



VTAM

SC23-0111-5

Installation and Resource Definition

Version 3 Releases 1, 1.1, 1.2, and 2



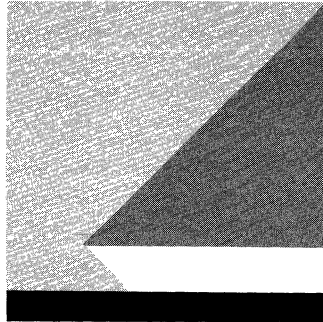


VTAM

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Version 3 Releases 1, 1.1, 1.2, and 2



File Number

S370/4300/30XX-50

Program Numbers

5665-313 (MVS/370)

5665-289 (MVS/XA)

5664-280 (VM/SP)

5666-313 (VSE)

Fifth Edition (July 1988)

This major revision replaces SC23-0111-3. This edition applies to the Advanced Communications Function for VTAM Version 3 Release 1 (running under VSE), Version 3 Release 1.1 (running under MVS and VM), Version 3 Release 1.2 (running under VM and VSE), and Version 3 Release 2 (running under MVS, VM, and VSE). VTAM is an IBM licensed program that can be ordered by the following program numbers:

- MVS/370 (program number 5665-313)
- MVS/Extended Architecture (program number 5665-289)
- VM/System Product (program number 5664-280)
- VSE/Advanced Functions (program number 5666-313)
- VSE/System Package (program number 5666-313).

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About This Book

This book is intended to help customers install VTAM and define resources to VTAM. It contains procedures and reference materials, which do not define any programming interfaces. Any references to programming interfaces are for guidance purposes only.

This publication is for system programmers responsible for installing VTAM Version 3. It also contains information on how to define resources to VTAM.

This book contains some explanatory material, but you will mostly find procedures (steps you should take when installing VTAM for the first time) and reference materials (descriptions of VTAM definition statements and their operands).

If you need a broader understanding of the topics covered in this book, refer to *Network Program Products General Information* and *Network Program Products Planning*.

Who Should Use This Book

Your job title probably includes the words “system programmer,” “analyst,” or “administrator.” Use this book if your job includes installing VTAM, transferring the VTAM object code from the product tape to your host processor, or defining the characteristics of your system after VTAM is installed.

For information about planning these activities, see *Network Program Products Planning*. For information about improving system performance after completing these activities, see *VTAM Customization*.

How to Use This Book

Before you begin installing VTAM and defining resources to it, you should plan for these tasks using *Network Program Products Planning*.

Installation means making a program ready to do useful work. It includes generating a program, installing program code into user libraries, initializing the program, and applying program temporary fixes (PTFs) to it.

Resource definition means defining the characteristics of data processing resources to VTAM. These resources include networks, hosts, Network Control Programs (NCPS), routes, terminals, and application programs.

The tasks of installation and resource definition are similar in one important aspect—both result in resources being defined. The purpose of installation is to define VTAM and its local devices and libraries to the operating system. The purpose of resource definition is to define resources to the installed VTAM program.

How This Book Is Organized

This book consists of the following chapters and appendices:

- Chapter 1, "Introduction"
- Chapter 2, "Installing VTAM in MVS"
- Chapter 3, "Installing VTAM in VM"
- Chapter 4, "Installing VTAM in VSE"
- Chapter 5, "Defining the Network to VTAM"
- Chapter 6, "Defining Start Options"
- Chapter 7, "MVS VM SNA Network Interconnection Considerations"
- Chapter 8, "Verifying the Installation"
- Appendix A, "Quick Reference for VTAM Definition Statements"
- Appendix B, "Quick Reference for VTAM Start Options"
- Appendix C, "MVS TSO/VTAM System Programmer Information"
- Appendix D, "MVS Filing Cryptographic Keys"
- Appendix E, "VM/SNA Console Support (VSCS)"
- Appendix F, "MVS Logon Manager"
- "Glossary."

Symbols Used in This Book

The following symbols are used in this book to indicate information that pertains to a specific operating system:

MVS/XA	Indicates information that applies to MVS/XA only.
MVS/370	Indicates information that applies to MVS/370 only.
MVS	Indicates information that applies to both MVS/XA and MVS/370, but not VM or VSE.
VM	Indicates information that applies to VM only.
VSE	Indicates information that applies to VSE only. Note: Because VSE/Advanced Functions is one of the licensed programs in VSE/System Package, no distinction is made between the two.
9370	Indicates information that applies to the IBM 9370 only. For V3R1.2, the 9370 is supported only on VM. For V3R2, the 9370 is supported on VM and VSE.

These symbols precede unique information. If a piece of information applies to more than one operating system, but not all of them, more than one symbol may precede the information. For example:

MVS VSE *This function locates the resource in this network or another network associated with a given symbolic name or network address.*

The information in the example would apply to MVS/XA, MVS/370, and VSE, but not VM. Information that applies to all operating systems is **not** denoted by any symbol.

Artwork Used in This Book

Figure 1 shows the conventions used in this book to illustrate the parts of a network.

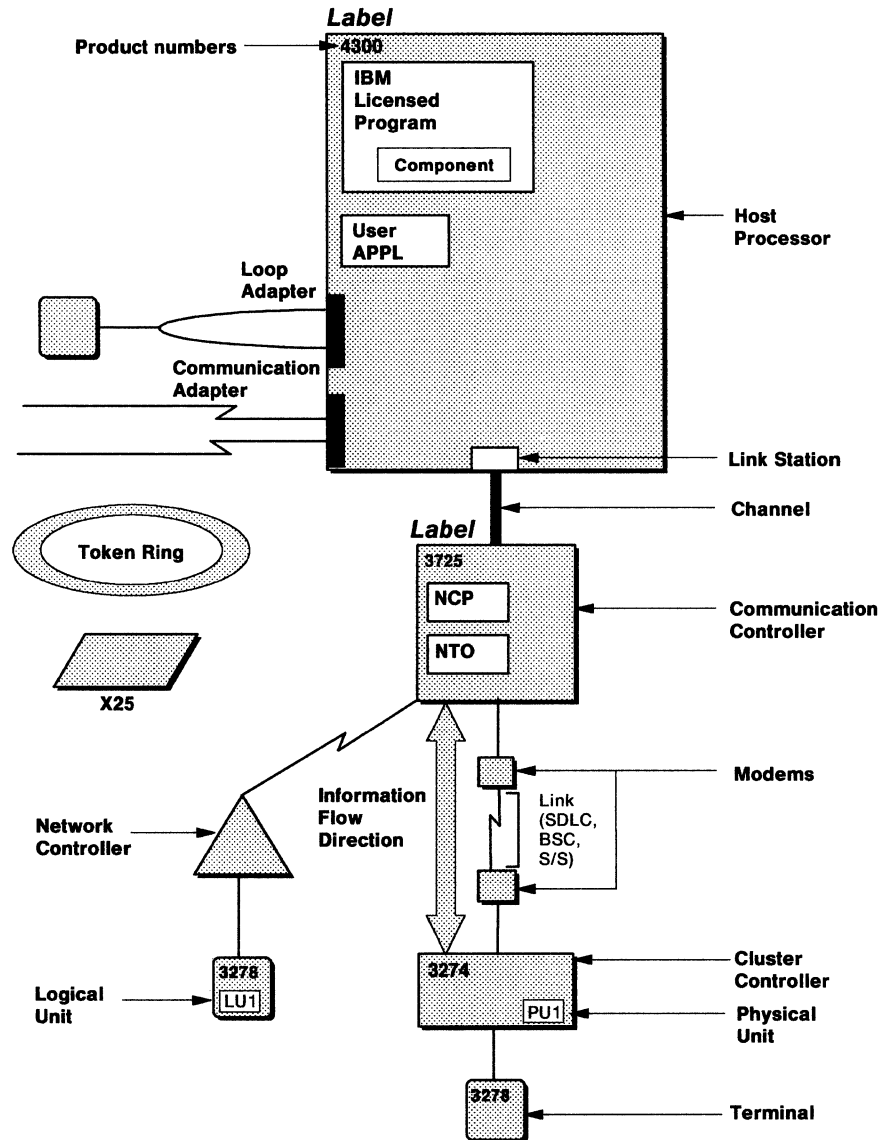


Figure 1. Conventions Used in Network Illustrations

What Is New in This Book

Most of the material in this book applies to all operating systems: MVS/XA, MVS/370, VM, and VSE. However, there are separate sections that describe how to install VTAM in MVS, VM, and VSE.

What Is New for VTAM V3R2

Support for Type 2.1 Peripheral Nodes

Previously, all LUS attached to peripheral nodes were dependent LUS and could engage in only one LU-LU session at a time. Also, dependent LUS could serve only as secondary logical units (SLUS).

Type 2.1 peripheral nodes allow both dependent and independent LUS. Independent LUS can engage in multiple (including parallel) sessions with other LUS either on the same node or on other nodes. Independent LUS can also act as primary logical units (PLUS) and issue session BINDS.

Changes for type 2.1 node support include the following:

- XID is a new operand on the PU definition statement for NCP and DR major nodes.
- CPNAME is a new operand on the PU definition statement for switched major nodes.
- The LOCADDR operand on the LU definition statement is for NCP, DR, and switched major nodes. It requires a value of 0 for independent LUS.
- RESSCB is a new operand for LU definition statements on switched and NCP major nodes.
- For VTAM V3R2, IDBLK must be a 3-digit hexadecimal number. Valid values for IDBLK are X'001' – X'FFE'. Prior to VTAM V3R2, IDBLK could be any 3-digit hexadecimal number.

LU 6.2 Support

LU 6.2 enhancements include the following changes to the APPL definition statement:

- APPC is a new operand that identifies the application as an LU 6.2 application.
- AUTOSES is a new operand.
- DDRAINL is a new operand.
- DMINWNL is a new operand.
- DMINWNR is a new operand.
- DRESPL is a new operand.
- DSESLIM is a new operand.
- EAS can now include LU 6.2 sessions.
- LMDENT is a new operand.
- PARSESS now defaults to YES if APPC=YES.
- SECACPT is a new operand.

APPC is a new VTAM internal trace start option.

Logon Manager

The logon manager allows dependent SLUS and a VTAM operator to indirectly initiate sessions with Transaction Processing Facility (TPF) applications. A TPF system must be defined as a type 2.1 peripheral node and its applications as independent LUS.

A new Appendix F has been added, describing the logon manager and how to install and define it.

Start Option Enhancements

Changes to the start options are:

- NETID is now required for all SSCPS.
- SSCPNAME is now required for all SSCPS.
- **MVS VM** GWSSCP is a new operand. The default is GWSSCP=YES, which assumes that the SSCP is gateway capable.
- ITLIM has been removed.
- The SSCP option on the VTAM internal trace has been split into network resource management (NRM) and SSCP.
- LU 6.2 application program interface (APPC) and execution sequence control (ESC) are new VTAM internal trace start options.
- The APBUF is a new buffer pool that provides fixed common storage addressable with a 24-bit address. It is used for buffers not related to I/O.
- The IOBUF is now used only for I/O buffers. **MVS/XA (V3R2)** This buffer is in 31-bit address storage, unless the cryptographic facility is active.

Dynamic Reconfiguration Enhancements

The dynamic reconfiguration changes are:

- MOVE is a new definition statement for moving PUS and their associated LUS.
- DATMODE is now a valid operand on the PU definition statement for NCP major nodes and switched major nodes.
- Implicit dynamic reconfiguration has been added to permit adding new PU and LU definition statements without having to regenerate the NCP.

Dynamic Update of Communication Control Units

Additional parameters on the BUILD definition statement support uploading load modules to a communication control unit (CCU) without disrupting the currently active load module.

Boundary Channel Adapter Support

The following changes provide enhanced channel adapter support:

- CA is now allowed for the LNCTL operand on the GROUP statement for NCP major nodes. LNCTL=CA is valid only for PU types 2 and 5. It is required for type 2.1 TPF nodes for use with the logon manager.
- The HOST macro is now VTAM-only.

Switched Session Continuation

ANS is a new operand for the PU definition statement on switched major nodes.

Support for Dynamic Table Replacement

Existing USS and interpret tables must be reassembled before they can be used with the MODIFY TABLE operator command against those USS and interpret tables.

Channel-to-Channel Improvement

The MAXBFRU operand on the LINE statement now allows you to set the size of the receive buffer in 4K pages. If the channel-to-channel adapter is communicating with a back-level host, MAXBFRU still specifies the number of buffers (rather than pages) to allocate.

Dynamic Path Update

Previously, an NCP's routing table could be updated only when a new load module was generated and loaded into the communication controller. Dynamic path update allows the VTAM operator to add, modify, or delete inactive explicit routes from an NCP's routing table without regenerating the NCP. In addition, inactive explicit routes may be deleted from VTAM's routing table.

The dynamic path update changes are:

1. The NCPPATH definition statement has been added.
2. The VPATH definition statement has been added.
3. NEWPATH is a new operand on the PCCU definition statement.
4. DELETER is a new operand on the PATH definition statement.

Cross-Domain Resource Improvement

If the NETWORK statement is specified, the resource is considered REAL even if the NETWORK statement specifies the host network. Previously, host network specification caused the resource to be treated as an ALIAS. If no NETWORK statement is specified, the resource can be used as REAL or ALIAS in any domain.

VFYOWNER is a new parameter on CDRSC statement.

Adjacent SSCP Table Enhancement

If the NETWORK statement is specified, the table is used for the specified network. If there is no NETWORK statement after a VBUILD statement, or there is a NETWORK statement without NETID specified, the table will be treated as the default table for all networks. Previously, if the NETID on the NETWORK statement was the host network, the table was treated as a default table. A default table and network-specific table for the host network may both be defined.

VM VSCS DTIGEN Storage Management Operands

Two new storage management operands have been added to the DTIGEN macro, which allow some control over the VSCS working set size:

- The STCHKTM operand represents the time interval between storage pool scans (checking).
- The STRELTM operand represents the timer interval between releasing storage back to GCS.

V3R2 Functions Available as PTFs on V3R1.1 and V3R1.2

The following functions, which are available as part of V3R2, are also available via V3R1.1 PTFs and V3R1.2 for certain operating systems.

- Channel-to-channel performance enhancement
 - A PTF on V3R1.1 for MVS and VM
 - Part of the base code in V3R1.2 for VM and VSE
 - Part of the base code in V3R2 for all operating systems.

- 3720 disk support
 - A PTF on V3R1.1 for MVS and VM
 - Part of the base code in V3R1.2 for VM
 - Part of the base code in V3R2 for all operating systems.
- 3745 Communication Controller support
 - A PTF on V3R1.1 for MVS (the 3720 disk support PTF is a prerequisite)
 - Part of the base code in V3R2 for all operating systems.
- MVS Double-byte character set support
 - A PTF on V3R1.1
 - Part of the base code in V3R2.

This is an enhancement to TSO/VTAM and does not affect VM or VSE.

VM VSE **What Is New for VTAM V3R1.2**

Switched Subarea Connection

Subarea nodes (such as VTAM and NCP) can now be connected over switched networks, so that processors like the IBM 9370 and IBM 4361 can dial into an SNA network.

Please refer to *VTAM Expanded Network Capabilities Support* for complete information.

X.25

X.25 communication adapter support has been integrated into VTAM and is no longer a separate feature.

LAN Support

VM Local area network (LAN) support enables the attachment of an IBM Token-Ring Network directly to an IBM 9370.

VSCS Features

VM Many VSCS enhancements have been added.

What Is New for VTAM V3R1.1

Support for the NetView Licensed Program

VTAM Version 3 Release 1.1 is designed to run in conjunction with the NetView™ program¹. The NetView program provides network management functions, including a programmed operator and diagnostic tools.

Multipoint Subarea Links

MVS VTAM now supports multipoint subarea links as a means by which to connect more than two devices. On an SNA line, one device is designated as the primary station, and all other devices on the line are secondary stations. A multipoint subarea link is one in which the secondary stations include one or more type 4 or type 5 physical units, with or without type 1 or type 2 physical units.

¹ NetView is a trademark of International Business Machines Corporation.

VM VM Improvements in VTAM Version 3 Release 1.1

In VTAM Version 3 Release 1.1, VM users can take advantage of the following functions:

- SNA network interconnection
- Extended network addressing
- Support for peripheral nodes, such as the IBM 3710 Network Controller.

VM VSCS Enhancements

For VM systems, the following serviceability tools have been added for vscs:

- vscs dump formatter
- vscs trace formatter.

There are also new vscs translation exits for display and keyboard devices, which you can modify. Two new operands on the DTIGEN macro—DEXIT and KEXIT—are used to activate these exits.

New Start Options

Three new start options have been added:

- PPOLOG lets you control the types of events recorded in the primary program operator (PPO) log.
- SSCPDYN determines whether VTAM should add entries dynamically to the adjacent SSCP table.
- SSCPORD determines how VTAM should scan the entries in the adjacent SSCP table.

MVS/XA Extended Recovery Facility (XRF)

Although XRF is not a new feature for VTAM V3R1.1, one operand, HAVAIL on the APPL definition statement, is new for VTAM V3R1.1.

Where to Find More Information

Figure 2 on page xvii shows the books in the VTAM V3R2 library, arranged according to related tasks. For a description of these manuals, see “Bibliography” on page 451. The bibliography also lists the titles and order numbers of manuals that are related to this manual or are cited by name in this manual.

Evaluation and Education

Network Program Products
General Information
GC30-3350

Network Program Products
Bibliography and
Master Index
GC30-3353

Planning

Network Program Products
Planning
SC30-3351

Network Program Products
Storage Estimates
SC30-3403

Installation and Resource Definition

VTAM
Installation and
Resource Definition
SC23-0111

Network Program Products
Samples
SC30-3352

Customization

VTAM
Customization
LY30-5614

Operation

VTAM
Operation
SC23-0113

VTAM
Messages and Codes
SC23-0114

Diagnosis

VTAM
Diagnosis
LY30-5601

VTAM Data Areas
for MVS, LY30-5592
for VM, LY30-5593
for VSE, LY30-5594

Writing Application Programs

VTAM
Programming
SC23-0115

VTAM
Programming for LU 6.2
SC30-3400

VTAM
Directory of Programming
Interfaces for Customers
GC31-6403

(For Reference Summary)

VTAM
Reference Summary
LY30-5600

Figure 2. The VTAM V3R2 Library

Chapter 1. Introduction

- An Overview of Installing VTAM 3
- Installing VTAM 5
- Replacing or Modifying VTAM Load Modules 6
- Coding Start Options, Start Option Lists, and Initial Configuration Lists 7
- Writing VTAM Application Programs and Installing Application Subsystems 7
- Defining the Network to VTAM 8
- Coding NCP Generation Definition Statements and Performing an NCP
 Generation 8
- Post-Installation Procedures 10
- Interdependencies 10
- mvs vm SNA Network Interconnection Considerations 10

Chapter 1. Introduction

An Overview of Installing VTAM

This chapter describes:

- The installation process as a whole
- Each part of the process separately
- Interdependencies among the parts of the process.

