standard Code for Information Interchange.

authorization exit routine. In VTAM, an optional installation exit routine that approves or disapproves requests for session initiation.

automatic activation. In VTAM, the activation of links and link stations in adjacent subarea nodes as a result of channel device name or RNAME specifications related to an activation command that names a subarea node. See *direct activation*.

automatic logon. (1) A process by which VTAM automatically creates a session-initiation request to establish a session between two logical units (LUs). The session will be between a designated primary logical unit (PLU) and a secondary logical unit (SLU) that is neither queued for nor in session with another PLU. See also *controlling application program* and *controlling logical unit*. (2) In VM, a process by which a virtual machine is initiated by

other than the user of that virtual machine. For example, the primary VM operator's virtual machine is activated automatically during VM initialization.

available. In VTAM, pertaining to a logical unit that is active, connected, enabled, and not at its session limit.

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). See also *session activation request*. Contrast with *UNBIND*.

BIU segment. In SNA, the portion of a basic information unit (BIU) that is contained within a path information unit (PIU). It consists of either a request/response header (RH) followed by all or a portion of a request/response unit (RU), or only a portion of an RU.

blocking of PIUs. In SNA, an optional function of path control that combines multiple path information units (PIUs) into a single basic transmission unit (BTU).

BNN. Boundary network node.

boundary function. In SNA: (1) A capability of a subarea node to provide protocol support for adjacent peripheral nodes, such as: (a) transforming network addresses to local addresses, and vice versa; (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 *path control (PC) network* and *network addressable unit (NAU)*.

boundary network node (BNN). 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.

BSC. Binary synchronous communication.

buffer. A portion of storage for temporarily holding input or output data.

CCP. Configuration control program facility.

chain. See *RU chain*.

channel adapter. A communication controller hardware unit used to attach the controller to a System/360 or a System/370 channel.

channel-attached. Pertaining to the attachment of devices directly by data channels (I/O channels) to a host processor. Contrast with *link-attached*. Synonymous with *local-attached*.

character-coded. Synonym for *unformatted*.

character times. In CCP, the maximum number of times the temporary text delay character can be sent to a terminal before the operation stops or that can be sent between the end of a receive and the beginning of a transmit operation.

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.

clocking. In CCP, the use of clock pulses to synchronize data and control characters sent on a line.

cluster controller. A device that can control the input/output operations of more than one device connected to it. A cluster controller may be controlled by a program stored and executed in the unit; for example, the IBM 3601 Finance Communication Controller. Or it may be controlled entirely by hardware; for example, the IBM 3272 Control Unit.

CMS. Conversational Monitor System.

command. (1) A request from a terminal for the performance of an operation or the execution of a particular program. (2) In SNA, any field set in the transmission header (TH), request header (RH), and sometimes portions of a request unit (RU), that initiates an action or that begins a protocol; for example: (a) Bind Session (session-control request unit), a command that activates an LU-LU session, (b) the change-direction indicator in the RH of the last RU of a chain, (c) the virtual route reset window indicator in a FID4 transmission header. See also *VTAM operator command*.

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* and *transmission line*.

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.

configuration. (1) (TC97) The arrangement of a computer system or network as defined by the nature, number, and the chief characteristics of its functional units. The term may refer to a hardware or a software configuration. (2) The devices and programs that make up a system, subsystem, or network. (3) In CCP, the arrangement of controllers, lines, and terminals attached to an IBM 3710 Network Controller. Also, the collective set of item definitions that describe such a configuration.

Configuration control program (CCP) facility. An SSP interactive application program facility by which configuration definitions for the IBM 3710 Network Controller can be created, modified, and maintained.

configuration report program (CRP). An SSP utility program that creates a configuration report listing network resources and resource attributes for networks with NCP, EP, PEP, or VTAM.

connected. In VTAM, pertaining to a physical unit (PU) or logical unit (LU) that has an active physical path to the host processor containing the system services control point (SSCP) that controls the PU or LU.

connection. Synonym for *physical connection*.

control block. (ISO) A storage area used by a computer program to hold control information.

control program (CP). The VM operating system that manages the real processor's resources and is responsible for simulating System/370s for individual users.

controlling application program. In VTAM, an application program with which a secondary logical unit (other than an application program) is automatically put in session whenever the secondary logical unit is available. See also *automatic logon* and *controlling logical unit*.

controlling logical unit. In VTAM, a logical unit with which a secondary logical unit (other than an application program) is automatically put in session whenever the secondary logical unit is available. A controlling logical unit can be either an application program or a device-type logical unit. See also *automatic logon* and *controlling application program*.

control statement. A statement in a command list that controls the processing sequence of the command list or allows the command list to send messages to the operator and receive input from the operator.

Conversational Monitor System (CMS). A VM application program for general interactive time sharing, problem solving, and program development.

converted command. An intermediate form of a character-coded command produced by VTAM through use of an unformatted system services definition table. The format of a converted command is fixed; the unformatted system services definition table must be constructed in such a manner that the character-coded command (as entered by a logical unit) is converted into the predefined, converted command format. See also *unformatted*.

coupler. A hardware device that connects a modem to a public phone system in much the same way that a telephone does.

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.

CRP. Configuration report program.

CSP. Communication scanner processor.

CWALL. An NCP threshold of buffer availability, below which the NCP will accept only high-priority path information units (PIUs).

data check. An indication that a transmission is faulty. For example, in SDLC a frame check sequence (FCS) error.

data circuit-terminating equipment (DCE). (TC97) The equipment installed at the user's premises that provides all functions required to establish, maintain, and terminate a connection, and the signal conversion and coding between the data terminal equipment (DTE) and the line. The DCE

may be separate equipment or an integral part of other equipment.

data flow control (DFC) layer. In SNA, the layer within a half-session that (1) controls whether the half-session can send, receive, or concurrently send and receive request units (RUs); (2) groups related RUs into RU chains; (3) delimits transactions via the bracket protocol; (4) controls the interlocking of requests and responses in accordance with control modes specified at session activation; (5) generates sequence numbers; and (6) correlates requests and responses.

data link. In SNA, synonym for *link*.

data link control (DLC) layer. In SNA, the layer that consists of the link stations that schedule data transfer over a link between two nodes and perform error control for the link. Examples of data link control are SDLC for serial-by-bit link connection and data link control for the System/370 channel.

data link control protocol. In SNA, a set of rules used by two nodes on a data link to accomplish an orderly exchange of information. Synonymous with *line control*.

data terminal equipment (DTE). (TC97) That part of a data station that serves as a data source, data link, or both, and provides for the data communication control function according to protocols.

DCE. Data circuit-terminating equipment.

deactivate. To take a resource of a node out of service, rendering it inoperable, or to place it in a state in which it cannot perform the functions for which it was designed. Contrast with *activate*.

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* and *no response*.

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. See also *macro instruction*.

device control character. * (ISO) A control character used for the control of ancillary devices associated with a data processing system or data communication system, for example, for switching such devices on or off.

direct activation. In VTAM, the activation of a resource as a result of an activation command specifically naming the resource. See *automatic activation*. Contrast with *indirect activation*.

disabled. In VTAM, pertaining to a logical unit (LU) that has indicated to its system services control point (SSCP) that it is temporarily not ready to establish LU-LU sessions. An initiate request for a session with a disabled logical unit (LU) can specify that the session be queued by the SSCP until the LU becomes enabled. The LU can separately indicate whether this applies to its ability to act as a primary logical unit (PLU) or a secondary logical unit (SLU). See also *enabled* and *inhibited*.

display. (1) To present information for viewing, usually on a terminal screen or a hard-copy device. (2) A device or medium on which information is presented, such as a terminal screen. (3) Deprecated term for *panel*.

domain operator. In a multiple-domain network, the person or program that controls the operation of the resources controlled by one system services control point. Contrast with *network operator* (2).

dump. (1) Computer printout of storage. (2) To write the contents of all or part of storage to an external medium as a safeguard against errors or in connection with debugging. (3) (ISO) Data that have been dumped.

duplex. * In data communication, pertaining to a simultaneous two-way independent transmission in both directions. Synonymous with *full duplex*. Contrast with *half duplex*.

dynamic reconfiguration (DR). The process of changing the network configuration (peripheral PUs and LUs) without regenerating complete configuration tables.

EBCDIC. * Extended binary-coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

ECL. Electronic cabling link.

element. (1) A field in the network address. (2) The particular resource within a subarea identified by the element address. See also *subarea*.

element address. In SNA, a value in the element address field of the network address identifying a specific resource within a subarea. See *subarea address*.

emulation mode. The function of a network control program that enables it to perform activities

equivalent to those performed by a transmission control unit. Contrast with *network control mode*.

Emulation Program (EP). 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*.

enabled. In VTAM, pertaining to a logical unit (LU) that has indicated to its system services control point (SSCP) that it is now ready to establish LU-LU sessions. The LU can separately indicate whether this prevents it from acting as a primary logical unit (PLU) or as a secondary logical unit (SLU). See also *disabled* and *inhibited*.

end-of-transmission (EOT). The specific character, or sequence of characters, that indicates no more data.

end-of-transmission (EOT) handshaking. When a 3710 sends EOT characters over an idle line and waits for return characters. If no EOT response is returned, the 3710 breaks the session.

EOT. End-of-transmission.

EP. Emulation Program.

ER. (1) Explicit route. (2) Exception response.

exception response (ER). In SNA, a negative response shown as 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* and *no response*. See also *negative response*.

EXEC. In a VM operating system, a user-written command file that contains CMS commands, other user-written commands, and execution control statements, such as branches.

exit routine. Any of several types of special-purpose user-written routines. See *accounting exit routine*, *authorization exit routine*, *logon-interpret routine*, *virtual route selection exit routine*, *EXLST exit routine*, and *RPL exit routine*.

EXLST exit routine. In VTAM, a routine whose address has been placed in an exit list (EXLST) control block. The addresses are placed there with the EXLST macro instruction, and the routines are named according to their corresponding operand; hence DFASY exit routine, TPEND exit routine, RELREQ exit routine, and so forth. All exit list

routines are coded by the VTAM application programmer. Contrast with *RPL exit routine*.

explicit route (ER). In SNA, the path control network elements, including a specific set of one or more transmission groups, that connect two subarea nodes. An explicit route is identified by an origin subarea address, a destination subarea address, an explicit route number, and a reverse explicit route number. Contrast with *virtual route (VR)*. See also *path* and *route extension*.