In Figure 3 on page 4, the installation process is broken into the following units of work:

- Installing VTAM:
 - Storing VTAM on system libraries
 - Providing support for VTAM in the operating system.
- Replacing or modifying VTAM modules. These include:
 - Installation exit routines and user replaceable modules
 - Tables for supporting session establishment and termination
 - Tables for supporting operator control.
- Writing start options, start option lists, and initial configuration lists
- Installing IBM application subsystems
- Defining the network to VTAM
- Writing NCP generation-definition statements and performing an NCP generation.

The licensed programs associated with VTAM are shown on the left of Figure 3 on page 4. Their status at the end of the process is shown on the right.

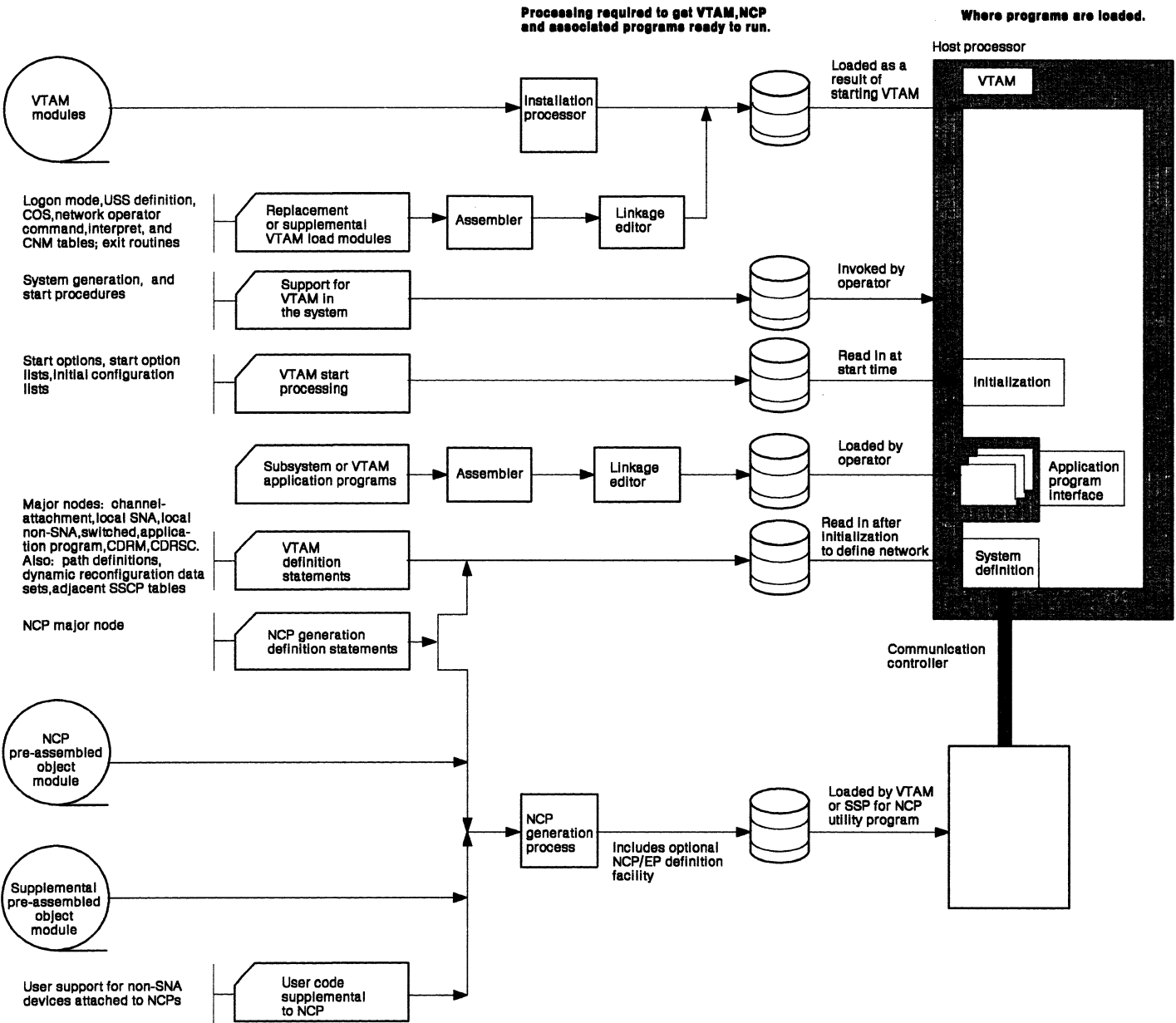


Figure 3. Overview of the Process of Installing VTAM

Figure 3 assumes that you have already installed the appropriate release of the operating system under which VTAM is to run. Installation of SNA terminal subsystems is not shown. Refer to the appropriate subsystem publication for more information.

Other things related to installing VTAM are:

- Installing network management licensed programs, such as the NetView program or the Network Communication Control Facility (NCCF) (see the appropriate installation manuals)
- Installing and setting up communication network management (CNM) applications, such as the NetView program, NLDM, and NPDA, to perform network management functions procedures (see the appropriate installation manuals)
- Setting up normal, as well as backup and recovery, operating procedures (see *Network Program Products Planning and VTAM Operation*)
- Tuning VTAM (see *VTAM Customization*)
- Verifying the installation (see Chapter 8, “Verifying the Installation” on page 369).

If you are upgrading your system from a previous release level, the tasks described in this chapter will involve revising or adding to work already done, rather than performing all new work. For example, when working on VTAM definition statements, you need to know what has changed from the original statements. In this case, refer to the appropriate sections in *Network Program Products Planning*.

Installing VTAM

Figure 3 on page 4 illustrates the process by which you combine the VTAM modules and definitions and install them on system libraries. For details of the process, refer to:

- Chapter 2, “Installing VTAM in MVS” on page 13
- Chapter 3, “Installing VTAM in VM” on page 31
- Chapter 4, “Installing VTAM in VSE” on page 43.

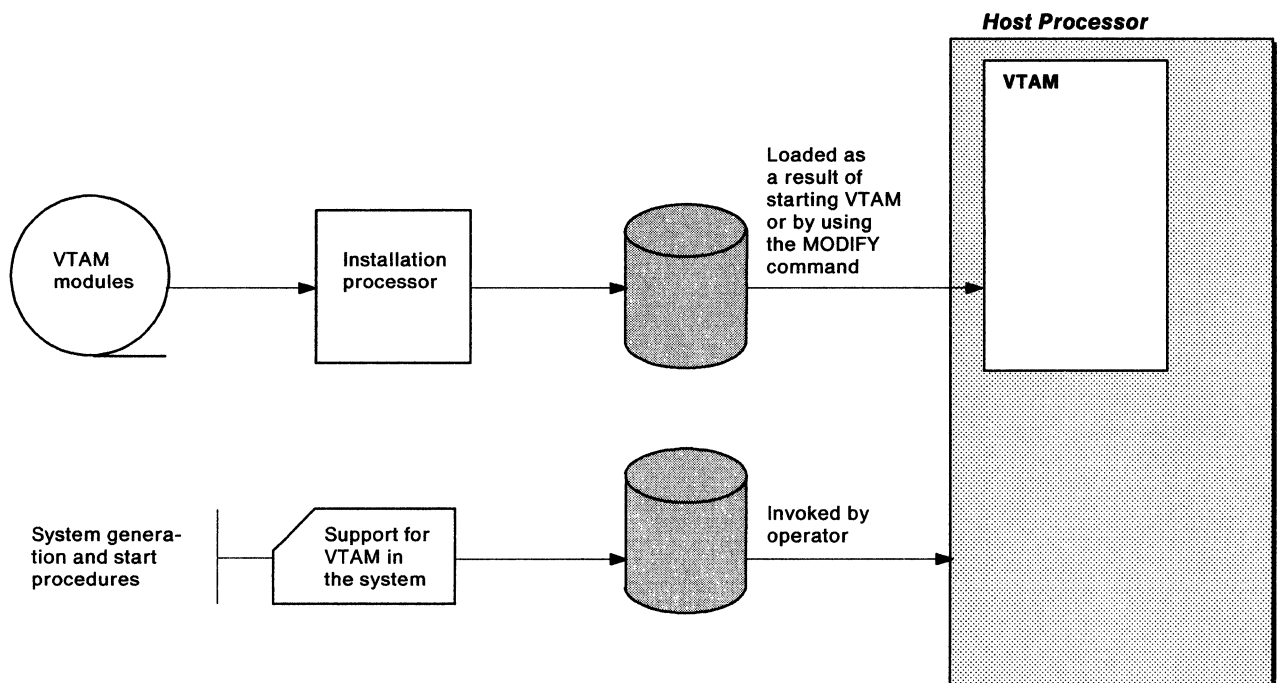


Figure 4. Procedure Flow for Installation of VTAM

You must also identify VTAM to the operating system, as well as identify the local devices VTAM supports and the files and libraries it requires. This identification requires a system generation. You should also write one or more start procedures. Figure 4, extracted from Figure 3 on page 4, illustrates the installation procedure.

Replacing or Modifying VTAM Load Modules

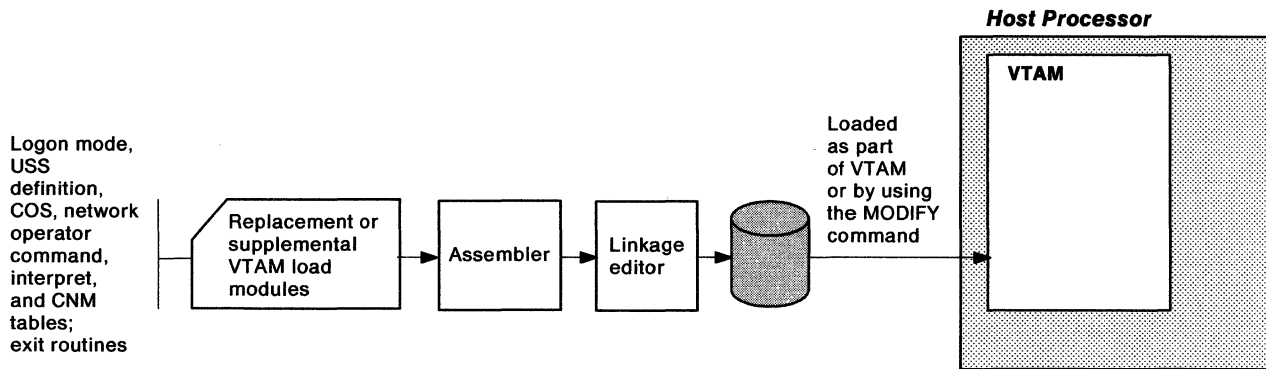


Figure 5. Replacing and Supplementing VTAM Modules

Figure 5, extracted from Figure 3 on page 4, shows how you can make replacements or supplements to VTAM modules after VTAM is installed. You can add:

- Routines for supplementing the VTAM process of establishing and terminating sessions. These are the session management, virtual route selection, authorization, and accounting exit routines, and the virtual route pacing window size calculation.
- A VTAM constants module. This module replaces a module in VTAM containing constants used in regulating various functions. You can also replace selected constants.
- Tables containing information used in session establishment and termination. You can code tables to replace interpret tables in VTAM. You can also code supplementary logon mode tables for additional logon modes, and supplementary USS tables to replace IBM-supplied defaults. Finally, you can translate verbs and operands used by terminal operators at your installation into IBM-supplied verbs, operands, and defaults. To set up classes of service and associate them with virtual routes, you must code a class-of-service (COS) table.
- A network operator command table containing certain VTAM operator command operands and defaults. You can code a table to supplement the one supplied by IBM. This allows you to change the defaults of operands and translate user-defined operands to IBM-supplied operands.
- A USS table for VTAM operator messages and commands. If you want to change the message text (for example, to provide non-English text) or other characteristics of a message, or to change the syntax or default values for a command, you can write a supplemental USS table.
- A supplementary communication network management (CNM) table for routing unsolicited network services request units to CNM application programs, if user-written CNM applications are used. (The IBM-supplied CNM routing table contains entries for IBM CNM products. If these are insufficient for your installation, you must code your own CNM routing table.)

For more information on supplementing VTAM load modules, see *VTAM Customization*.

Coding Start Options, Start Option Lists, and Initial Configuration Lists

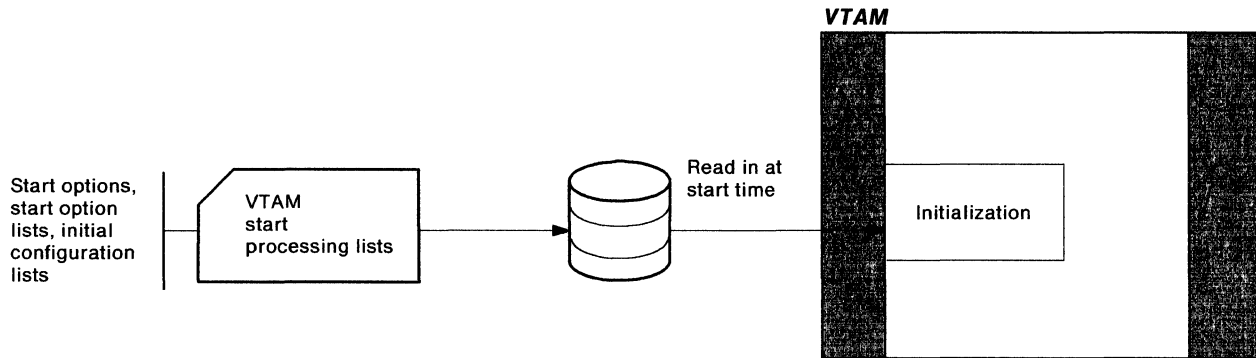


Figure 6. Procedure Flow for Coding Start Options, Lists, and Procedures

Using start option lists, initial configuration lists, and start procedures can reduce operator involvement in starting VTAM. Figure 6, extracted from Figure 3 on page 4, illustrates this process. You can code these items and store them on libraries from which they can be retrieved at start time.

For more information on coding start options, start option lists, and initial configuration lists, see Chapter 6, “Defining Start Options” on page 281.

Writing VTAM Application Programs and Installing Application Subsystems

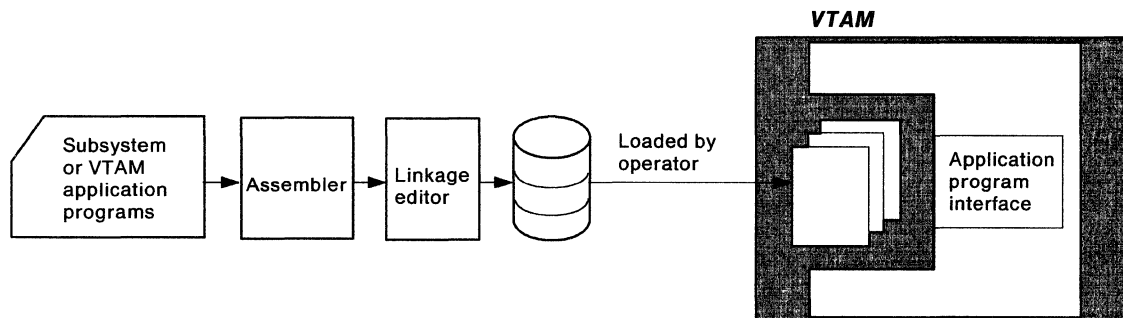


Figure 7. Procedure Flow for Installing Application Programs

Application programs and subsystems request telecommunication services of VTAM using VTAM macroinstructions. As shown in Figure 7, extracted from Figure 3 on page 4, you code, assemble, and link-edit VTAM application programs just as you would any application program. The operator initiates execution of these programs. Application programs identify themselves to VTAM before receiving telecommunication services, and the identifier they use should agree with the name assigned to them in the statements defining them to VTAM. For more information on writing VTAM application programs, see *VTAM Programming* and *VTAM Programming for LU 6.2*.

There are also IBM-written application programs described in *Network Program Products General Information*.

Defining the Network to VTAM

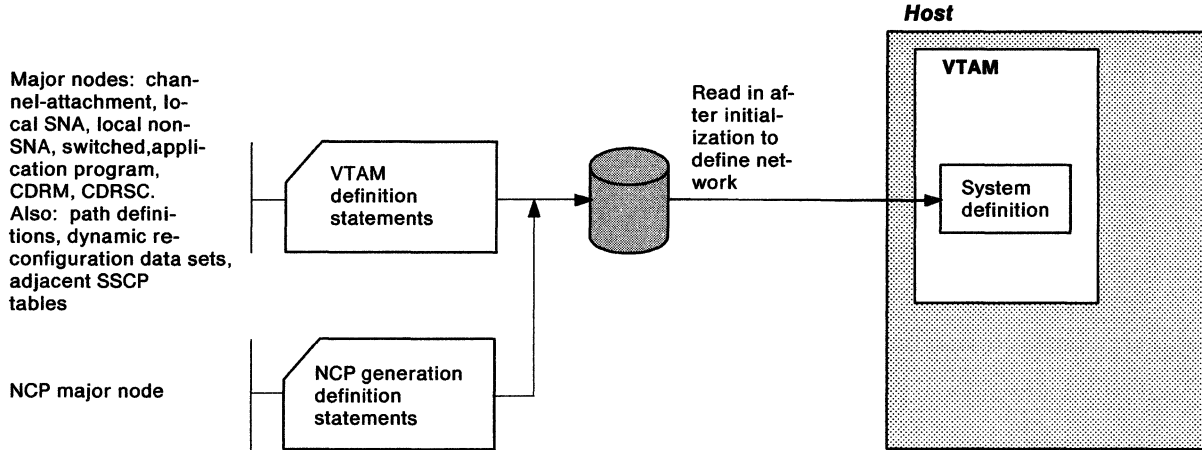


Figure 8. Procedure Flow for Defining VTAM Resources

To control telecommunication, VTAM needs a definition of each resource in its domain. As illustrated in Figure 8, extracted from Figure 3 on page 4, you define resources that are controlled by an NCP through definition statements used to generate the NCP. Optionally, you can use the NCP/EP Definition Facility to process these NCP definition statements for improved performance. You define all of the remaining resources through VTAM definition statements. For more information, see *NCP Resource Definition Guide* and *NCP Generation and Loading Guide*.

Depending on your installation requirements, you may also want to define resources outside of your domain. These include resources in other domains (see “Defining Cross-Domain Resources” on page 267 for details) and in other networks (see “Defining Cross-Domain Resources” on page 352).

Coding NCP Generation Definition Statements and Performing an NCP Generation

The network control program that is loaded into a communication controller includes the following:

- NCP modules assembled in response to generation-definition statements written to describe the resources and functions of the NCP
- Preassembled NCP modules for basic functions performed by an NCP.

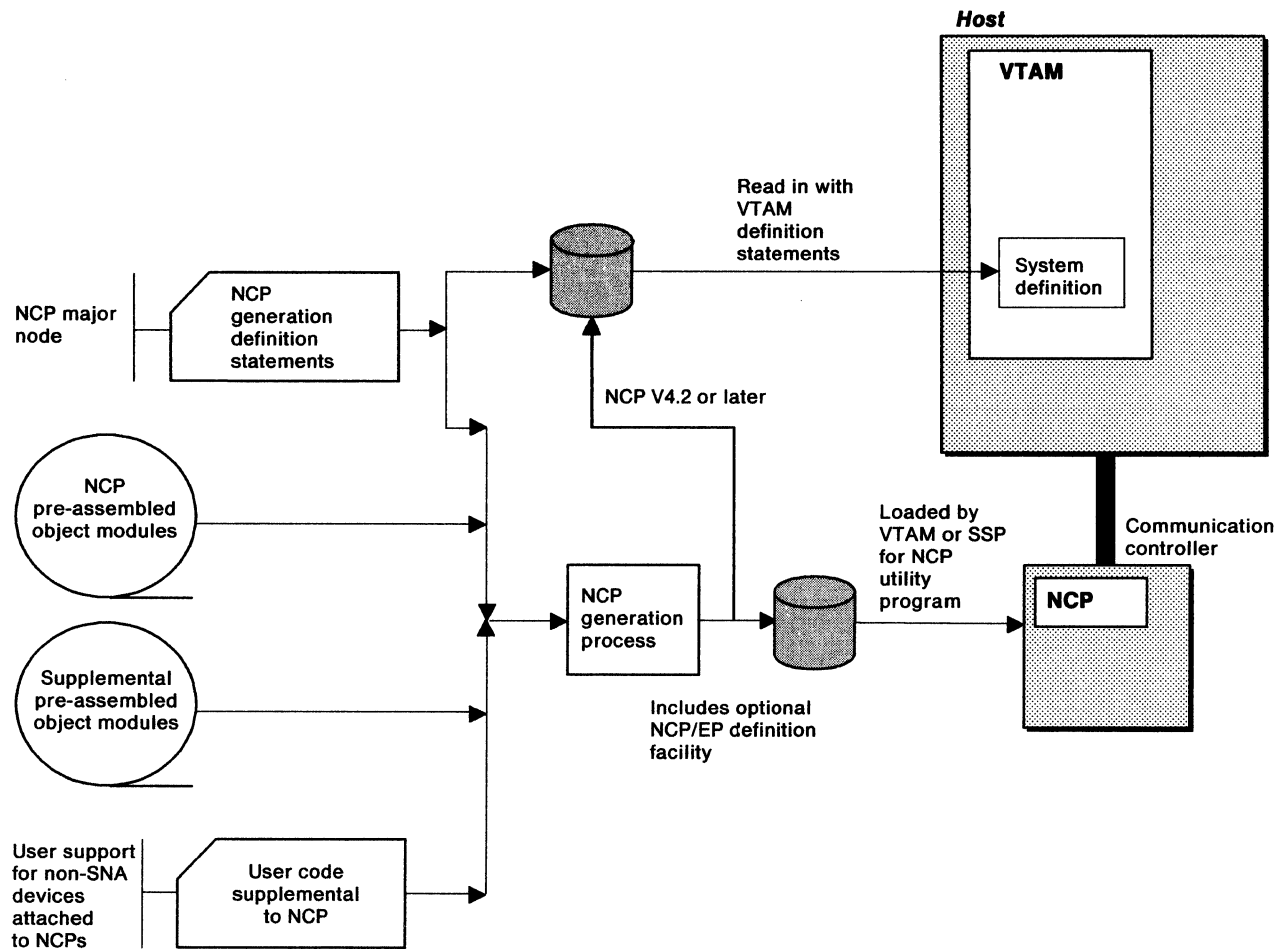


Figure 9. Procedure Flow for Performing an NCP Generation

Optionally, the network control program may also include the following:

- Modules of the IBM Network Terminal Option (NTO) licensed program (or a program that you have coded) — to support non-SNA devices
- Modules of the IBM Network Routing Facility (NRF) licensed program — to allow certain devices attached to the communication controller to exchange data without routing the data through the host
- Modules of the IBM X.25 NCP Packet Switching Interface (NPSI) licensed program — to allow the communication controller to be attached to an X.25-based packet-switched data network.

Figure 8 on page 8, extracted from Figure 3 on page 4, shows the steps required for generating an NCP. For a description of all licensed programs that can be generated along with the NCP and loaded into the communication controller, see *Network Program Products Planning*.

All these modules are link-edited and stored in libraries that must be allocated to VTAM when it is started.

After an NCP is generated, the generation-definition statements are filed in the VTAM definition library so that the NCP characteristics and attached devices are defined to VTAM.

Post-Installation Procedures

Once you complete the tasks described above, you are ready to begin operating VTAM. However, before beginning day-to-day operations, you should:

- Set up operating procedures. Think about this task early in the installation process and as you verify the installation (see *VTAM Operation*).
- Verify the installation. Read Chapter 8, “Verifying the Installation” on page 369, for a description of this process.

After you are successfully performing day-to-day operations using VTAM, you should tune it to perform as efficiently as possible. For more information on tuning VTAM, see *VTAM Customization*.

Interdependencies

The order of the steps shown in Figure 3 on page 4 is not mandatory. Ideally, they should be done in parallel. There are interdependencies among the parts of the process, however, that suggest a particular sequence to follow. Some of these interdependencies are:

- VTAM and its supporting features can be installed in system libraries first. Replacement or supplementary modules can be added later as they are coded.
- VTAM definition statements and NCP generation-definition statements have some operands that affect each other. You should be aware of these relationships, even if you do not code the definitions in parallel. These operands are described in Chapter 5, “Defining the Network to VTAM” on page 59.
- **vm** Whenever you change VTAM definition statements or start option lists in **vm**, use the Group Control System (GCS) **ACCESS** command to reaccess the disk containing the corresponding VTAMLST files before activating the resources or restarting VTAM.
- Coordinate the coding of initial configuration lists, configuration restart files, and several of the start options with network definition for functions such as network activation, network deactivation, and backup and recovery.
- If you use the extended network addressing of VTAM Version 3, be careful to maintain address compatibility in networks that use releases of VTAM and NCP for which extended network addressing is not supported. Both the subarea and element portions of addresses must be compatible for nodes to communicate with one another.

For more information on interdependencies, see *Network Program Products Planning*.

mvs vm SNA Network Interconnection Considerations

Considerations for interconnected networks are discussed in Chapter 7, “**mvs vm** SNA Network Interconnection Considerations” on page 319. These considerations include VTAM definition statements and operands, NCP generation-definition statements, and VTAM start options.

Chapter 2. Installing VTAM in MVS

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Chapter 2. Installing VTAM in MVS

Overview of the Process

VTAM is an access method of the MVS operating system. Before you can use VTAM, it must be identified and incorporated into the system during system generation. Once VTAM is identified to the system, it is not necessary to perform a system generation for this system when upgrading to a new release of VTAM. Information on planning and generating VTAM support is given in *System Generation Reference*.

The procedure for installing VTAM from the tape, including suggested coding statements, is described in the Program Directory accompanying the VTAM program. The Program Directory also describes the contents of the tape and space allocations required on system data sets. The tape contains the VTAM modules and macroinstruction definitions (including TSO/VTAM) needed to make VTAM part of your operating system. The System Modification Program (SMP) is used to install the program tapes. For additional information on SMP, see *OS/VS System Modification Program (SMP) System Programmers Guide*.

For operating system requirements for VTAM, see *Network Program Products General Information*.

Figure 10 on page 15 illustrates the process of installing VTAM.

Identifying VTAM to the Operating System

If a system generation is required to include the VTAM modules and macroinstructions from the product tapes into the operating system:

- Name the system data sets used by VTAM, NCP, and any SNA terminal subsystem requiring host support in the DATASET macroinstruction (or IEHPRGM). System data sets are described in Figure 12 on page 20.

- Code:

```
ACSMETH=VTAM OR IND=YES
```

in the DATAMGT macroinstruction, to include VTAM in the operating system.

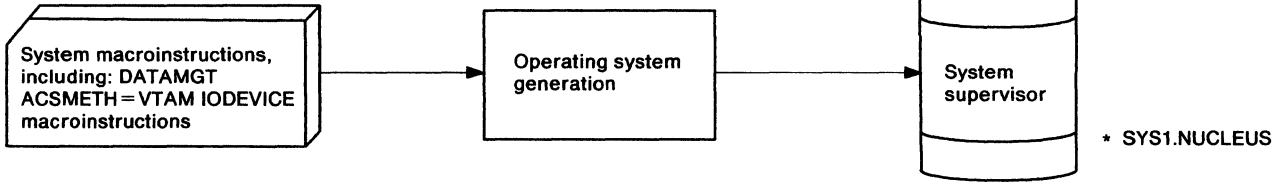
- In the SECONSLE macroinstruction, if the system is generated with the multiple console support option, VTAM requires a routing code of at least ROUTCDE=(1,2,8) and command code of VALDCMD=(1,2). Depending on the message, VTAM also uses routing codes 4, 6, and 10 in combination with basic codes 1, 2, and 8.
- If the routing codes provided for VTAM messages do not meet your needs, you can change the routing codes used on the messages by coding a system user exit routine (if there is multiple console support). The exit routine receives control before messages are routed so it can examine the messages' routing codes (and descriptor codes, if desired) and change them. The system uses the modified routing codes to route these messages. To change routing codes, follow these steps:
 1. Prepare the write-to-operator/write-to-operator with response (WTO/WTOR) exit routine and add it to the control program. The WTO/WTOR exit routine

can be inserted into the resident portion (communications task) of the control program either before or after system generation.

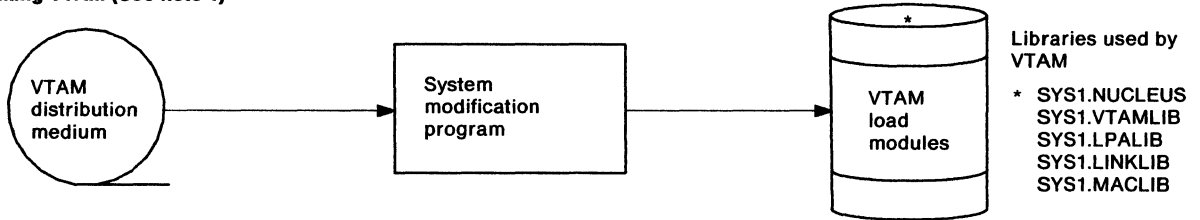
2. Refer to *VTAM Messages and Codes* for the message routing codes and decide on the new routing codes you would like to reassign to each message.
- If you are adding channel-attached devices either as part of system generation or as an I/O generation, the IODEVICE macroinstruction should include:
 - Channel-attached communication controllers and other channel-attached devices. Devices attached to communication controllers are not defined in IODEVICE macroinstructions; they are defined in statements filed for use by VTAM and the NCP. If the NCP is generated with partitioned emulation programming (PEP), PEP lines must also be defined with the IODEVICE macroinstruction.
 - ADDRESS and OPTCHAN as the primary and secondary addresses of communication controllers, if using a 2-channel switch on communication controller channel adapters.
 - In V3R2, the MODIFY TABLE operator command lets you dynamically replace USS, interpret, logon mode, and class-of-service tables (see *VTAM Operation*). If you want to use the MODIFY TABLE command against a given USS or interpret table, you must reassemble that table using the VTAM V3R2 macroinstruction libraries.
 - **MVS/XA** Be sure that the extended CSA value, defined by the second value on the CSA parameter in member IEASYSxx, is at least 4 megabytes.
 - In the CTRLPROG macroinstruction, set CSA equal to or greater than 800.
 - SYS1.VTAMLIB must be named in the APFLIB operand of the IODEVICE macroinstruction when doing a system generation.

Figure 11 on page 18 shows an example of system generation statements used to include VTAM.

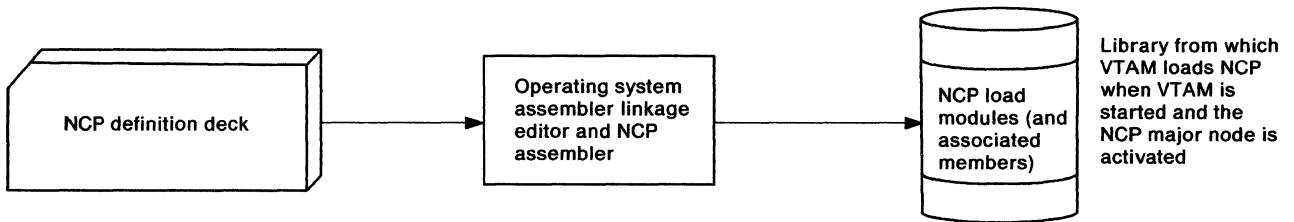
A Generating the operating system with support for VTAM



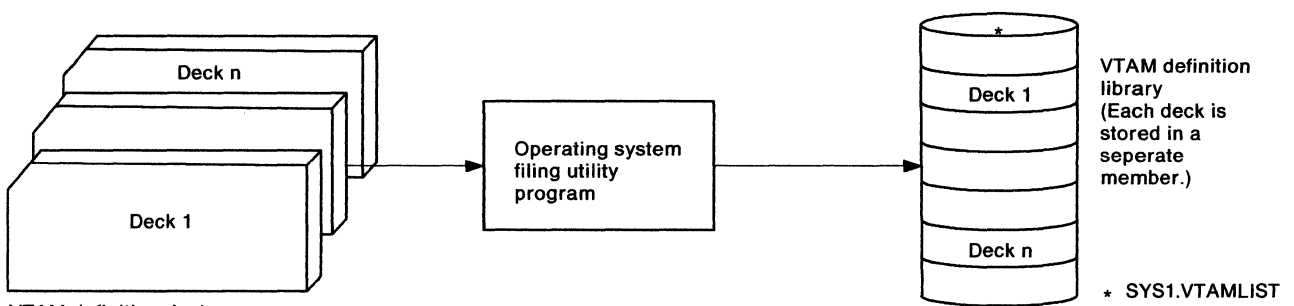
B Installing VTAM (See note 1)



C Generating a network control program (NCP)



D Defining the domain to VTAM

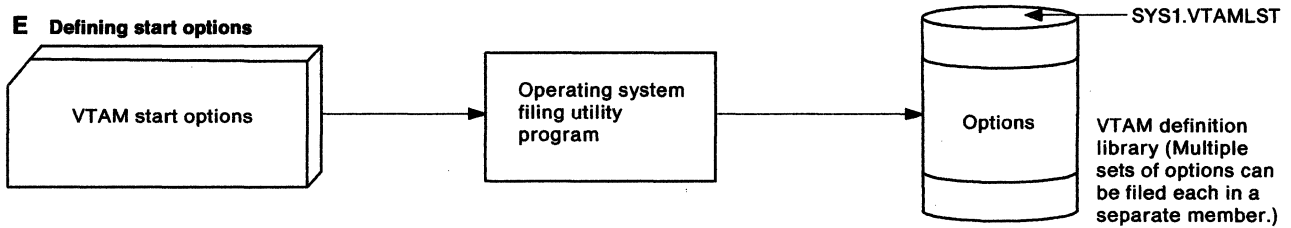


VTAM definition decks
(one for each major node and one for each table, such as path tables and adjacent SSCP tables)

Note 1:
If a system generation is to be performed, VTAM can be installed on the system distribution libraries using SMP for the SYSGEN.