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.

extended recovery facility (XRF). Software designed to minimize the effect of failures in MVS, VTAM, the host processor, or IMS/VS on sessions between IMS/VS and designated terminals. It provides an alternate subsystem to take over failing sessions.

fanout. A modem feature that permits up to four controllers to be attached to one modem. See also *tailing*.

FASTRUN. One of several options available with the NCP/EP Definition Facility (NDF) that indicates only the syntax is to be checked in generation definition statements.

feature. A particular part of an IBM product that a customer can order separately.

field-formatted. Pertaining to a request or response that is encoded into fields, each having a specified format such as binary codes, bit-significant flags, and symbolic names. Contrast with *character-coded*.

flow control. 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. See also *pacing*, *session-level pacing*, and *virtual route pacing*.

formatted system services. A portion of VTAM 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)*. See also *field-formatted*.

frame. (1) The unit of transmission in some local area networks, including the IBM Token-Ring Network. It includes delimiters, control characters, information, and checking characters. (2) In SDLC, the vehicle for every command, every response, and all information that is transmitted using SDLC procedures.

full duplex (FDX). Synonym for *duplex*.

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.

gateway NCP. An NCP that performs address translation to allow cross-network session traffic. The gateway NCP connects two or more independent SNA networks.

gateway SSCP. An SSCP that is capable of cross-network session initiation, termination, takedown, and session outage notification. A gateway SSCP is in session with the gateway NCP; it provides network name translation and assists the gateway NCP in setting up alias network addresses for cross-network sessions.

generation. The process of assembling and link editing definition statements so that resources can be identified to all the necessary programs in a network.

generation definition. The definition statement of a resource used in generating a program.

generic bind. Synonym for *session activation request*.

generic unbind. Synonym for *session deactivation request*.

half-duplex. * In data communication, pertaining to an alternate, one way at a time, independent transmission. Contrast with *duplex*.

half-session. In SNA, a component that provides FMD services, data flow control, and transmission control for one of the sessions of a network addressable unit (NAU). See also *primary half-session* and *secondary half-session*.

help panel. An online display that tells you how to use a command or another aspect of a product. See *task panel*.

hierarchy. In NetView, the resource types, display types, and data types that make up the organization, or levels, in a network.

host processor. (1) (TC97) A processor that controls all or part of a user application network. (2) In a network, the processing unit in which the data communication access method resides. (3) In an SNA network, the processing unit that contains a system services control point (SSCP).

idle character. (1) (CCITT/ITU) A control character that is sent when there is no information to be sent. (2) A character transmitted on a communication line that does not print or punch to the output component of the accepting terminal.

inactive. In VTAM, describes the state of a resource that has not been activated or for which the VARY INACT command has been issued. Contrast with *active*. See also *inoperative*.

indirect activation. In VTAM, the activation of a lower-level resource of the resource hierarchy as a result of SCOPE or ISTATUS specifications related to an activation command naming a higher-level resource. Contrast with *direct activation*.

inhibited. In VTAM, pertaining to a logical unit (LU) that has indicated to its system services control point (SSCP) that it is not ready to establish LU-LU sessions. An initiate request for a session with an inhibited LU will be rejected by the SSCP. The LU can separately indicate whether this applies to its ability to act as a primary logical unit (PLU) or as a secondary logical unit (SLU). See also *enabled* and *disabled*.

initiate. A network services request sent from a logical unit (LU) to a system services control point (SSCP) requesting that an LU-LU session be established.

inoperative. The condition of a resource that has been active, but is not. The resource may have failed, received an INOP request, or is suspended while a reactivate command is being processed. See also *inactive*.

interconnected networks. SNA networks connected by gateways.

interconnection. See *SNA network interconnection*.

interface. * A shared boundary. An interface might be a hardware component to link two devices or it might be a portion of storage or registers accessed by two or more computer programs.

interpret table. In VTAM, an installation-defined correlation list that translates an argument into a string of eight characters. Interpret tables can be used to translate logon data into the name of an application program for which the logon is intended.

ISTATUS. In VTAM and NCP, a definition specification method for indicating the initial status of resources. See also *indirect activation*.

JCL. Job control language.

job control language (JCL). * A problem-oriented language designed to express statements in a job that are used to identify the job or describe its requirements to an operating system.

Katakana. A character set of symbols used in one of the two common Japanese phonetic alphabets.

keyword. (1) * One of the predefined words of an artificial language. (2) One of the significant and informative words in a title or document that describes the content of that document. (3) A symbol that identifies a parameter. (4) A part of a command operand that consists of a specific character string (such as DSNAME=).

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*.

LIC. Last-in-chain.

line. See *communication line*.

line control. Synonym for *data link control protocol*.

line group. One or more telecommunication lines of the same type that can be activated and deactivated as a unit.

line speed. The number of binary digits that can be sent over a telecommunication line in one second, expressed in bits per second (bps).

link. In SNA, the combination of the link connection and the link stations joining network nodes; for example: (1) a System/370 channel and its associated protocols, (2) a serial-by-bit connection under the control of Synchronous Data Link Control (SDLC). A link connection is the physical

medium of transmission. A link, however, is both logical and physical. Synonymous with *data link*.

Link Problem Determination Aid (LPDA). A series of testing procedures initiated by NCP that provide modem status, attached device status, and the overall quality of a communications link.

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 cross-subarea link. In the resource hierarchy, the link station is subordinate to the cross-subarea link.

link-attached. In VTAM, pertaining to devices that are physically connected by a telecommunication line. Synonymous with *remote*. Contrast with *channel-attached*.

load module. (ISO) A program unit that is suitable for loading into main storage for execution; it is usually the output of a linkage editor.

local address. In SNA, an address used in a peripheral node in place of an SNA network address and transformed to or from an SNA network address by the boundary function in a subarea node.

local-attached. Deprecated term for *channel-attached*.

logical unit (LU). In SNA, a port through which an end user accesses the SNA network in order to communicate with another end user and through which the end user accesses 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 logical units. See also *network addressable unit (NAU)*, *peripheral LU*, *physical unit (PU)*, *system services control point (SSCP)*, *primary logical unit (PLU)*, and *secondary logical unit (SLU)*. Contrast with *physical unit (PU)*.

logical unit (LU) services. In SNA, capabilities in a logical unit to: (1) receive requests from an end user and, in turn, issue requests to the system services control point (SSCP) in order to perform the requested functions, typically for session initiation; (2) receive requests from the SSCP, for example to activate LU-LU sessions via Bind Session requests; and (3) provide session presentation and other services for LU-LU sessions. See also *physical unit (PU) services*.

logon. In VTAM, an unformatted session initiation request for a session between two logical units. See *automatic logon* and *simulated logon*. See also *session-initiation request*.

logon mode. In VTAM, a subset of session parameters specified in a logon mode table for communication with a logical unit. See also *session parameters*.

logon mode table. In VTAM, a set of entries for one or more logon modes. Each logon mode is identified by a logon mode name.

logon-interpret routine. In VTAM, an installation exit routine, associated with an interpret table entry, that translates logon information. It may also verify the logon.

LPDA. Link Problem Determination Aid.

LU. Logical unit.

LU-LU session. In SNA, a session between two logical units (LUs) in an SNA network. It provides communication between two end users, or between an end user and an LU services component.

LU-LU session type. In SNA, the classification of an LU-LU session in terms of the specific subset of SNA protocols and options supported by the logical units (LUs) for that session, namely:

The mandatory and optional values allowed in the session activation request.

The usage of data stream controls, FM headers, request unit (RU) parameters, and sense codes.

Presentation services protocols such as those associated with FM header usage.

LU-LU session types 0, 1, 2, 3, 4, 6, and 7 are defined.

macro instruction. (1) * (ISO) An instruction in a source language that is to be replaced by a defined sequence of instructions in the same source language. The macro instruction may also specify values for parameters in the instructions that are to replace it. (2) In assembler programming, an assembler language statement that causes the assembler to process a predefined set of statements called a macro definition. The statements normally produced from the macro definition replace the macro instruction in the program. See also *definition statement*.

message. In VTAM, the amount of FM data transferred to VTAM by the application program with one SEND request.

migration. Installing a new version or release of a program when an earlier version or release is already in place.

modem. A device that modulates and demodulates signals transmitted over data communication facilities. The term is a contraction for modulator-demodulator.

Multiple Virtual Storage (MVS). An IBM program product 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.

multi-tailed. When a communication controller with an NCP is attached to more than one host processor. See *twin-tailed*. See also *fanout* and *tailing*.

MVS. Multiple Virtual Storage operating system.

native network. The network in which a gateway NCP's resources reside.

NAU. Network addressable unit.

NCCF. Network Communications Control Facility.

NCP. (1) Network Control Program (IBM program product). Its full name is Advanced Communications Function for the Network Control Program. (2) Network control program (general term).

NCP/EP definition facility (NDF). A program that is part of System Support Programs (SSP) and is used to generate a partitioned emulation programming (PEP) load module or a load module for a Network Control Program (NCP) or for an Emulation Program (EP).

NCP Subset. Advanced Communications Function for Network Control Program (NCP) V4 Subset. An IBM licensed program that is a subset of NCP. It operates only on IBM 3720 Communication Controllers with certain capacity limitations such as number of scanners, lines, and channel adapters supported.

NCP/Token-Ring interconnection (NTRI). An NCP function that allows a communication controller to attach to the IBM Token-Ring Network by providing a basic boundary network node interface.

NDF. NCP/EP definition facility.

negative response. In SNA, a response indicating that a request did not arrive successfully or was not processed successfully by the receiver. Contrast with *positive response*. See *exception response*.

NetView. An IBM program product used to monitor a network, manage it, and diagnose its problems.

network. (1) (TC97) An interconnected group of nodes. (2) In data processing, a user application network. See *path control network*, *public network*, *SNA network*, and *user application network*.

network address. In SNA, an address, consisting of subarea and element fields, that identifies a link, a link station, or a network addressable unit. Subarea nodes use network addresses; peripheral nodes use local addresses. The boundary function in the subarea node to which a peripheral node is attached transforms local addresses to network addresses and vice versa. See *local address*. See also *network name*.

network addressable unit (NAU). In SNA, a logical unit, a physical unit, or a system services control point. It is the origin or the destination of information transmitted by the path control network. Each NAU has a network address that represents it to the path control network. See also *network name*, *network address*, and *path control network*.