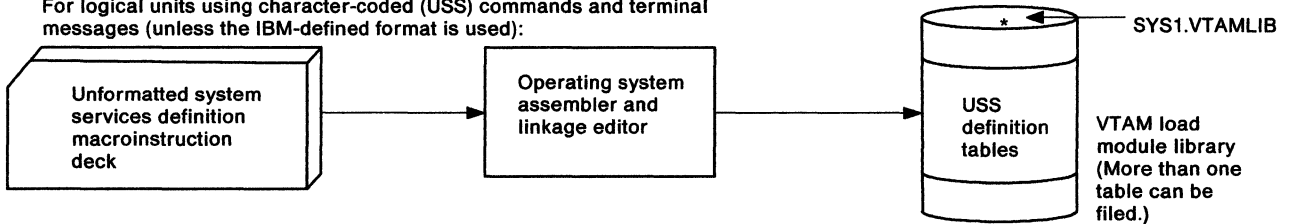
Figure 10 (Part 1 of 3). Creating a VTAM Domain in MVS

E Defining start options

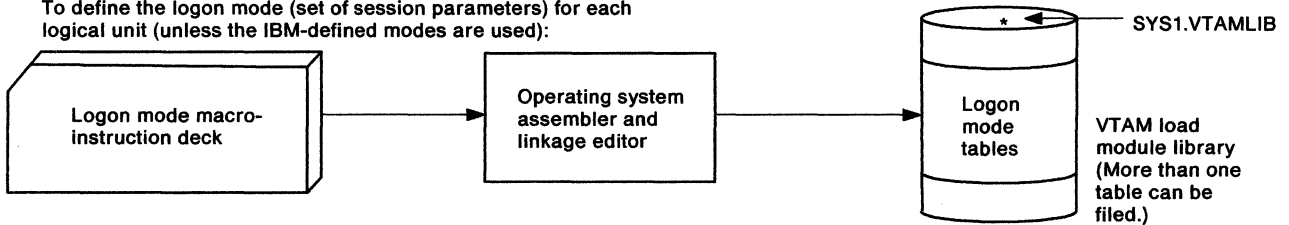


F Defining session-establishment and termination tables (See Note 2)

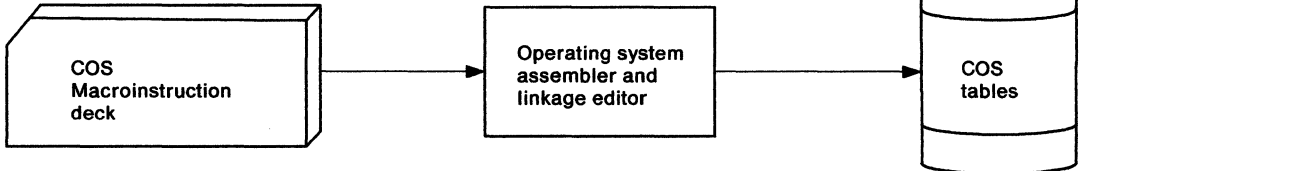
For logical units using character-coded (USS) commands and terminal messages (unless the IBM-defined format is used):



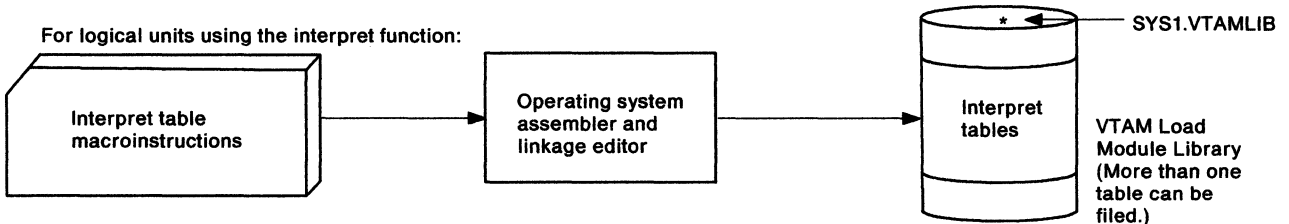
To define the logon mode (set of session parameters) for each logical unit (unless the IBM-defined modes are used):



To define a COS table



For logical units using the interpret function:

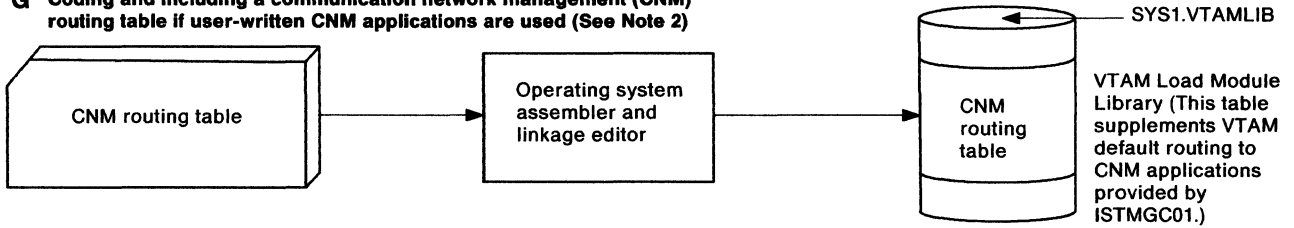


Note 2: For more information on steps F through I, see *VTAM Customization*.

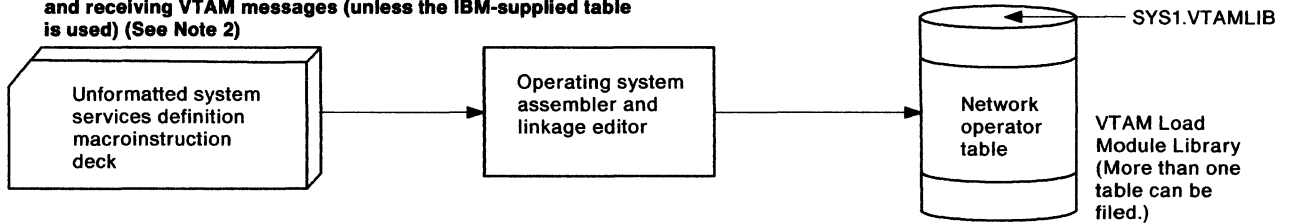
* SYS1.LPALIB or SYS1.VTAMLIB

Figure 10 (Part 2 of 3). Creating a VTAM Domain in MVS

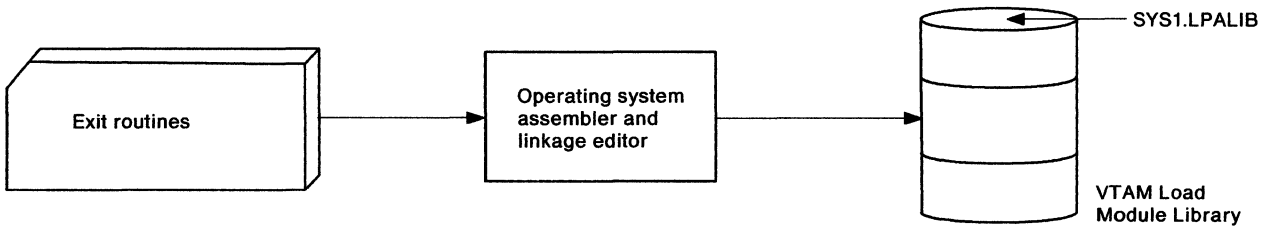
G Coding and including a communication network management (CNM) routing table if user-written CNM applications are used (See Note 2)



H For VTAM and program operators using certain operator commands and receiving VTAM messages (unless the IBM-supplied table is used) (See Note 2)



I Coding and including exit routines (See Note 2)



Note 2: For more information, see *VTAM Customization*.

Figure 10 (Part 3 of 3). Creating a VTAM Domain in MVS

```

//MVSGEN  JOB MSGLEVEL=(1,1),TIME=1440
//        EXEC PGM=ASMBLR,REGION=1042K
//SYSLIB  DD  DSN=SYS1.AGENLIB,DISP=SHR,UNIT=3330,VOL=SER=DLIB01
//SYSUT1  DD  UNIT=3330,SPACE=(CYL,(30,10))
//SYSUT2  DD  UNIT=3330,SPACE=(CYL,(30,10))
//SYSUT3  DD  UNIT=3330,SPACE=(CYL,(20,10))
//SYSPUNCH DD UNIT=3330,VOL=SER=Volser,DISP=SHR,DSN=dsname
//SYSPRINT DD  SYSOUT=A
//SYSIN   DD  *
*****
*                SYSTEM CHANNELS
*****
                CHANNEL macroinstructions go here
*****
*                I/O DEVICES BY CHANNEL ADDRESS
*****
                IODEVICE macroinstructions go here
*****
*                SYSTEM OPTIONS
*****

DMGT      DATAMGT ACSMETH=(VTAM),IND=YES                **Note 1**

CTLPGM    CTRLPROG CSA=800,
           APFLIB=(SYS1.VTAMLIB,volser,qual.ncplib,volser)

*****
*                DATASETS
*****

//VTAMLIB DD  DSN=SYS1.VTAMLIB,VOL=(volser,devtype),SPACE=(**Note 2**)
           (plus all other required DATASET macroinstructions)
*****
*                CONSOLES
*****

MSTRC     CONSOLE MCONS=009,ALTCONS=3E1,ROUTCDE=ALL

SECCON    CONSOLE SECONS=3E1,ALTCONS=009,ROUTCDE=ALL,VALDCMD=(1,2,3)

*****
*                GENERATION MACROINSTRUCTION
*****

                The GENERATE macroinstruction goes here

                END

/*

```

Figure 11. Example of System Generation Statements

Notes:

1. If either IND=YES or ACSMETH=VTAM or both are coded, VTAM is included in the system.
2. Space requirements can be computed from *Network Program Product Storage Estimates* or the Program Directory.

Allocating and Cataloging Data Sets

This section describes the data sets that must be created when installing VTAM or other related programs.

The following types of data sets are used in conjunction with VTAM:

- VTAM-related data sets
- NCP-related data sets
- Trace data sets
- Cryptographic key data set.

Figure 12 on page 20 summarizes the operating system data sets that contain VTAM-related and NCP-related information, while Figure 13 on page 21 summarizes the data sets used specifically for VTAM functions. The following discussion provides additional information about some of these data sets.

VTAM-Specific Data Sets

The following data sets contain information that is specific to VTAM.

SYS1.VTAMLIB

This is a required partitioned data set that contains VTAM load modules and user-defined tables and exit routines. This data set must be allocated and cataloged during system generation. It must be on a direct-access volume, which can be the system resident volume, and secondary space can be allocated. Space requirements are described in the Program Directory, which is shipped with the VTAM distribution tape.

This library can contain the interpret table (or tables) containing logon descriptions and any installation-coded logon routines in these tables, along with logon mode tables, the USS table, and the CNM routing table.

The DD name for SYS1.VTAMLIB must be VTAMLIB. The following DCB subparameters are recommended:

```
RECFM=U,BLKSIZE=7294
```

SYS1.VTAMLIB must be an authorized library (a library listed in the currently used IEAAPFxx).

SYS1.VTAMLST

This is the VTAM definition library in which definition statements for each major node are filed. It is a required partitioned data set and must be allocated on a direct-access volume before filing VTAM network definitions.

The data set can be allocated and cataloged at any time **before** its initial use by using the IEHPRGM utility program or the IEBUPDTE utility program, or **when** the data set is first used by using the appropriate job control language (JCL). Allocate sufficient space to accommodate filing of the definition decks for all types of major nodes as well as all anticipated sets of start options. Start options are filed in members under the name ATCSTRxx (where xx represents two alphanumeric characters). Members named ATCCONxx contain lists of major nodes and adjacent SSCP tables that are activated automatically when VTAM is started.

The DD name for SYS1.VTAMLST must be VTAMLST. The following DCB subparameters are recommended:

RECFM=FB,BLKSIZE=*any multiple of 80*

It is also recommended that you code LABEL=,RETPD=0 on all DD statements for SYS1.VTAMLST. If you do not, an operator awareness message requiring a reply may be generated.

Note: You can modify SYS1.VTAMLST, but you must be very careful about the relationships between VTAM and NCP definition statements. These relationships are described in “NCP Definition Statements for the NCP” on page 226. For example, if you change a VTAMLST member and do not change a corresponding NCP definition statement, you could cause serious errors that are hard to diagnose.

Name of Data Set	VTAM Comments	DD Statements Required to Allocate Data Sets in Procedure for Starting VTAM	Comments
Supply DSNAME of cryptographic dataset	VTAM encryption keys	No	Required if using cryptographic function. (Appendix D, “mvs Filing Cryptographic Keys” on page 415)
SYS1.DUMP	Records of SVC DUMP	No	Optional
SYS1.LINKLIB	VTAM initialization module, used when VTAM is started	No	Required: created during system generation.
	NCP loader utility program	Yes	Required: added when NCP is installed. Must be in SYS1.LINKLIB, a concatenation of SYS1.LINKLIB, or a STEPLIB in the start procedure.
	NCP dump utility program	No	Required: added when NCP is installed.
	NCP dump bootstrap program	No	Required: added when NCP is installed.
	Local communication controller pre-IPL testing modules (initial test modules)	Yes	Required if controller is to be tested automatically before the loading of the NCP by VTAM. Added when the NCP is installed.
	Logon manager load modules	No	Required for logon manager.

Figure 12 (Part 1 of 2). Operating System Data Sets Used by VTAM

Name of Data Set	VTAM Comments	DD Statements Required to Allocate Data Sets in Procedure for Starting VTAM	Comments
SYS1.LOGREC	VTAM error records	No	Required: created during system generation.
SYS1.LPALIB	VTAM load modules and user-written exit routines to be loaded into the shared link pack area	No	Required: created during system generation.
SYS1.MACLIB	VTAM macroinstruction definitions and extensions to system macroinstruction definitions	Yes	Required: created during system generation.
SYS1.NUCLEUS	VTAM resident svcs and abnormal termination modules	No	Required: created during system generation.
SYS1.PARMLIB	VTAM-related information	No	Required: created during system generation.
SYS1.PROCLIB	JCL for started tasks	No	Required for logon manager.
SYS1.SVCLIB	VTAM nonresident svcs and ERPs for local devices	No	Optional: created during system generation.
SYS1.TRACE	GTF trace records for VTAM	No	Optional: created during system generation. Required to run any VTAM trace.

Figure 12 (Part 2 of 2). Operating System Data Sets Used by VTAM

Name of Data Set	VTAM Comments	DD Statements Required to Allocate Data Sets in Procedure for Starting VTAM	Comments
SYS1.ASAMPLIB	Sample of network operator command table in source-language form	Yes	Required for installation, optional thereafter. Provided by IBM.
SYS1.SAMPLIB	Alterable copy of sample network operator command table in source-language form	Yes	Required for installation, optional thereafter. Provided by IBM.

Figure 13 (Part 1 of 2). VTAM- and NCP-Specific Data Sets

Name of Data Set	VTAM Comments	DD Statements Required to Allocate Data Sets in Procedure for Starting VTAM	Comments
SYS1.VTAMLIB	1. Load modules for VTAM 2. User-defined tables and exit routines	Yes	Only VTAM load modules are required. Created during system generation. Must be in an authorized library.
SYS1.VTAMLST	VTAM definition statements and start options	Yes	Required: created by user before starting VTAM. Use extreme care when modifying this data set (see note on page 20).
Configuration restart data sets	VTAM status of minor nodes for each major node	Yes	Required if a warm restart is to be used. Created before starting VTAM (by user).
Initial test routine data set	NCP diagnostic routine	Yes	Required if a test of communication controllers is desired.
SYS1.NODELST	VTAM status of major nodes	Yes	Required if restart of all previously active major nodes is desired.
NCP load library	NCP load modules	Yes	Each NCP stored as a separate member of library. Created when generating the NCP. Must be in an authorized library.
NCP dump data set	Dump records for the NCP	Yes	Required if VTAM is requested to provide a dump of an NCP. Created by user before starting VTAM.
Note: None of the NCP-related data sets are required if the NCP is the only channel contacted and activated. This includes the NCP load, dump, and initial test routine data sets.			

Figure 13 (Part 2 of 2). VTAM- and NCP-Specific Data Sets

Configuration Restart Data Sets (Optional)

If you choose to use the configuration restart facility of VTAM, configuration restart Virtual Storage Access Method (VSAM) data sets must be defined. The DD statement defines the configuration restart VSAM data set for the NCP major node. The *ddname* must match the *ddname* on the CONFIGDS operand of the PCCU definition statement for the associated NCP or the VBUILD definition statement for the associated major node. There are no VTAM restrictions on this data set name. For a discussion of configuration restart, see *Network Program Products Planning*. See your operating

system's VSAM publication for more information on the data sets required for configuration restart. The following example defines a catalog entry to allocate space for a VSAM data set to contain the configuration restart data:

```
DEFINE
  CLUSTER(NAME(LRNCKPT) -
    VOL(PUBLIC) -
    KEYS(4 0) -
    RECORDS(200 20) -
    RECORDSIZE(24 136)) -
  INDEX(NAME(LRNCKPTI.INDEX) -
    TRACKS(1))
```

You can define configuration restart data sets for any of the following major nodes:

- NCP major node
- Channel-attachment major node
- Local non-SNA major node
- Local SNA major node
- Switched major node.

For networks with more than one domain, you can define configuration restart data sets for these additional major nodes:

- Cross-domain resource major node
- Cross-domain resource manager major node.

Note: When a major node definition is changed in SYS1.VTAMLST, delete and redefine the associated configuration restart VSAM data set. Do not use the WARM option when activating the new definition.

A configuration restart data set must have the following characteristics:

- The data set must be indexed. Code the INDEX operand on the DEFINE command, or allow the default value to be assumed.
- A key length of 4 bytes and an offset of 0 bytes are required. Code KEYS (4 0).
- The average record size must be 24 bytes, and the maximum record must be 136 bytes. Code RECORDSIZE (24 136).

The number of records in the file should equal the number of minor nodes defined in the major node. When choosing the number of records for a switched major node, include each PATH statement. Therefore, the primary allocation should be the number of minor nodes in the major node, and the secondary allocation should be about one tenth as large.

mvs NODELST Data Set

You can define a NODELST data set to maintain a list of major nodes that are active at one time. The VTAM operator supplies the name of the data set in the NODELST start option. If you choose to use the NODELST facility, VSAM data sets must be defined. For a discussion of the NODELST facility, see *Network Program Products Planning*.

The following example defines a NODELST VSAM data set. The DEFINE command is used to define a catalog entry and allocate space for an indexed cluster:

```
DEFINE
  CLUSTER(NAME(NODLST1) -
    VOL(PUBLIC) -
    KEYS(2 0) -
    RECORDS(120 20) -
    RECORDSIZE(10 10)) -
  INDEX(NAME(NODLST1I.INDEX) -
    TRACKS(1))
```

A NODELST data set must have the following characteristics:

- The data set must be indexed. Code the INDEX operand on the DEFINE command or allow the default value to be assumed.
- A key length of 2 bytes and an offset of 0 bytes are required. Code KEYS (2 0).
- The average record and the maximum record must each have a length of 10 bytes. Code RECORDSIZE (10 10).

The number of records in the file should equal the number of major node and DRDS file activations that occur from the time VTAM is started until it is halted. This includes major nodes that are reactivated. The primary allocation should be about 1.2 times the total number of major nodes and DRDS files in the network, and the secondary allocation should be about 0.2 times the total number.

All other data characteristics may be defaulted. Refer to *Access Method Services* for more information.

NCP-Specific Data Sets

The data sets described below may be needed for a communication controller:

- A load data set that contains the NCP in card-image format
- A test routine data set that contains the initial test routine (one file for each host VTAM)
- A dump data set to receive the NCP dump output (one data set for each host VTAM)
- A dump data set for communication scanner processor (CSP) and for maintenance and operator subsystem (MOSS) traces.

See NCP publications for additional information about these data sets.

NCP Load Library

To load the NCP, an NCP load data set must be created (space must be allocated) and, optionally, cataloged. The name of this data set used in the JCL is defined when the NCP is coded.

The DD statement defines the data set that holds the generated NCP and RRT modules. In addition:

- The *ddname* must be the same as the unqualified name of the data set.
- The data set name (DSN operand) must match the LOADLIB operand for the BUILD definition statements for the associated NCP.

- If the QUALIFY operand is coded in the BUILD definition statement, use the qualified data set name when coding DSN. (For VTAM, the LOADLIB operand is used instead of the QUALIFY operand.)
- NCP load data sets must be in an authorized library.

A single NCP load library can contain more than one NCP.

Initial Test Routine Data Set

For a channel-attached NCP, the VTAM user can load a diagnostic routine, called the initial test routine, into a communication controller and have it execute before the NCP is loaded.

The INITEST DD statement defines the data set that holds this initial test routine for the channel-attached communication controller. This statement must be coded if INITEST=YES is coded in the PCCU definition statement of the channel-attached NCP. Normally, NCP load modules for initial test are placed on SYS1.LINKLIB by the user during NCP installation. If the initial test routine has not been placed on SYS1.LINKLIB, check the documentation accompanying the NCP installation tapes for the name of the data set initially containing the routine.

NCP Dump Data Set

To dump the NCP, you must allocate space for an NCP dump data set. You may also catalog the dump data set. Its name is defined when the NCP is coded.

This dump data set must accommodate a dump of the entire communication controller storage. The size of communication controller storage depends on the model number.

The amount of direct access storage required for the dump data set can be determined from the storage size of the communication controller, and from calculating the number of tracks needed to hold the required number of 512-byte records of communication controller storage.

The procedure for determining the amount of storage needed for the dump data set applies to the 3705, 3720, and 3725 Communication Controllers. However, the 3725 requires an additional 2K bytes.

The DD statement defines the dump data set for the communication controller. The *ddname* must match the *ddname* in the DUMPDS operand of the PCCU definition statement for the associated NCP. There are no VTAM restrictions on the data set name.

VTAM dump processing fails if the SSP modules that are loaded to process the dump are not accessible to VTAM. For these modules to be accessible to VTAM, the data set containing them should be a link list data set named in the LNKST_{xx} member (where *xx* represents the specific parameter) of SYS1.PARMLIB. (See Figure 14 on page 26 for a sample STEPLIB DD statement.)

CSP and MOSS Dump Data Sets (NCP in a 3720 or 3725 Communication Controller Only)

To dump the communication scanner processor (CSP) and maintenance and operator subsystem (MOSS) microcode for problem determination, create one data set for the dump of each component. Optionally, these data sets can be cataloged. The names of these data sets are defined to VTAM in the start procedure. Figure 14 on page 26 shows an example of this procedure.

You can determine the amount of direct access storage required for these dump data sets from the sizes of the respective components, and by calculating the number of tracks needed to hold the required number of records. However, the MOSS dump data set must be at least 184K bytes.

The DD statement for each dump data set defines it for the NCP utility used to dump the communication controller. The *ddname* must match the name in the CDUMPDS (for a CSP dump) or MDUMPDS (for a MOSS dump) operand of the PCCU definition statement for the appropriate NCP. VTAM has no restrictions on the data set name.

Coding a VTAM Start Procedure

Recommendations for Coding a VTAM Start Procedure

You should code a VTAM start procedure and file it in SYS1.PROCLIB. The system operator specifies the procedure when starting VTAM.

In this discussion, the start procedure is called NET. This name is not required, but is recommended for consistency in entering the VTAM operator commands and to reduce the operator's chances of making a syntax error. NET is required as the first operand on the DISPLAY, HALT, and VARY network operator commands.

The first operand of the START and MODIFY network operator commands must be the name of this start procedure (NET in this example).

Example of Coding a VTAM Start Procedure

Figure 14 lists the job control statements of a typical start procedure.

```
//NET          PROC
//VTAM         EXEC   PGM=ISTINM01,TIME=1440,REGION=4096K
//STEPLIB      DD     DSN=SYS1.SSPLIB,DISP=SHR
//VTAMLST      DD     DSN=SYS1.VTAMLST,DISP=SHR,LABEL=RETPD=0
//VTAMLIB      DD     DSN=SYS1.VTAMLIB,DISP=SHR
//NCPDUMP      DD     DSN=SYS1.NCPDUMP,DISP=SHR
/** DATA SETS FOR 3720 AND 3725 DUMPS
//CSPDUMP      DD     DSN=SYS1.CDUMP,DISP=SHR
//MOSSDUMP     DD     DSN=SYS1.MDUMP,DISP=SHR
//SYSABEND     DD     SYSOUT=A
//NCPLOAD      DD     DSN=SYS1.NCPLOAD,DISP=SHR
/** NODELST DATA SET
//NODEDS1      DD     DSN=NODEDS1,DISP=OLD,AMP=AMORG
/** ALTERNATE NODELST DATA SET
//NODEDS2      DD     DSN=NODEDS2,DISP=OLD,AMP=AMORG
```

Note: On the EXEC statement, ISTINM01 is a VTAM module name. You must code PGM=ISTINM01.

Figure 14. Example of Statements to Define a VTAM Start Procedure

The sample start procedure is written with these assumptions:

- A communication controller is in the network.
- The generated NCP and RRT modules for the communication controller reside on data set SYS1.NCPLOAD.

- The SSP modules needed to load and dump the communication controllers are in SYS1.SSPLIB.
- A dump data set is desired for each communication controller.
- A dump data set is desired for the communication scanner processor (CSP).
- A dump data set is desired for the maintenance and operator subsystem (MOSS).
- Two NODELST data sets have been defined and may be used by VTAM.
- Space has been allocated for all data sets and they are cataloged.

The EXEC statement causes the VTAM host attachment module to be executed. This module is ISTINM01.

Verifying the Installation

Once VTAM is installed, you can begin verifying it. See Chapter 8, “Verifying the Installation” on page 369, for suggested steps.

Chapter 3. Installing VTAM in VM

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Chapter 3. Installing VTAM in VM

Overview of the Process

VTAM is an access method of the VM system. Before using VTAM, prepare your VM system to support it in the following way:

- Generate the VM Control Program (CP), defining shared segments for VTAM and the Group Control System (GCS).
- Generate GCS, which provides supervisor and data management services for the VTAM virtual machine and other virtual machines in which VTAM application programs run.
- Define the VTAM virtual machine and define or update other virtual machines associated with VTAM.

You will find information on planning, storage requirements, and generating support for VTAM in:

- *VM/SP Planning Guide and Reference*
- *VM/SP Installation Guide*
- *Network Program Products Storage Estimates.*

The process for installing VTAM is shown in Figure 15 on page 32. You will use a single user ID to install VTAM and to maintain it once it is in use. This user ID can have any name, but MAINT is recommended. You will use another user ID, VTAM, for day-to-day operation.

After you follow the setup procedures summarized in Figure 15 on page 32, the installation is done automatically by EXECs.

Refer to the VTAM Installation Memo to Users for installation procedures, and to the Program Directory that accompanies your VTAM shipment for special instructions.

To print the Installation Memo to Users:

1. Attach the VTAM product tape as 181
2. Enter ACCESS *diskaddr* A
3. Enter VMFPLC2 REW
4. Enter VMFPLC2 SCAN I5664280 MEMO (EOT
5. Enter VMFPLC2 LOAD * * A
6. Enter PRINT I5664280 MEMO (CC

1	Determine how storage is to be allocated in the VTAM virtual machine. Refer to "Determining Storage Needs for the VTAM Virtual Machine."
2	Generate CP. Refer to the <i>VM/SP Installation Guide</i> for information on installing CP and CMS.
3	Generate GCS. Refer to the <i>VM/SP Planning Guide and Reference</i> for information on setting up authorized user IDs.
4	Create or update directories for the user IDs that VTAM and VSCS will use. Refer to the Installation Memo to Users which is in the second file of your VTAM product tape.
5	Install VTAM by invoking the INSTFPP EXEC.
6	Verify that VTAM was installed correctly.

Figure 15. Summary of Installing VTAM and VSCS on a VM System

Preparing to Install VTAM

You can install VTAM only if the Conversational Monitor System (CMS) is already installed. You can run VTAM only if the Group Control System (GCS) is already installed.

Determining Storage Needs for the VTAM Virtual Machine

You need to decide two things: how to allocate storage in the VTAM virtual machine, and how much storage you will need.

How Storage Is Allocated

Figure 16 on page 33 suggests a way to allocate storage in the VTAM virtual machine. In this example, the size of the VTAM virtual machine is 10 megabytes. As you decide how to allocate storage in the VTAM virtual machine, consider:

- To avoid wasting storage, VTAM's private storage area should consist of a single block. For example, in Figure 16 on page 33, this entire area is located between GCS private storage and the GCS shared segment.
- The VTAM shared segment should be higher than the highest address of the VTAM virtual machine, and higher than the highest address of any other virtual machines that attach it. (These virtual machines would include the NetView program, RSCS, and the GCS recovery machine.)

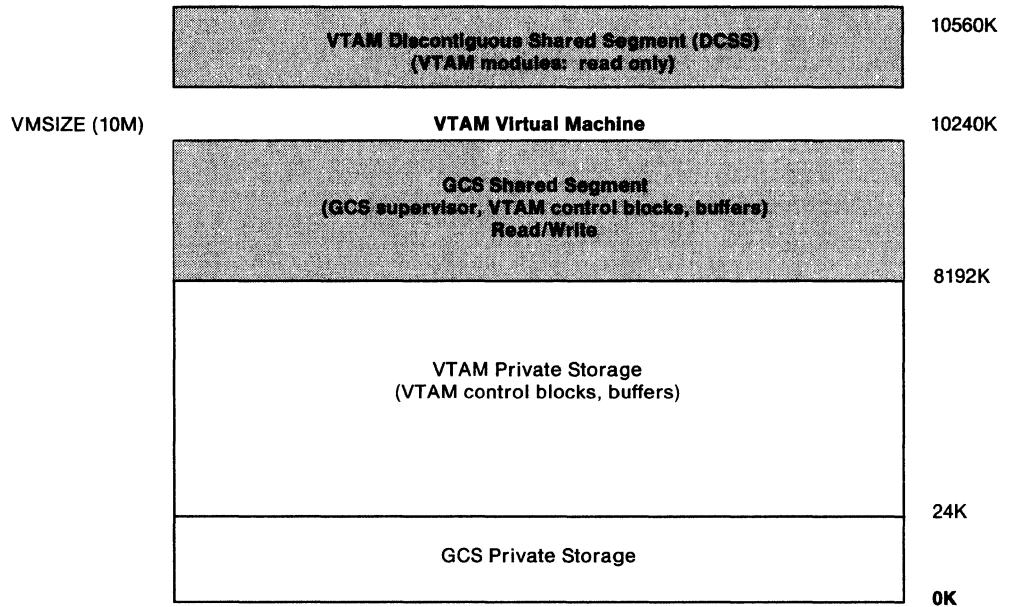


Figure 16. Sample Storage Allocation for VTAM and GCS

Size of the VTAM Virtual Machine

To calculate how much storage VTAM and GCS will need, follow this procedure:

1. Determine private storage requirements for GCS. (See *VM/SP Planning Guide and Reference* for details.)
2. Calculate private storage requirements for VTAM, using the formulas in *Network Program Products Storage Estimates*. These requirements consist of:
 - Private constant storage
 - Private dynamic storage
 - vscs private storage (if you intend to run vscs in the VTAM virtual machine).
3. Calculate common storage requirements for GCS. These consist of:
 - The GCS supervisor
 - GCS control blocks
 - The GCS trace table
 - Application-specific requirements; for VTAM, these are:
 - VTAM constant common storage
 - VTAM dynamic common storage
 - VTAM buffer pools
 - The VTAM internal trace table (size depends on the number of 4K pages allocated by the VTAM TRACE start option or operator command)
 - Storage for activating channel-attached devices.

The GCS requirements are described in the *VM/SP Planning Guide and Reference*. The VTAM requirements are described in *Network Program Products Storage Estimates*.

4. Determine common storage requirements for VTAM (the size of the VTAM shared segment). This is approximately 340K; to allocate storage in 64K segments, you should round this to 384K.
5. Add the results from Steps 1 on page 33, 2 on page 33, and 3 on page 33 to find the size of the VTAM virtual machine. Do not add the result from Step 4; the VTAM shared segment should be outside the VTAM virtual machine.

Generating the Control Program (CP)

When you generate CP:

- Update DMKSNT, the CP system name table, so that a discontinuous shared segment (DCSS) is defined for VTAM. The DCSS contains VTAM modules that are shared among virtual machines in the group. Its size was calculated in Step 4. Refer to *VTAM Installation Memo to Users* for an example of DMKSNT entries for VTAM DCSS.
- Do not use the small CP option.

Configuring the Group Control System (GCS)

Use the GCS GROUP EXEC to configure the GCS. When you configure the GCS:

- Define the VTAM virtual machine as an authorized machine.
- Define the VSCS virtual machine as an authorized machine if VSCS operates in a separate virtual machine from VTAM.
- Define an authorized virtual machine to receive dumps.
- Specify the size of the GCS trace table.
- Define a VM recovery virtual machine for the VM group. This machine must be different from the VTAM virtual machine.
- Specify the maximum number of virtual machines that can exist in the system.
- Supply the name of the VTAM shared segment.

Refer to *VM/SP Planning Guide and Reference* for detailed information on how to generate GCS.

Setting up Directory Entries for VTAM and MAINT

Refer to the Installation Memo to Users for a sample directory entry for VTAM and additional entries required for the MAINT user ID.

For complete information on setting up directories, see *VM/SP Planning Guide and Reference*.

Note: Any user ID that runs VTAM must have BMX, REALTIMER, and VCUNOSHR options specified in its directory entry.

The Minidisks You Will Need

VTAM requires several minidisks for installation and service.

These addresses apply to the MAINT user ID, and all these minidisks should be owned by MAINT.

Function of Disk	Disk Address	Size Required (In 1K Blocks)
CMS system disk ¹	190	not applicable ³
MAINT's 191 disk ¹	191	not applicable ³
IPCSE disk ¹	193	150 ²
TRAPRED disk ¹	193	50 ²
Work space for INSTFPP ¹	194	not applicable ³
GCS system disk ¹	595	not applicable ³
VTM191 disk	298	2750
BASE disk	299	11000
MACRO definition disk ¹	29A ⁵	2300
RUN disk	29A	4000
MERGE disk	29B ⁴	4500
ZAP disk	29C ⁴	2250
DELTA disk	29D ⁴	9000
MNT319 disk ¹	319	not applicable ³
VMFPARM disk ¹	348	75 ²

Notes:

1. These disks must already be defined to VM before you install VTAM. VTAM should not share any disks except these.
2. VTAM shares these disks with other programs. The numbers represent the number of 1K blocks you should assign **besides** the space that is dedicated to other uses.
3. These are VM system disks; there are no size considerations for VTAM.
4. These space requirements are initial recommended sizes. You may need to increase the disk space according to your service needs.
5. For V3R1.1 the macroinstruction definition disk default is 19E.

The VMFPARM disk must be a separate disk. You cannot define it as a disk on which data will be written during the installation or service process.

Because all disks are owned by the maintenance user ID, you do not need to update any EXECs or files when you change CP directory passwords.

Installing VTAM

The Installation Memo to Users explains in detail how to install VTAM on a VM/SP system. Refer to this memo before attempting to install VTAM.

The VMFPARM File

The file VMFPARM is used during the installation process. Each version of VTAM has a specific filename for filetype = VMFPARM. The filenames are as follows:

V3R1.1	5664280A	VMFPARM
V3R1.2	5664280B	VMFPARM
V3R2	5664280C	VMFPARM

It contains information about minidisks that VTAM uses and about the VTAM discontinuous shared segment. Figure 17 on page 37 shows what the file looks like.

Each entry in the file, except the last one, applies to a separate minidisk and has two or more parts:

disk-name

is the label used when the installation EXECs format a disk. Do **not** change this name in the VMFPARM file.

primary-disk-address

is the address used when the installation EXECs load the VTAM product files onto the disk. During the installation process, or any time after, you can use XEDIT to edit VMFPARM file and change this address to PASS. If you do so, the disk is skipped during installation; no files are put onto it. You can code the primary disk address as PASS and provide secondary addresses to avoid modifying a disk during an installation or service procedure.

secondary-disk-addresses

are optional parameters used to allow additional disk names for disk accesses. Use these addresses **only** for the BASE, ZAP, and MERGE disks. They allow you to verify service (such as PTFs) and back it out if necessary, before you actually merge it onto your system.

The last entry in the file, VTAMSEG, contains the name of the VTAM discontinuous shared segment. This name must match the name given to the VTAM discontinuous shared segment when it was defined in the CP system name table (see "Generating the Control Program (CP)" on page 34) and is the same name used when generating GCS. The default name is VTAM.

Disk Name	Primary Disk Address	Description
BASE	299	VTAM base disk <ul style="list-style-type: none"> • VTAM files are installed onto this disk.
DELTA	29D	VTAM PTF staging disk <ul style="list-style-type: none"> • VTAM service is placed onto this disk. • The VMFMERGE function is used to move service from this disk onto the MERGE disk.
IPCSE	193	IPCSE library disk <ul style="list-style-type: none"> • The VTAM dump formatting routines are put on this disk. • The vscs dump formatting routines are put on this disk.
TRAPRED	193	TRAPRED library disk <ul style="list-style-type: none"> • The VTAM trace formatting routine is put on this disk. • The vscs trace formatting routine is put on this disk.
MERGE	29B	VTAM merged text disk <ul style="list-style-type: none"> • VTAM service is merged onto this disk. • This disk is also used to load merged service. • This contains text files for modules that have changed (because of service) since VTAM was installed.
MACRO	29A (V3R2, V3R1.2) 19E (V3R1.1)	VTAM macroinstruction definition library disk <ul style="list-style-type: none"> • The VTAM macroinstruction definition library is copied to this disk.
RUN	29A	VTAM system library disk <ul style="list-style-type: none"> • The VTAM load library is built on this disk. • The vscs load library is built on this disk. • This disk must be specified, and cannot be PASS.

Figure 17 (Part 1 of 2). The Default VMFPARM File

Disk Name	Primary Disk Address	Description
VMFPARM	348	VMFPARM disk <ul style="list-style-type: none"> • This file (VMFPARM) is put onto this disk during the installation procedure. • This disk address should be specified as a disk that is currently accessed (during installation) and that will always be accessed during installation or service processing.
VTM191	298	VTAM's 191 disk <ul style="list-style-type: none"> • Sample EXECs and source modules are put on this disk. (But only during installation. After installation, this disk is not modified.)
ZAP	29C	VTAM ZAP target disk <ul style="list-style-type: none"> • Any local ZAPs are put on this disk.
VTAMSEG	VTAM	This is not a disk address, but is the name of the VTAM discontinuous shared segment. If this parameter is modified, GCS must also be modified to load the specified segment.