Network Communications Control Facility (NCCF). (1) The command facility of NetView that is a base for command processors that can monitor, control, and improve the operation of a network. (2) A back-level IBM program product that performs some of these functions.

network control (NC). In SNA, an RU category used for requests and responses exchanged between physical units (PUs) for such purposes as activating and deactivating explicit and virtual routes and sending load modules to adjacent peripheral nodes. See also *data flow control layer* and *session control*.

network control mode. The functions of a network control program that enable it to direct a communication controller to perform activities such as polling, device addressing, dialing, and answering. Contrast with *emulation mode*.

Network Control Program (NCP). An IBM program product 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 control program. A program, generated by the user from a library of IBM-supplied modules, that controls the operation of a communication controller.

network identifier (network ID). The network name defined to NCPs and hosts to indicate the name of the network in which they reside. It is unique across all communicating SNA networks.

networking. In a multiple-domain network, communication among domains.

network name. (1) In SNA, the symbolic identifier by which end users refer to a network addressable unit (NAU), a link, or a link station. See also *network address*. (2) In a multiple-domain network, the name of the APPL statement defining a VTAM application program is its network name and it must be unique across domains. Contrast with *ACB name*. See *uninterpreted name*.

network operator. (1) A person or program responsible for controlling the operation of all or part of a network. (2) The person or program that controls all the domains in a multiple-domain network. Contrast with *domain operator*.

network performance analyzer (NPA). An option of NCP that collects performance data about devices. The data is recorded by NPM.

Network Performance Monitor (NPM). An IBM program product that uses VTAM to record performance data collected for various devices in a network.

Network Terminal Option (NTO). An IBM program product 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.

non-native network. Any network attached to a gateway NCP that does not contain that NCP's resources.

nonswitched data link. A connection between a link-attached device and a communication controller that does not have to be established by

dialing. Contrast with *switched data link*. See also *point-to-point data link* and *multipoint data link*.

nonswitched line. A telecommunication line on which connections do not have to be established by dialing. Contrast with *switched line*.

no response (NR). 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* and *exception response*.

notify. A network services request that is sent by an SSCP to a logical unit (LU) to inform the LU of the status of a procedure requested by the LU.

NPM. Network Performance Monitor.

NPSI. X.25 NCP Packet Switching Interface.

NTO. Network Terminal Option.

NTRI. NCP/Token-Ring interconnection.

online. Stored in a computer and accessible from a terminal.

operator. A person who operates a machine. See *network operator*.

padding. In SNA, a technique by which a receiving component controls the rate of transmission of a sending component to prevent overrun or congestion. See *session-level padding*, *send padding*, and *virtual route (VR) padding*. See also *flow control*.

padding group. In SNA, (1) The path information units (PIUs) that can be transmitted on a virtual route before a virtual-route padding response is received, indicating that the virtual route receiver is ready to receive more PIUs on the route. Synonymous with *window*. (2) The requests that can be transmitted on the normal flow in one direction on a session before a session-level padding response is received, indicating that the receiver is ready to accept the next group of requests.

padding group size. In SNA, (1) The number of path information units (PIUs) in a virtual route padding group. The padding group size varies according to traffic congestion along the virtual route. Synonymous with *window size*. (2) The number of requests in a session-level padding group.

padding response. In SNA, an indicator that signifies a receiving component's readiness to accept another padding group; the indicator is

carried in a response header (RH) for session-level pacing, and in a transmission header (TH) for virtual route pacing.

packet switching. (TC97) 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; upon completion of the transmission, the channel is made available for the transfer of other packets.

page. (1) The portion of a panel that is shown on a display surface at one time. (2) To move back and forth among the pages of a multiple-page panel. See also *scroll*. (3) (ISO) In a virtual storage system, a fixed-length block that has a virtual address and that can be transferred between real storage and auxiliary storage. (4) To transfer instructions, data, or both between real storage and external page or auxiliary storage.

panel. (1) A formatted display of information that appears on a terminal screen. See also *help panel* and *task panel*. Contrast with *screen*. (2) In computer graphics, a display image that defines the locations and characteristics of display fields on a display surface.

parallel links. In SNA, two or more links between adjacent subarea nodes.

partitioned emulation programming (PEP) extension. A function of a network control program that enables a communication controller to operate some telecommunication lines in network control mode while simultaneously operating others in emulation mode.

path. (1) In SNA, the series of path control network components (path control and data link control) that are traversed by the information exchanged between two network addressable units (NAUs). A path consists of a virtual route and its route extension, if any. See also *explicit route*. (2) In defining a switched major node, a potential dial-out port that can be used to reach a physical unit.

path control (PC) layer. In SNA, the layer that manages the sharing of link resources of the SNA network and routes basic information units (BIUs) through it. Path control routes message units between network addressable units (NAUs) in the network and provides the paths between them. It converts the BIUs from transmission control (possibly segmenting them) into path information units (PIUs) and exchanges basic transmission units (BTUs) and one or more PIUs with data link control. See also *BIU segment*, *blocking of PIUs*,

data link control layer, and *transmission control layer*.

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* and *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*.

PC. Path control.