Figure 17 (Part 2 of 2). The Default VMFPARM File

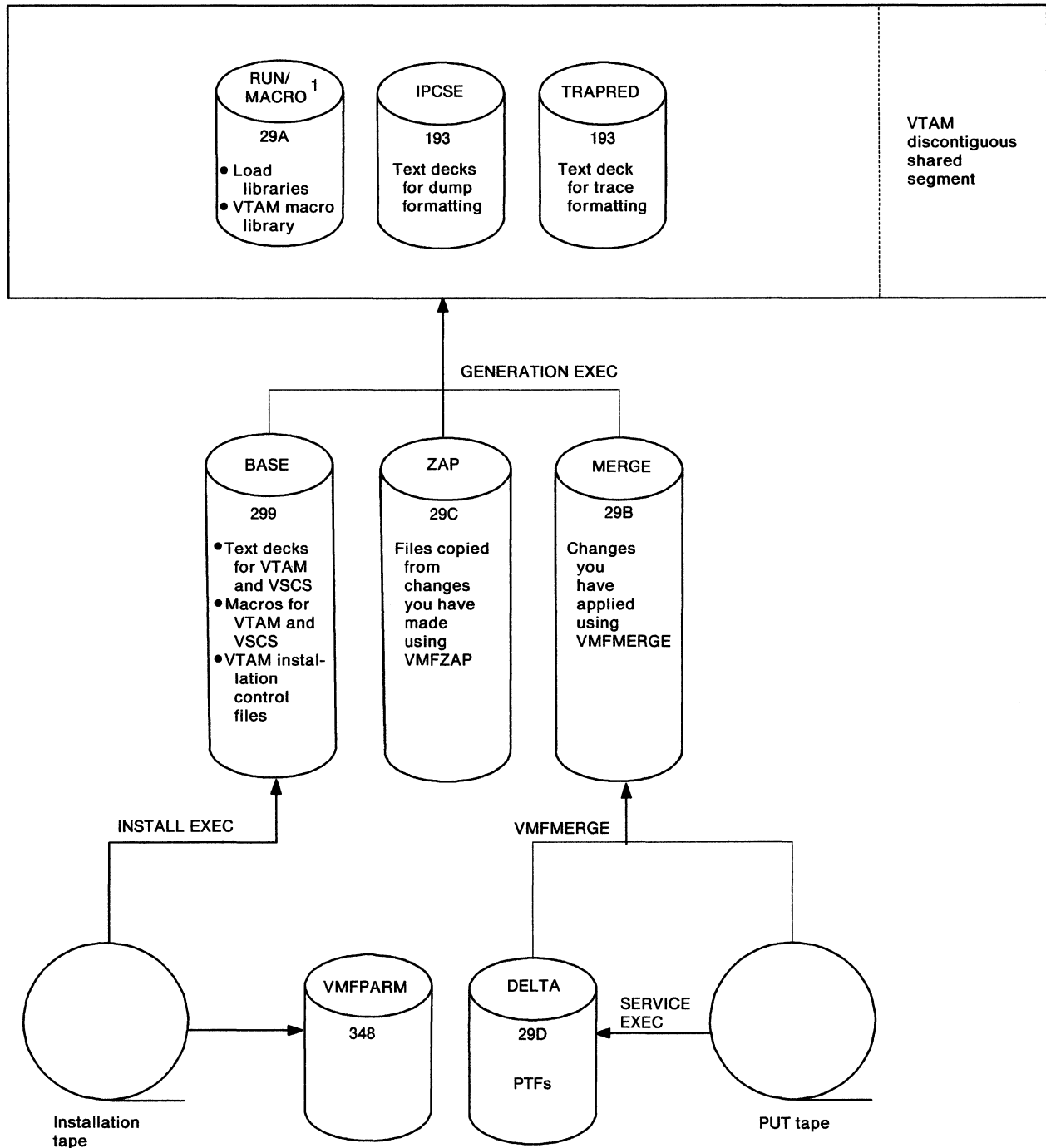
The Installation Procedure

Refer to the Installation Memo to Users that accompanies your VTAM shipment.

Verifying the Installation

VTAM for VM/SP does not have an automated installation verification procedure. Once VTAM is installed, you can begin verifying it. See Chapter 8, "Verifying the Installation" on page 369, for the suggested steps.

Run-Time System



1. In V3R1.1 the MACRO disk is 19E.

Figure 18. What Happens When You Install and Maintain VTAM on a VM System

Chapter 4. Installing VTAM in VSE

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Chapter 4. Installing VTAM in VSE

Overview of the Process

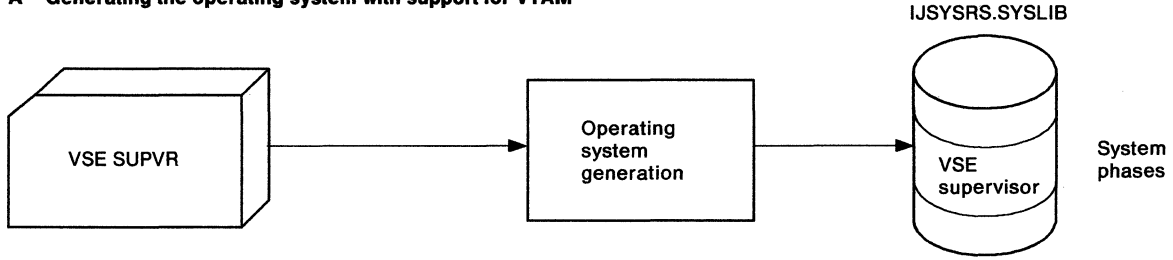
VTAM is an access method of the VSE operating system. Before you can use VTAM, it must be incorporated into the VSE system during system generation. Once VTAM is identified to the system, it is not necessary to perform a system generation for this system when upgrading to a new release of VTAM. You will find information on planning and generating VTAM support in a VSE system in *VSE/Advanced Functions System Generation* and *VSE/Advanced Functions System Management Guide*.

The procedure for installing VTAM from the tape, including suggested coding statements, is described in the Program Directory that accompanies the VTAM program. The Program Directory also describes the contents of the tape and space allocations required on system files. The tape contains the VTAM modules and macroinstruction definitions needed to make VTAM part of your operating system. The VSE Maintain System History Program (MSHP) is used to install the VTAM modules from the program tapes, and to update the history files. MSHP is also used to install the VTAM macroinstructions in the source statement library.

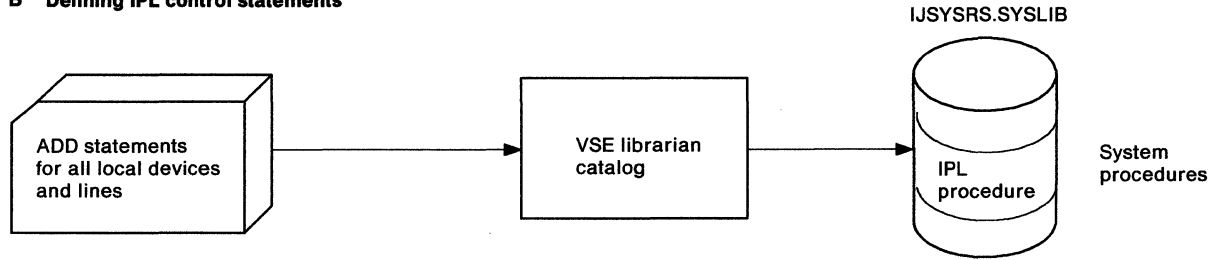
VTAM Version 3 requires VSE Version 2 Release 1 with modification level 3.

Figure 19 on page 44 illustrates the process of installing VTAM in VSE.

A Generating the operating system with support for VTAM



B Defining IPL control statements



C Generating a network control program (NCP)

Note: You do not need to generate an NCP for a communication adapter-attached communication controller.

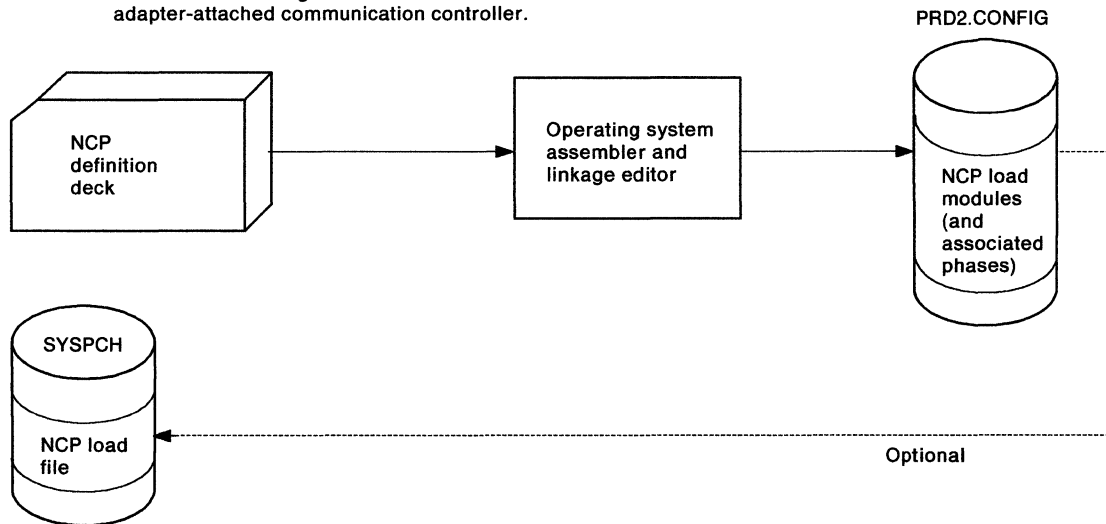
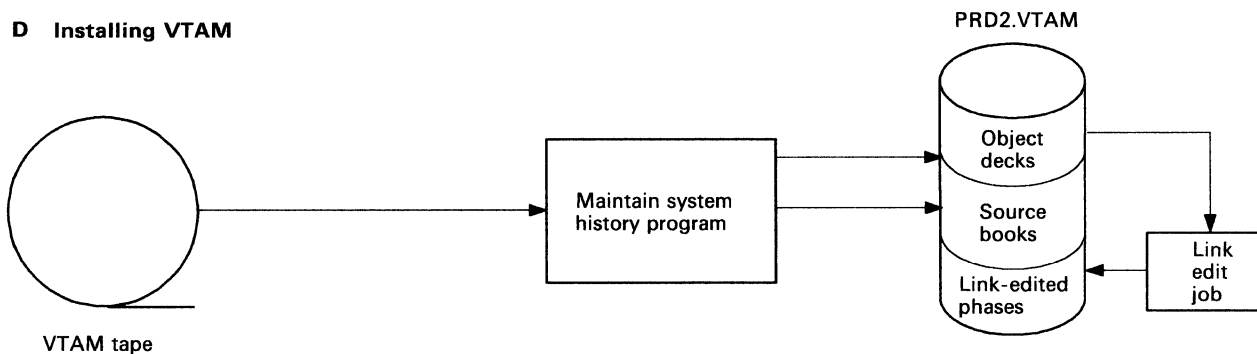
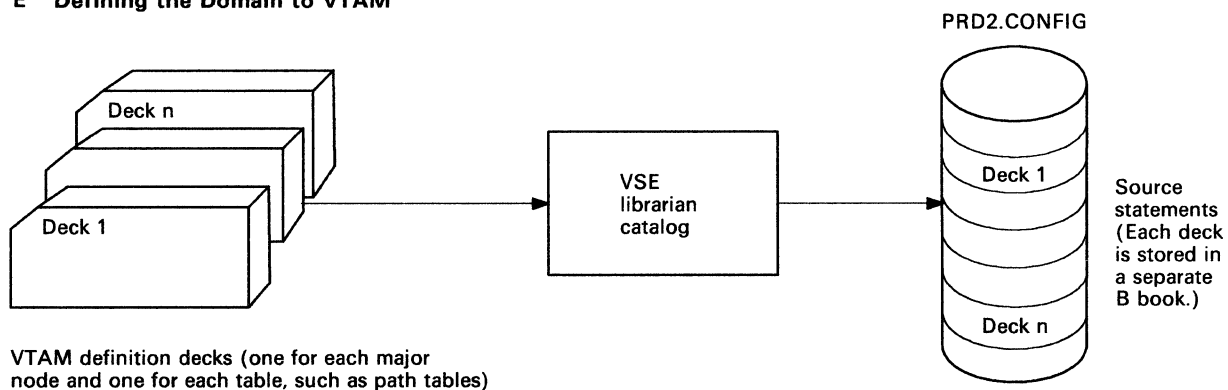


Figure 19 (Part 1 of 4). Creating a VTAM Domain in VSE

D Installing VTAM



E Defining the Domain to VTAM



F Defining Start Options

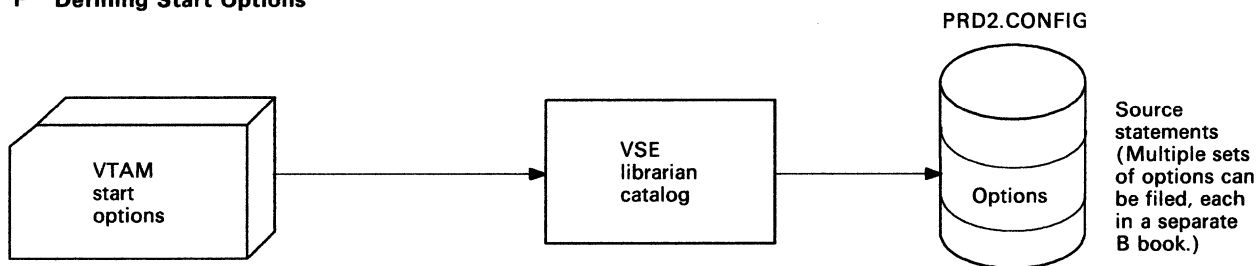
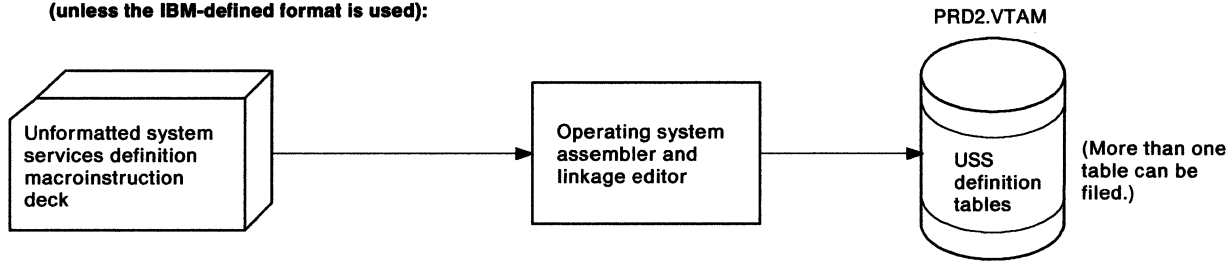


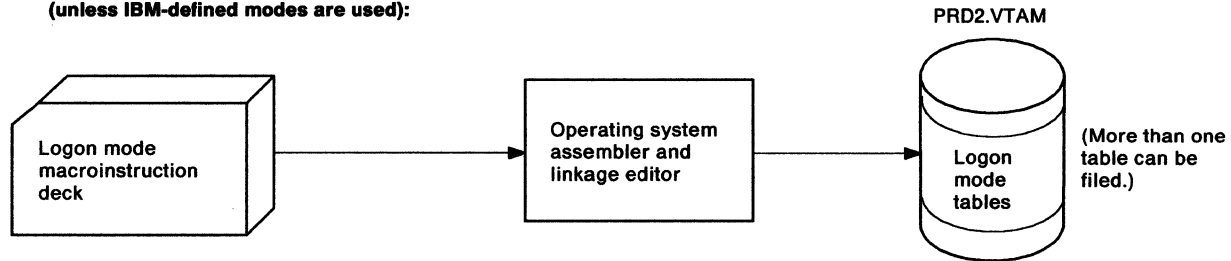
Figure 19 (Part 2 of 4). Creating a VTAM Domain in VSE

G Defining session-establishment and termination tables

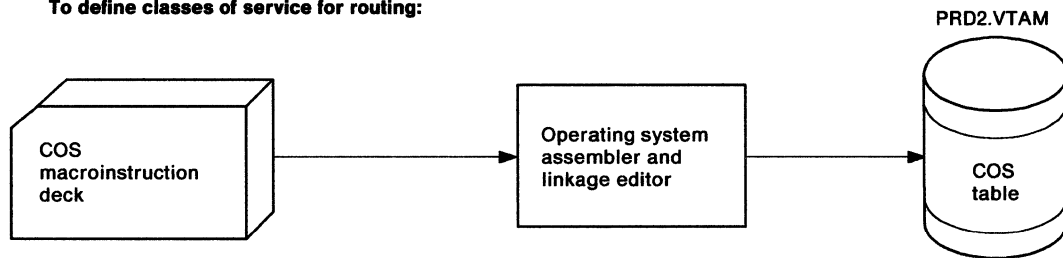
**For logical units using character-coded (USS) commands and terminal messages
(unless the IBM-defined format is used):**



**To define the logon mode (set of session parameters) for each logical unit
(unless IBM-defined modes are used):**



To define classes of service for routing:



For logical units using the interpret function:

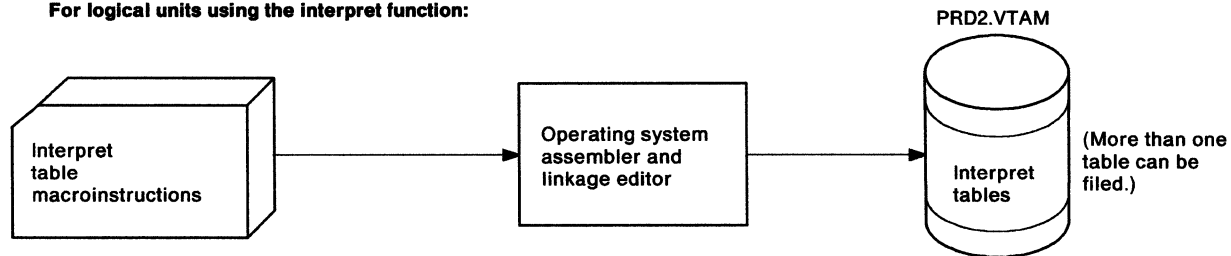
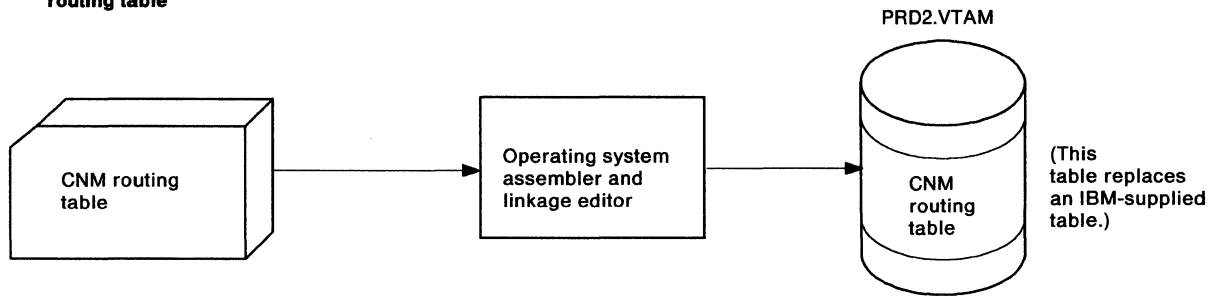
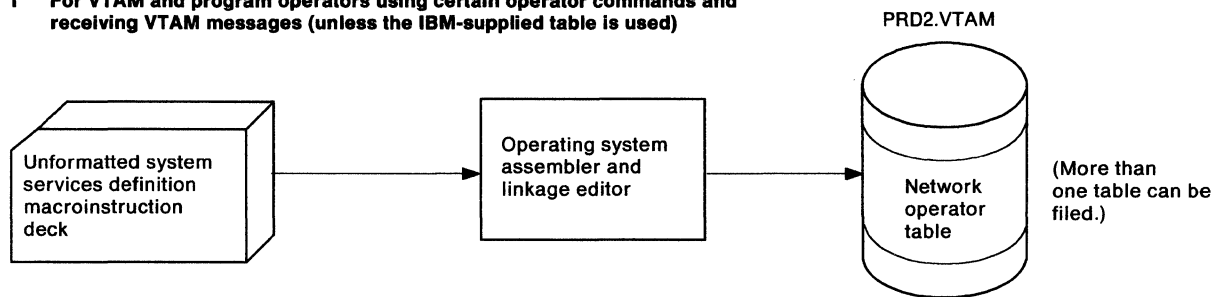


Figure 19 (Part 3 of 4). Creating a VTAM Domain in VSE

H Coding and including a communication network management (CNM) routing table



I For VTAM and program operators using certain operator commands and receiving VTAM messages (unless the IBM-supplied table is used)



J Coding and including exit routines

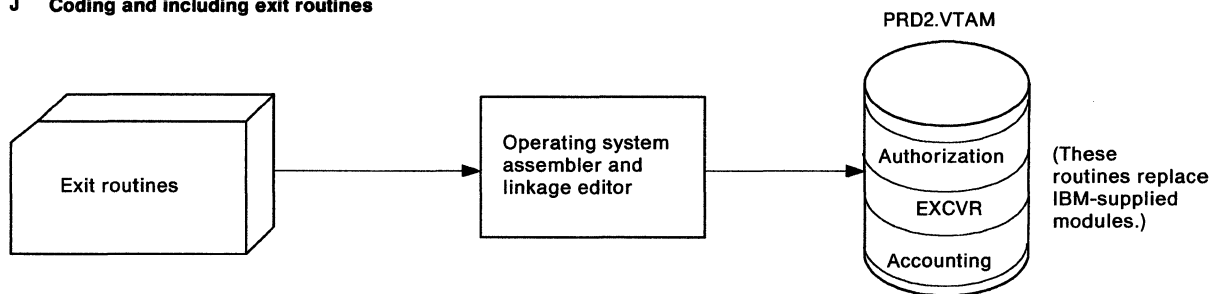


Figure 19 (Part 4 of 4). Creating a VTAM Domain in VSE

Notes:

1. Although VTAM is shown installed in private libraries, it can be installed in either system or private libraries.
2. You do not need to generate an NCP for a 3705, 3720, or 3725 Communication Controller attached by a communication adapter.

Identifying VTAM to the Operating System

You no longer need to identify VTAM to the operating system. The VSE system generation statements already include VTAM support. However, you can change values coded on some system generation statements, such as the SUPVR and IOTAB macroinstructions.

The SUPVR Macroinstruction

A VSE system must have at least two partitions: one for VTAM, and one for an application program. If additional partitions are needed (for other application programs or for programs unrelated to VTAM), change the NPARTS operand to include them.

The partition containing VTAM should have higher priority than partitions containing VTAM application programs; otherwise, the application programs might not be able to communicate with VTAM. For example, a request to open an access method control block could fail. The relative priorities of the application programs are not significant to VTAM. Note that an application program can be a subtask of another application program running in the same partition.

The IOTAB Macroinstruction

The IOTAB (I/O table) macroinstruction defines the storage to be set aside for various system device tables. The IODEV operand determines the maximum number of devices that might be attached to the system. For VTAM, you must include all channel-attached terminals and all communication controllers attached directly to the host processor.

Coding an IPL Procedure with Support for VTAM (Optional)

An initial program load (IPL) procedure loads VSE and defines to it the devices that are to be attached to it and the sizes of the partitions it is to create. To include support for VTAM in an IPL procedure, you must define VTAM devices and the sizes of VTAM-related partitions.

For an example of IPL statements, see Figure 20 on page 49.

```
ADD 01F,1050A
ADD 024,3705,01
ADD 025,3705,01
ADD 026,3705,01
ADD 027,3705,02
ADD 028,3705,02
ADD 030,3705,10
ADD 031,3705,10
ADD 032,3705,10
ADD 033,2703
ADD 034,2703
ADD 03B,2703
ADD 00A,3277
ADD 00B,3277
ADD 00C,3505
ADD 00D,3525P
ADD 00E,1403
ADD 080,3277
ADD 081,3277
ADD 082,3777
ADD 083,3277
ADD 090,3277
ADD 091,3277
ADD 092,3277
ADD 0B8,3791L
ADD 181,3420T9
ADD 190,2314
ADD 191,2314
ADD 192,2314
ADD 193,2314
ADD 194,2314
ADD 195,2314
ADD 196,2314
ADD 250,3330
ADD 251,3330
ADD 252,3330
ADD 253,3330
ADD 254,3330
DEF SYSREC = 200,SYSCAT = 200
DPD TYPE = N,UNIT = X'193',CYL = 1,VOLID = 111111
SVA
ALLOCR F1 = 200K,F2 = 118K,F3 = 0K,F4 = 0K,F5 = 0K,F6 = 0K
ALLOC F1 = 1750K,F2 = 250K,F3 = 0K,F4 = 0K,F5 = 0K,F6 = 0K
ASSGN SYSLST,02E
ASSGN SYS001,193
ASSGN SYS002,193
ASSGN SYS003,193
ASSGN SYSLNK,193
```

Figure 20. An Example of IPL Statements in VSE

Defining VTAM Devices

Insert an ADD command in the IPL procedure for each channel-attached device and each communication-adapter attached line. ADD commands relate device types to specific channel device names. For more information about the device type codes for specific devices, see the description of the ADD command in *VSE/Advanced Functions Operating Procedures*.

Defining Sizes of VTAM and Application Program Partitions

The sizes of VSE system partitions are defined during system generation by the ALLOC and ALLOCR operator commands. Both real and virtual storage must be allocated for the partition in which VTAM will run. You must allocate additional storage if a module is to be attached as a VTAM subtask. For information on calculating storage requirements, refer to *Network Program Products Storage Estimates*. VTAM does not need space in the application program partition.

Defining VSAM

You can use DEF SYSCAT=*cuu* to define the address of the VSAM master catalog volume. Note that ASSGN statements are not valid for SYSCAT as operator commands or job control.

For more information, refer to:

VSE/Advanced Functions Operating Procedures
VSE/Advanced Functions System Generation.

Files Used by VTAM

This section describes:

- VTAM-related files
- NCP-related files
- Trace files.

VTAM-Related Files

VTAM can use any of the following member types in its files:

- **VTAM definition library members**

These members contain VTAM definition statements, start option lists, and configuration lists. They have the suffix **B** in their names. LCL3270.B is an example.

- **VTAM macroinstruction library members**

These members contain VTAM macroinstruction definitions. They have the suffix **E** in their names. OPNDST.E is an example.

- **VTAM phase library members**

These members contain VTAM phases, tables, and exit routines. They have the suffix **PHASE** in their names. ISTCPC00.PHASE is an example.

- **VTAM object library members**

These members contain VTAM object-code modules that have not been link-edited. They have the suffix **OBJ** in their names. ISTINCAL.OBJ is an example.

For more information on the library structure in VSE, see *VSE/Advanced Functions System Management Guide*.

Configuration Restart VSAM Files

If you choose to use the configuration restart facility of VTAM, you must define configuration restart VSAM files. See *Network Program Products Planning* for a discussion of configuration restart.

You can define configuration restart files for any of the following major nodes:

- NCP major node
- Channel-attachment major node
- Local non-SNA major node
- Local SNA major node
- Switched major node.

For networks with more than one domain, you can define configuration restart files for these additional major nodes:

- Cross-domain resource major node
- Cross-domain resource manager major node.

Note: A different file is associated with each major node. When the definition of a major node is changed in the source statement library, you must delete it and redefine the associated configuration restart file.

A configuration restart file must have the following characteristics:

- The file must be indexed. Code the INDEX operand on the DEFINE command or take the default.
- A key length of 4 bytes and an offset of 0 bytes are required. Code KEYS (4 0).
- The average record size must be 24 bytes, and the maximum record must be 136 bytes. For example, code RECORDSIZE (24 136) for an NCP major node.

An example of access method service (AMS) statements that define a configuration restart file is shown here:

```
DEFINE -
  CLUSTER(NAME(ARNCKPT) -
    VOLUMES(111111) -
    KEYS(4 0) -
    RECORDSIZE(24 136)) -
  DATA(NAME(ARNCKPT.DATA) -
    TRACKS(1)) -
  INDEX(NAME(ARNCKPT.INDEX) -
    TRACKS(1))
```

The name of the configuration restart file in the DEFINE statement must match the name in the CONFGDS operand of the NCP PCCU statement or VBUILD or LBUILD statements.

The number of records in the file should equal the number of minor nodes defined in the major node. (For a switched major node, include each PATH statement when choosing the number of records.) Therefore, the primary allocation should be the number of minor nodes in the major node, and the secondary allocation should be about one tenth as large.

NCP-Related Files

The files described below may be needed for a communication controller:

- A load file that contains the NCP in card-image format or the PHASE file containing the NCP load module
- A test routine file that contains the initial test routine of the NCP loader (one file for each host VTAM)
- A dump file to receive the NCP dump output.

NCP Load File

VTAM can use either a phase or sequential data files as input to the NCP loader.

During Stage 3 of the generation of an NCP, the NCP load modules are automatically link-edited into a selected sublibrary. Unless you supply the name of a different sublibrary, PRD2.CONFIG is used. The phase name is the same as the name in the NEWNAME operand of the BUILD definition statement.

When the VTAM utility that loads NCPs is invoked to load this NCP, it initially searches for a copy in the sublibrary you have referred to in the VTAM procedure. If the phase is found in PRD2.CONFIG (or in a different sublibrary, if specified) and enough storage has been allocated to the VTAM partition through the ALLOC statement to hold the phase, the phase is used. If there is not enough storage, VTAM looks for a copy of the NCP on a sequential data file.

If you have storage considerations, you should create sequential data files of your NCPs. To do this, punch the NCP phase to the sequential data file whose file name matches the name in the NEWNAME operand. You must provide JCL to punch the relocated NCP load image to a sequential file. SYSPCH can be assigned to a disk extent.

To use the VTAM utility for loading an NCP, you must add to your VTAM partition storage allocation an amount equal to the size of the largest NCP load module you expect to process. If you do not know its size, use directory-list output to determine the correct value. It is recommended that you define the NCP load file as a backup in case NCP generation changes or reallocation of operating system storage prevents use of this loading method.

VTAM dynamically assigns SYS000 to the address of the controller being loaded (specified by CUADDR in the generation or U parameter on a VARY ACT command).

VTAM uses some of the SSP utilities to load an NCP. The LIBDEF statement in the VTAM start procedure should have the file name of the sublibrary that contains the phases for the utilities.

The file name in the DLBL statement must be the same as the name in the NEWNAME operand of the BUILD definition statement. The symbolic device name in the EXTENT and ASSGN statements must be the same as the name in the NCPLUB operand of the PCCU statement. The BUILD and PCCU statements are discussed in Chapter 5, "Defining the Network to VTAM" on page 59.

Initial Test Routine File

For a channel-attached communication controller, the VTAM user can load a diagnostic routine, called the initial test routine, into a communication controller and have it execute before the NCP is loaded. The initial test routine is distributed with the NCP generation tape. DLBL and EXTENT statements must be provided for this file if the routine is to be used. The file name in the DLBL statement must be DIAGFLE. The LUB must be SYS008.

NCP Dump File

The NCP dump utility writes the contents of the communication controller storage into a direct access device in 512-byte records. The file name in the DLBL statement must be NCPDUMP. The symbolic device name in the ASSGN statement must be the name in the DUMPDS operand of the PCCU definition statement. This symbolic device name must be omitted if more than one NCP is to be dumped. (The PCCU statement is discussed in “The PCCU Definition Statement” on page 217.)

The dump file must accommodate a dump of the entire communication controller storage. The size of communication controller storage depends on the model number.

The amount of direct-access storage required for the dump file can be determined from the storage size of the communication controller and from calculating the number of tracks needed to hold the required number of 512-byte records of communication controller storage.

VTAM dump processing fails if the NCP modules that are loaded to process the dump are not in the proper sublibrary, or are in a different sublibrary during dump processing.

VTAM Trace Files

The trace information is written sequentially onto a disk or tape file. If the file is on a disk, it must be defined in DLBL and EXTENT statements.

For a disk trace file, the names TRFILE and SYS001 are mandatory. TRFILE must be the first operand of the DLBL statement.

For a tape trace file, assign SYS001 to an unlabeled tape.

To use TPRINT to print a trace, include SYS004.

When the disk trace file is full, the file is overwritten, with the newest trace records overlaying the oldest trace records. Subsequently, the trace-print facility can be used to write the trace information onto SYSLST.

The trace records are written to TRFILE in 2048-byte blocks. The number of tracks of direct-access storage to be allocated depends on the number of 2048-byte records that the user wishes to preserve. *VTAM Diagnosis Guide* (V3R1 and V3R1.1) or *VTAM Diagnosis* (V3R2) contains additional information about the traces available in VTAM.

Coding a VTAM Start Procedure

An EXEC statement begins the execution of VTAM. The user can create a procedure to start VTAM (called a start procedure) for EXEC, or the VTAM operator can enter the JCL from the console or card reader. The VTAM operator can either enter the JCL in its entirety, or modify a start procedure. The manner in which the operator issues EXEC, enters JCL, and invokes or modifies a start procedure is not unique for VTAM; these actions are done as described in *VSE/Advanced Functions Operation*. An example of the job control statements in a typical start procedure is shown in Figure 21.

```
// JOB ACFVTAM
// ASSGN SYS000,UA                                1
// LIBDEF PHASE,SEARCH=(PRD2.VTAM,PRD2.COMM,PRD2.COMM2)  2
*
// LIBDEF SOURCE,SEARCH=(PRD2.CONFIG)              3
*
// ASSGN SYSLST,cua                                4
*
// DLBL DIAGFLE,'IFUNCPD,IFUNCPE'                  5
// EXTENT SYS008
// ASSGN SYS008,cua
*
// DLBL NCP001,'NCP001.LOAD.FILE'
// EXTENT SYS007
// ASSGN SYS007,cua
*
// DLBL NCPDUMP,'NCPDUMP.FILE',,DA
// EXTENT ,,,,190,95
// ASSGN SYS005,DISK,VOL=VOLIDS,SHR
*
// DLBL NCPDUMP,'NCP.DUMPS'
// EXTENT ,VOLIDS
// ASSGN SYS005,DISK,VOL=VOLIDS,SHR
* OPTIONAL TRACE FILE
// DLBL TRFILE,'VTAM.TRACE.FILE'
// EXTENT SYS001
// ASSGN SYS001,cua
* OPTIONAL TPRINT FILE
// DLBL TRFILE,'VTAM.TRACE.FILE'
// EXTENT SYS004
// ASSGN SYS004,cua
* OPTIONAL CONFIGURATION RESTART FILE
// DLBL ANYNAME,,,VSAM
// EXTENT SYSCAT,VSAM01
* OPTIONAL CONFIGURATION RESTART FILE
// DLBL NCP001C,,,VSAM
// EXTENT SYSCAT,VSAM01
* OPTIONAL NODELST FILE
// DLBL NODELST,,,VSAM
// EXTENT SYSCAT,VSAM01
// EXEC ISTINCVT,SIZE=AUTO
*
```

Figure 21. Example of a Procedure to Start VTAM in VSE

The following notes are keyed to numbers in Figure 21 on page 54.

Notes:

1. Temporarily unassigned so VTAM can use the symbolic name SYS000 for the communication controller when loading an NCP. VTAM dynamically assigns SYS000 to the communication controller channel device name during LOAD and DUMP. SYS000 is also used when connecting or disconnecting channel-attached SNA cluster controllers.
2. VTAM phases can reside in a system library or a private library. You can provide job control language to name the private library to be searched before the system library. The file name of a private library must match the file name on the DLBL statement that identifies the private library. In this example, VTAM and NCP are in private libraries. The associated DLBL and EXTENT statements are in the standard labels for these libraries.
3. If the VTAM definition library is to reside in a private library, name the private library to be searched before the system library.
4. For the trace printout, SYSLST must be assigned. When the trace file is full, the trace print subtask of VTAM can be used to write the trace information onto SYSLST.
5. The names IFUNCPD and IFUNCPE are just arbitrary examples.

Verifying the Installation

Once VTAM is installed, you can begin verifying it. See Chapter 8, "Verifying the Installation" on page 369, for suggested steps.

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Chapter 5. Defining the Network to VTAM

Overview of the Process

If you are already familiar with the VTAM definition statements and operands, and need only a quick reference, refer to Appendix A, “Quick Reference for VTAM Definition Statements” on page 383, an alphabetic reference that lists each VTAM definition statement and its operands.

If you are unfamiliar with the VTAM definition statements or need an explanation of an operand, refer to this chapter.

For VTAM to use a data communication network, the application programs and the physical configuration of the domain must be defined to it. These definitions represent points or nodes in the network that can be addressed and used by application programs (using VTAM macroinstructions) and by the VTAM operator (using VTAM operator commands).