PEP. Partitioned emulation programming.

peripheral LU. In SNA, a logical unit representing a peripheral node.

peripheral PU. In SNA, a physical unit representing a peripheral node.

physical connection. In VTAM, a point-to-point connection or multipoint connection.

physical unit (PU). In SNA, one of three types of network addressable units (NAUs). Each node of an SNA network contains a physical unit (PU) that manages and monitors the resources (such as attached links) of a node, as requested by a system services control point (SSCP) via 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. See also *peripheral PU*, *physical unit (PU) type*, and *subarea PU*.

physical unit (PU) services. In SNA, the components within a physical unit (PU) that provide configuration services and maintenance services for SSCP-PU sessions. See also *logical unit (LU) services*.

physical unit (PU) type. In SNA, the classification of a physical unit (PU) according to the type of node in which it resides. The PU type is the same as its node type; that is, a type 1 PU resides in a type 1 node, and so forth.

PIU. Path information unit.

PLU. Primary logical unit.

polling. (1) * Interrogation of devices for purposes such as to avoid contention, to determine operational status, or to determine readiness to send

or receive data. (2) (TC97) The process whereby stations are invited, one at a time, to transmit.

positive response. A response indicating that a request was received and processed. Contrast with *negative response*.

primary half-session. In SNA, the half-session that sends the session activation request. See also *primary logical unit*. Contrast with *secondary half-session*.

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 may contain both primary and secondary half-sessions for different active LU-LU sessions. Contrast with *secondary logical unit (SLU)*.

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.

PU. Physical unit.

PU type. Physical unit type.

public network. A network 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. Contrast with *user-application network*.

PU-PU flow. In SNA, the exchange between physical units (PUs) of network control requests and responses.

receive pacing. In SNA, the pacing of message units that the component is receiving. See also *send pacing*.

RECMS. Record maintenance statistics.

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 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*.

record maintenance statistics (RECMS). In NetView, an SNA error event record built from an NCP or line error and sent unsolicited to the host.

release. For VTAM to relinquish control of resources (communication controllers or physical units). See also *resource takeover*. Contrast with *acquire (2)*.

remote. Synonym for *link-attached*.

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.

resource. (1) Any facility of the computing system or operating system required by a job or task, and including main storage, input/output devices, the processing unit, data sets, and control or processing programs. (2) In NetView, any hardware or software that provides function to the network.

resource takeover. In VTAM, action initiated by a network operator to transfer control of resources from one domain to another. See also *acquire (2)* and *release*. See *takeover*.

response header (RH). In SNA, a header, optionally followed by a response unit (RU), that indicates whether the response is positive or negative and that may contain a pacing response. See also *negative response*, *pacing response*, and *positive response*.

response time. (1) The amount of time it takes after a user presses the enter key at the terminal until the reply appears at the terminal. (2) For response time monitoring, the time from the activation of a transaction until a response is received, according to the response time definition coded in the performance class.

RH. Request/response header.

ring. A network configuration where a series of attaching devices are connected by unidirectional transmission links to form a closed path.

route. See *explicit route* and *virtual route*.

route extension (REX). In SNA, the path control network components, including a peripheral link, that make up the portion of a path between a subarea node and a network addressable unit (NAU) in an adjacent peripheral node. See also *path*, *explicit route (ER)*, *virtual route (VR)*.

RPL exit routine. In VTAM, an application program exit routine whose address has been placed in the EXIT field of a request parameter list (RPL). VTAM invokes the routine to indicate that an asynchronous request has been completed. See *EXLST exit routine*.

RU chain. In SNA, a set of related request/response units (RUs) that are consecutively transmitted on a particular normal or expedited data flow. The request RU chain is the unit of recovery: if one of the RUs in the chain cannot be processed, the entire chain is discarded. Each RU belongs to only one chain, which has a beginning and an end indicated via 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.

SA. Subarea.

scanner interface trace (SIT). A record of the activity within the communication scanner processor (CSP) for a specified data link between a 3725 Communication Controller and a resource.

screen. An illuminated display surface; for example, the display surface of a CRT or plasma panel. Contrast with *panel*.

scroll. To move all or part of the display image vertically to display data that cannot be observed within a single display image. See also *page (2)*.

SDLC. Synchronous Data Link Control.

secondary half-session. In SNA, the half-session that receives the session-activation request. See also *secondary logical unit (SLU)*. Contrast with *primary half-session*.

secondary logical unit (SLU). In SNA, the logical unit (LU) that contains the secondary

half-session for a particular LU-LU session. An LU may contain secondary and primary half-sessions for different active LU-LU sessions. Contrast with *primary logical unit (PLU)*.

secondary logical unit (SLU) key. A key-encrypting key used to protect a session cryptography key during its transmission to the secondary half-session.

send pacing. In SNA, pacing of message units that a component is sending. See also *receive pacing*.

session. In SNA, a logical connection between two network addressable units (NAUs) that can be activated, tailored to provide various protocols, and deactivated, as requested. Each session is uniquely identified in a transmission header (TH) by a pair of network addresses, identifying the origin and destination NAUs of any transmissions exchanged during the session. See *half-session*, *LU-LU session*, *SSCP-LU session*, *SSCP-PU session*, and *SSCP-SSCP session*. See also *LU-LU session type* and *PU-PU flow*.

session activation request. In SNA, a request that activates a session between two network addressable units (NAUs) and specifies session parameters that control various protocols during session activity; for example, BIND and ACTPU. Synonymous with *generic BIND*. Contrast with *session deactivation request*.

session control (SC). In SNA, (1) One of the components of transmission control. Session control is used to purge data flowing in a session after an unrecoverable error occurs, to resynchronize the data flow after such an error, and to perform cryptographic verification. (2) A request unit (RU) category used for requests and responses exchanged between the session control components of a session and for session activation and deactivation requests and responses.

session deactivation request. In SNA, a request that deactivates a session between two network addressable units (NAUs); for example, UNBIND and DACTPU. Synonymous with *generic unbind*. Contrast with *session activation request*.

session limit. (1) In SNA, the maximum number of concurrently active LU-LU sessions a particular logical unit can support. (2) In the network control program, the maximum number of concurrent line-scheduling sessions on a non-SDLC, multipoint line.

session parameters. In SNA, the parameters that specify or constrain the protocols (such as bracket

protocol and pacing) for a session between two network addressable units. See also *logon mode*.

session-initiation request. In SNA, an Initiate or logon request from a logical unit (LU) to a system services control point (SSCP) that an LU-LU session be activated.

session-level pacing. In SNA, a flow control technique that permits a receiving connection point manager to control the data transfer rate (the rate at 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* and *virtual route pacing*.

shared. Pertaining to the availability of a resource to more than one use at the same time.

simulated logon. A session-initiation request generated when a VTAM application program issues a SIMLOGON macro instruction. The request specifies a logical unit (LU) with which the application program wants a session in which the requesting application program will act as the primary logical unit (PLU).

SIT. Scanner interface trace.

SLU. Secondary logical unit.

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 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.

SNBU. Switched network backup.

span. In NetView, a user-defined group of network resources within a single domain. Each major or minor node is defined as belonging to one or more spans. See also *span of control*.

span of control. The total network resources over which a particular network operator has control. All the network resources listed in spans associated through profile definition with a particular network operator are within that operator's span of control.

SSCP. System services control point.

SSCP ID. In SNA, a number that uniquely identifies a system services control point (SSCP). The SSCP ID is used in session activation requests sent to physical units (PUs) and other SSCPs.

SSCP-LU session. In SNA, a session between a system services control point (SSCP) and a logical unit (LU); the session enables the LU to request the SSCP to help initiate LU-LU sessions.

SSCP-PU session. In SNA, a session between a system services control point (SSCP) and a physical unit (PU); SSCP-PU sessions allow SSCPs to send requests to and receive status information from individual nodes in order to control the network configuration.

SSCP-SSCP session. In SNA, a session between the system services control point (SSCP) in one domain and the SSCP in another domain. An SSCP-SSCP session is used to initiate and terminate cross-domain LU-LU sessions.

SSP. System Support Programs (IBM program product). Its full name is Advanced Communications Function for System Support Programs.

station. (1) One of the input or output points of a network that uses communication facilities; for example, the telephone set in the telephone system or the point where the business machine interfaces with the channel on a leased private line. (2) One or more computers, terminals, or devices at a particular location.

subarea (SA). 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 address. In SNA, a value in the subarea field of the network address that identifies a particular subarea. See also *element address*.

subarea link. In SNA, a link that connects two subarea nodes.

subarea PU. In SNA, a physical unit (PU) in a subarea node.

switched line. A communication line in which the connection between the communication controller and a remote link station is established by dialing.

switched network backup (SNBU). In VTAM, an optional facility that allows a user to specify, for certain types of PUs, a switched line to be used as an alternate path if the primary line becomes unavailable or unusable.

Synchronous Data Link Control (SDLC). A discipline for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. SDLC conforms to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute and High-Level Data Link Control (HDLC) of the International Standards Organization.

system services control point (SSCP). In SNA, a 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 program product, made up of a collection of utilities and small programs, that supports the operation of the NCP.

tailng. A feature on a multi-channel modem that allows another modem link to be attached to one of the channels. See *multi-tailed* and *twin-tailed*. See also *fanout*.

takeover. The process by which the failing active subsystem is released from its extended recovery facility (XRF) sessions with terminal users and replaced by an alternate subsystem. See *resource takeover*.

TAP. Trace analysis program.

task. A basic unit of work to be accomplished by a computer. The task is usually specified to a control program in a multiprogramming or multiprocessing environment.

task panel. Online display from which you communicate with the program in order to accomplish the program's function, either by selecting an option provided on the panel or by entering an explicit command. See *help panel*.

TCAM. (1) Telecommunications Access Method. (2) The IBM program product whose full name is Advanced Communications Function for TCAM and that provides queued message handling. TCAM Versions 1 and 2 are access methods, but TCAM Version 3 is a message handling subsystem.

telecommunication line. Any physical medium such as a wire or microwave beam, that is used to transmit data. Synonymous with *transmission line*.

terminal. A device that is capable of sending and receiving information over a link; it is usually equipped with a keyboard and some kind of display, such as a screen or a printer.

terminal component. An addressable part of a terminal that performs an input or output function, such as the display component of a keyboard-display device or a printer component of a keyboard-printer device.

TH. Transmission header.

threshold. In NetView, refers to a percentage value set for a resource and compared to a calculated error-to-traffic ratio.

TIC. Token-ring interface coupler.

time sharing option (TSO). An optional configuration of the operating system that provides conversational time sharing from remote stations.

token. A sequence of bits passed from one device to another along the network. When the token has data appended to it, it becomes a frame.

token ring. A network, having a ring topology, that passes tokens from one attaching device to another. For example, the IBM Token-Ring Network.

token-ring interface coupler (TIC). An adapter that can connect a 3725 Communication Controller to an IBM Token-Ring Network.

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 control (TC) layer. In SNA, the layer within a half-session that synchronizes and paces session-level data traffic, checks session sequence numbers of requests, and enciphers and decipheres end-user data. Transmission control has two components: the connection point manager and session control. See also *half-session*.

transmission control unit (TCU). A communication control unit whose operations are controlled solely by programmed instructions from the computing system to which the unit is attached; no program is stored or executed in the unit. Examples are the IBM 2702 and 2703 Transmission Controls. Contrast with *communication controller*.

transmission group (TG). In SNA, a group of links between adjacent subarea nodes, appearing as a single logical link for routing of messages. A transmission group may consist of one or more SDLC links (parallel links) or of a single System/370 channel.

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*.

transmission line. Synonym for *telecommunication line*.

TSO. Time sharing option.

twin-tailed. When a communication controller with an NCP is attached to two host processors. See *multi-tailed*. See also *fanout* and *tailing*.

TWX. Teletypewriter exchange service.

unbind. In SNA, a request to deactivate a session between two logical units (LUs). See also *session deactivation request*. Contrast with *BIND*.

unformatted. In VTAM, pertaining to commands (such as LOGON or LOGOFF) entered by an end user and sent by a logical unit in character form. The character-coded command must be in the syntax defined in the user's unformatted system services definition table. Synonymous with *character-coded*. Contrast with *field-formatted*.

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*. See also *converted command*.

uninterpreted name. In SNA, a character string that a system services control point (SSCP) is able to convert into the network name of a logical unit (LU). Typically, an uninterpreted name is used in a logon or Initiate request from a secondary logical unit (SLU) to identify the primary logical unit (PLU) with which the session is requested.

user. Anyone who requires the services of a computing system.

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-written generation application. A user-written program that runs with the NCP/EP definition facility (NDF) during NCP generation. It processes definition statements and operands.

USS. Unformatted system services.

Virtual Machine (VM). A program product whose full name is the Virtual Machine/System Product (VM/SP). It is a software operating system that manages the resources of a real processor to provide virtual machines to end users. As a time-sharing system control program, it consists of the virtual machine control program (CP), the conversational monitor system (CMS), the group control system (GCS), and the interactive problem control system (IPCS).

virtual route (VR). In SNA, a logical connection (1) between two subarea nodes that is physically realized as a particular explicit route, or (2) that is contained wholly within a subarea node for intra-node sessions. A virtual route between distinct subarea nodes imposes a transmission priority on the underlying explicit route, provides flow control through virtual-route pacing, and provides data integrity through sequence numbering

of path information units (PIUs). See also *explicit route (ER)*, *path*, and *route extension*.

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* and *session-level pacing*.

virtual route selection exit routine. In VTAM, an optional installation exit routine that modifies the list of virtual routes associated with a particular class of service before a route is selected for a requested LU-LU session.

Virtual Storage Extended (VSE). An IBM program product whose full name is the Virtual Storage Extended/Advanced Function. It is a software operating system controlling the execution of programs.

Virtual Telecommunications Access Method (VTAM). An IBM program product 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 operating system. Its full name is Virtual Machine/System Product.

VM/SP. Virtual Machine/System Product operating system. Synonym for *VM*.

VR. Virtual route.

VSE. Virtual Storage Extended operating system.

VTAM. Virtual Telecommunications Access Method (IBM program product). Its full name is Advanced Communications Function for the Virtual Telecommunications Access Method.

VTAM operator command. A command used to monitor or control a VTAM domain.

window. (1) In SNA, synonym for *pacing group*. (2) A small amount of information in a framed-in area on a panel that overlays part of the panel.

window size. In SNA, synonym for *pacing group size*.

XID. A data link control command and response passed between adjacent nodes that allows the two nodes to exchange identification and other information necessary for operation over the data link.

XRF. Extended recovery facility.

X.21. See *Recommendation X.21 (Geneva 1980)*.

X.25. See *Recommendation X.25 (Geneva 1980)*.

X.25 NCP Packet Switching Interface (NPSI). The X.25 Network Control Program Packet Switching Interface, which is an IBM program product that allows SNA users to communicate over packet-switched data networks that have interfaces complying with Recommendation X.25 (Geneva 1980) of the International Telegraph and Telephone Consultative Committee (CCITT). It allows SNA programs to communicate with SNA equipment or with non-SNA equipment over such networks. In addition, this product may be used to attach native X.25 equipment to SNA host systems without a packet network. See also *Recommendation X.25 (Geneva 1980)*.

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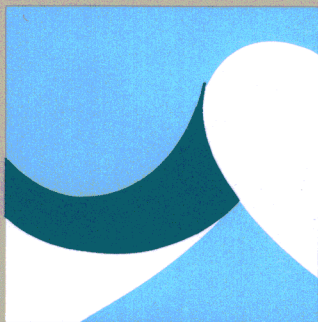
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