Defining the domain to VTAM involves defining:

- Application program major nodes
- Channel-attachment major nodes
- LAN major nodes
- Local non-SNA major nodes
- Local SNA major nodes
- Packet major nodes
- Switched major nodes
- NCP major nodes
- Sets of path statements.

Defining VTAM in a multiple-domain network also involves defining:

- Cross-domain resource manager major nodes
- Cross-domain resource major nodes
- Adjacent SSCP tables.

MVS VM Defining VTAM when you are using SNA network interconnection may also involve changing existing major node definitions.

After a network is defined, peripheral SNA physical units (PUS) attached to an NCP and their logical units (LUS) in the NCP configuration can be added or relocated by defining dynamic reconfiguration decks.

Code definitions of major and minor nodes, paths, and adjacent SSCP tables using VTAM definition statements or NCP generation definition statements, and put these definitions into the VTAM definition library.

You must use network-unique names in all VTAM-related definitions that are active at the same time. For example, the name on a statement defining a minor node must not be the major node name. A definition is termed “active” when VTAM reads the major node in which it is contained (see *Network Program Products Planning* for NCP backup exceptions). If major node or path-definition-set names appear

in a configuration list, or if they are activated because of the VARY ACT operator command, VTAM reads them.

In addition, you cannot use any name beginning with "IST" or any of the following names for a major or minor node name:

VTAM
VTAMSEG
VTAMTERM
VSE TRACE.

mvs You can code additional operands on some VTAM definition statements to use with the data encryption facility. These operands are described in Appendix D, "mvs Filing Cryptographic Keys" on page 415. If you plan to use the VTAM data encryption facility, you should first read *IBM Cryptographic Subsystem Concepts and Facilities*.

Coding the Definitions

Restrictions on Use of Assembler Features

The NCP and VTAM definition statements are coded in standard operating system macroinstruction format, as described in "Format of Definition Statements in this Book" on page 61, with the following restrictions:

- Assembler program control instructions (such as ICTL and ISEQ) cannot be used in major node definition decks.
- Assembler listing control statements (such as PRINT, SPACE, and EJECT) can be used in the NCP generation deck but must not be used in definition decks for the other types of major nodes.

Some assembler features must not be used in a major node definition deck:

- User assembler macroinstructions that generate NCP definition statements are not permitted.
- Names generated by global variables (such as &SYSNDX and &SYSECT) cannot be used.
- Variable substitution at assembly time is not permitted.
- References to assembler attributes (such as length and type) are not permitted.
- Use of literals is not permitted.
- Quoted strings cannot be used to make names out of keywords. For example, AUTH= 'PASS' is treated just like AUTH=PASS.
- Null keywords cannot be used. For example, ",," is treated as a null keyword and is invalid.

Comments, statements, or remarks can be used in decks for all the types of major nodes. However, macroinstructions or keywords, such as GENEND, should not be used, especially in a continued card of remarks.

Errors made in the major node definition decks filed in the VTAM definition library result in messages to the system operator's console during VTAM initialization or VARY ACT command processing.

Missing continuation characters can cause the NCP (during NCP generation) to assume values that are not physically correct (for example, half-duplex lines instead of duplex lines).

Format of Definition Statements in this Book

This section describes the conventions used in this book to explain the syntax of definition statements, and the rules used to code them.

The rules summarized here are assembler language rules.

NCP and VTAM definition statements have the following format:

Name	Definition Statement	Operands
Symbolic name	Definition statement	Required and optional operands

The *name* field symbolically identifies the definition statement or minor node. If you use a symbolic name, it must contain 1–8 characters in the following format:

- 1st character Uppercase alphabetic (A–Z) or the national characters @, #, or \$.
- 2nd to 8th Uppercase alphabetic (A–Z) or numeric (0–9) or the national characters @, #, or \$.

If coded, the name field must begin in the first position of the definition statement, and must be followed by one or more blanks. Although the symbolic name is frequently optional, it is highly recommended that you code it, since VTAM uses it in operator messages referring to the resource defined.

The *definition statement* field identifies the definition statement. The definition statement field must be preceded and followed by one or more blanks.

The *operand* field contains operands, which can be coded in any order, and must be separated by commas. The operand field ends with one or more blanks placed after the last operand. In most definition statements, keyword operands are used in the operand field. Keyword operands are followed by an equal sign (=) and the keyword value. The keyword value can be a single value or a list of values. If it is a list of values, the values must be separated by commas and the list must be enclosed in parentheses. If the operand fields are to be continued, the continuation character goes in column 72.

You may code 3-letter prefixes on NCP definition statements and operands if the NCP/EP Definition Facility is installed on your system. However, **do not** code prefixes on any other types of nodes. The results of doing so are unpredictable. For more information, see *NCP Generation and Loading Guide*.

If a default value for a keyword operand exists, you can cause VTAM to use it by doing one of the following:

- Omit the operand entirely. For example, code:

```
applname APPL
```

- Code a null value for the keyword. For example, code:

```
applname APPL MAXPVT =
```

or, if other operands follow the defaulted operand, code:

```
applname APPL MAXPVT = ,SONSCIP = YES
```

All three examples have the same effect on MAXPVT as coding the operand with its default value, that is:

```
applname APPL MAXPVT = 0
```

Comments can be written after the operand field, but they must be separated from the last operand of the operand field by one or more blanks. Comments can be continued to the next card, but they must start in column 17 or beyond. An entire card can be used for a comment by placing an asterisk in the first column of the card. If several entire cards are needed for comments, place an asterisk in the first column of each card and leave column 72 blank. A definition statement that has no operands cannot have comments on the same card as the operation code.

VTAM and NCP definition statements are coded in columns 1–71 of a card. You can continue a statement that exceeds 71 columns on one or more additional cards. When it is necessary to continue a statement on another card, the following rules apply:

1. Code the statement either:
 - a. up through column 71, or
 - b. through any completed operand by interrupting the statement after the comma which separates the operand from those which follow.
2. Enter a nonblank continuation character in column 72. The continuation character is not considered as part of the statement.
3. Continue statement operands in column 16 of the next card. Columns 1–15 must be blank. A continuation card that begins in column 17 or later is ignored.
4. If the statement must be continued on another card, proceed with rule 1.
5. Statements can be coded on as many cards as needed.
6. Comments can appear on every card of a continued statement.
7. Columns 73–80 can be used to code identification characters, statement sequence characters, or both.

All statements may be in mixed cases, though they will be translated and processed by VTAM in uppercase.

Symbols Used in this Book

This section lists the conventions used in this book to illustrate the format and coding of definition statements.

Capital Letters: Capital letters represent values that are coded directly, without change. Brackets [], “or” bar |, underlines, and subscripts are never coded.

Lowercase Letters: Lowercase letters represent operands for which a value or name must be supplied if the operand or name is coded.

Brackets []: Brackets enclose operands or symbols that are either optional or conditional. Conversely, the lack of brackets means that you must code an item or group of items.

An optional operand is one that can be coded or omitted independently of other operands that are coded or omitted. Depending on the operand, omitting it might cause the corresponding feature or function to be omitted or included, or cause a specific value (the default value) to be assigned. When the syntax of a definition statement is shown in this book, any operands that are required appear first, followed by the optional or conditional operands in alphabetical order.

Vertical “or” Bar (|): A vertical bar between operands means that you must choose one operand from among the values separated by the “or” bar.

Parentheses, Equal Signs, and Commas: Parentheses, equal signs, and commas are coded as shown.

Underlined Values: An underlined value represents the value that VTAM or the NCP uses if the operand is omitted (the default value).

Braces { }: Braces denote mutually exclusive operands.

Numeric value (¹) placed at end of an operand means: See “Notes” immediately following operands section for description.

Introduction to Defining the Network

The following sections summarize:

- The procedure you must follow, and things you must consider, when defining the network to VTAM
- The format used in this chapter to describe the syntax of network definition statements.

Detailed descriptions of every definition statement begin at “Defining Application Program Major Nodes” on page 69, and continue for the rest of the chapter.

Filing Network Definition Statements

To define major nodes and file the definitions in the VTAM definition library, follow these steps. Also use these steps when making changes or additions to the definitions after putting them into the VTAM definition library.

1. Code the appropriate VTAM or NCP definition statements to define the major node. If defining an NCP:
 - Follow the coding requirements for the NCP-only definition statements and operands, and use the NCP generation instructions described in *NCP Resource Definition Reference* and *NCP Generation and Loading Guide*. If the NCP/EP Definition Facility is installed on your system, you may attach 3-letter prefixes to the NCP definition statements and operands described in this manual. However, attach prefixes only to statements included in an NCP major node definition.
 - If changing or adding VTAM-only definition statements or operands, change the NCP source deck; no NCP generation is required.
 - If changing or adding NCP definition statements or operands, change the NCP source deck and do a partial or complete NCP generation (as described in *NCP Generation and Loading Guide*).
2. **MVS VSE** You must run an operating system utility program to put the definitions into the definition library.
3. **VM** The network definition decks are stored as sequential CMS files with a filetype of VTAMLST. The files must have characteristics of RECFM=F,LRECL=80. The filenames are the names of the major nodes. The files are stored on a minidisk that is linked to the VTAM and VSCS virtual machine.

Note: Whenever you change VTAM definition statements or start option lists, you must use the GCS ACCESS command to reaccess the disk that contains the corresponding VTAMLST files before you activate the resources or restart VTAM.

Sift-Down Effect in VTAM Definition Statements

The “sift-down” effect allows you to code an operand on a higher-level node so that you do not need to recode it on each lower-level node for which the same value is desired. As a result, the sift-down effect can greatly simplify the coding process.

Many of the operands whose values sift to lower-level nodes do not affect the higher-level nodes on which they are coded, but can be coded there to take advantage of sifting. The sifted values may be overridden at any point in the hierarchy of definition statements. You can override the “sifted” values for specific lower-level nodes by:

1. Coding the same operand on the lower-level node. If the operand is recoded, the coded value applies until the next occurrence of the definition statement on which it is coded.
2. Coding the same operand with no value, followed by a comma, which will cause the default value to replace the sifted value for this and all lower-level nodes. This is true only for operands DLOGMOD, LOGAPPL, LOGTAB, MODETAB, and USSTAB. For example, to cause an LU not to log on automatically to any APPL when it is activated, code LOGAPPL=, (with no operand value) on the LU macroinstruction. If any other operand is coded in this manner, the operand will be ignored, if it is not required. Note that if the next occurrence of a statement at the same level does not contain the operand coded previously with no value,

the original sifted value of the operand is re-established. If any other operand is coded in this manner, the operand is ignored (if it is not required).

The sifted values may be overridden at any point in the hierarchy of definition statements.

The specific keyword operands to which sifting applies are identified in the major node and dynamic reconfiguration definition sections in this chapter. For information about definition statement sequencing and the sift-down level for each NCP operand, refer to *NCP Resource Definition Guide*.

Defining Resources for Switched Connections

Two types of resource are involved in a switched connection: a switched line within a switched line group, and a remote physical unit. The switched connection can be any of the following:

- An SDLC switched line
- A switched virtual circuit of an X.25 PSDN
- A local area network (peripheral nodes only).

These connections can be made to a communication controller executing NCP, or directly to a host processor, such as an IBM 9370 with a telecommunications subsystem.

The switched lines are defined within switched line groups within an NCP major node, a channel-attachment major node, a packet major node, or a LAN major node.

The remote physical unit can be a type 1, 2, 4, or 5 physical unit that is defined within a switched major node.

VM Considerations

All local device addresses that you code in definition statements for VTAM under VM must be **virtual** device addresses, rather than real device addresses. You must make sure that the virtual addresses that you code in the definition statements match:

- The virtual device addresses on any DEDICATE statements that you have coded in the VM directory
- The virtual device addresses on any CP ATTACH commands entered from the operator console or a GCS EXEC
- The virtual device addresses on any CP DEFINE commands entered from the VTAM console or from a profile.

When you define a logical unit that logs on to VM, its name cannot be the same as any VM user IDs in the system.

Maximum Number of Minor Nodes in the Host Subarea

In application program major nodes, channel-attachment major nodes, local SNA major nodes, and local non-SNA major nodes, some minor nodes may have to be counted as more than one node in calculating the maximum number of minor nodes in the host subarea. See *Network Program Products Planning* for more information.

Type 2.1 Peripheral Nodes

Description

A type 2.1 node can be any of the following programmable peripherals:

- Displaywriter (no independent LU)
- APPC/PC (a personal computer running Advanced Program-to-Program Communications)
- RT-PC
- 3820 (no independent LU)
- 5520 (no independent LU)
- 5550 (no independent LU)
- Scanmaster
- Series 1
- System/36
- System/38 (no independent LU)
- System/88
- TPF (Transaction Processing Facility).

Programmable peripherals such as the above have the software and processing power to handle concurrent or parallel transaction requests. Under pre-V3R2 VTAM releases, such programmable peripherals were restricted to a single LU-LU session per logical unit.

VTAM V3R2 provides enhanced support for type 2.1 nodes; they can engage in multiple and parallel LU-LU sessions and can be initiators of the sessions.

Type 2.1 nodes can communicate with each other as well as with applications in VTAM. Communication between type 2.1 nodes can occur through the main communication path among the nodes in the network, composed of SCCPs and NCPs.

Type 2.1 peripheral nodes can have independent or dependent logical units or both. Before VTAM V3R2, all LUS in peripheral nodes were dependent LUS and, as such, were restricted to only one LU-LU session at a time. Under VTAM V3R2, LUS in type 2.1 nodes can be defined as independent LUS. Independent LUS can engage in concurrent (including parallel) sessions with other independent LUS, with applications and/or with dependent LUS. For additional information, see "Independent Versus Dependent LUs" on page 67.

Defining Type 2.1 Nodes

VTAM determines whether a peripheral node is a type 2.1 or a type 2.0 either during activation of the node or at contact time for switched nodes. VTAM supports the following types of nodes as type 2.1 nodes:

- Nodes on NCP switched lines
- Nodes on NCP leased lines
- Nodes channel-attached to NCP.

The NCP PU definition statement requires the following operands for a type 2.1 node:

- PUTYPE=2
- XID=YES (the default).

During activation of the node or at connection (contact) time, VTAM checks the XID value received from the node to determine whether the node is a type 2.0 or a type 2.1.

As a type 2.1 node, a node on an NCP switched line also requires either CPNAME or both IDBLK and IDNUM on the PU statement. You may code all three if you wish. During activation of the node, VTAM uses the control point (CP) name to find the PU and LU definition statements associated with the node. If the CP name is omitted, VTAM uses IDBLK and IDNUM instead.

MVS Type 2.1 TPF (Transaction Processing Facility) nodes for use with the logon manager require that the LNCTL=CA operand be specified on the NCP's GROUP definition statement.

Independent Versus Dependent LUs

Before VTAM V3R2, all LUS on peripheral nodes were dependent LUS. A dependent LU can engage in only one LU-LU session at a time and acts only as an SLU (secondary logical unit).

An independent LU can have multiple concurrent (including parallel) LU-LU sessions and can act as a PLU (primary logical unit) as well as an SLU. An independent LU can have sessions with another LU either in the same or another node. It can function as a PLU (independent only) for another LU (either independent, dependent or application) or as a SLU for another independent LU or application.

Independent LUS support use of extended BINDS (new with VTAM V3R2). Extended BINDS contain information necessary to activate a session, to make use of features such as adaptive session pacing, and to identify a particular session. See *VTAM Customization* for more information on session pacing. Extended BINDS always contain a fully qualified procedure correlation identifier (PCID) (a PCID qualified by the name and network ID of the PCID generator). A BIND without this information is a nonextended BIND. Extended BINDS can optionally contain network-qualified names if the subarea components in the session establishment path support them. An extended BIND will be sent only if the boundary function (if applicable) and the SSCP of the PLU and SLU support extended bind. An extended BIND will be nonextended by an NCP in support of a back level node.

Independent LUS can exist only on type 2.1 peripheral nodes. For a description of type 2.1 nodes, see "Type 2.1 Peripheral Nodes" on page 66.

Support for independent LUS requires NCP V4R3. If a type 2.1 node is attached to the VTAM (rather than the NCP) boundary function, only dependent LUS are supported.

To define an independent LU for a type 2.1 node, code LOCADDR=0 on the LU statement under a PU type 2 definition.

The controller PLU logic is different for independent and dependent LUS. Currently, a dependent LU can have only one active LU-LU session at a time. Hence, there is no session with the controller when the LU is in session with another application.

For independent LUS, this is not the case. VTAM will initiate a session between an LU and its controller, even though there are already active LU-LU sessions. Each time a session with a PLU which is not the controller is terminated, and the independent LU does not already have a session with the controller, a session is established with the controller.

Limitations

There are certain restrictions covering alias name translation and the independent LU:

- If the PLU name received in the BIND from the LU is network-qualified, then the SLU name **must** also be network-qualified.
- If the names are network-qualified, they must be the real names, or the session fails to setup.
- A session cannot be concurrently established to different destination resources with the same name and different networks.
- If the SLU name received in the BIND is network-qualified, and the SLU is from a different network than the PLU, the SLU's alias name as known in the PLU's network must be the same as the SLU's real name.

One additional restriction governs the independent LU; an independent LU cannot be the destination logical unit (DLU) for an autologon session (an independent LU should not be specified on the LOGAPPL parameter of another LU).

VSE VM Defining Loop-Adapter-Attached Devices

Loop-adapter-attached devices are defined in a local SNA major node, and communicate with VTAM application programs as if they were channel-attached SNA physical units and logical units. See "Defining Local SNA Major Nodes" on page 151 for more information.

Note: Loop-adapter devices are available only on certain 4300 series machines. See your IBM marketing representative for availability.

Defining Application Program Major Nodes

You define an application program major node by filing one VBUILD statement for the major node, and an APPL definition statement for each application program in the major node.

See Figure 22 for an example of statements defining an application program major node.

```
APPLNODE VBUILD TYPE=APPL
APAYRO  APPL  ACBNAME=PAYROLL,AUTH=ACQ,PARSESS=YES,EAS=10,      X
          MODETAB=COMTAB
AACCTS  APPL  ACBNAME=ACCOUNTS,PARSESS=YES,EAS=20,              X
          MODETAB=COMTAB
AINV0   APPL  ACBNAME=INVENTORY,EAS=50
```

Figure 22. An Example of Statements Defining an Application Program Major Node

The VBUILD Statement

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = APPL

name

a *name* is optional.

TYPE = APPL

means that this VBUILD statement defines an application program major node.

The APPL Definition Statement

Code one APPL definition statement for each application program that is in the VTAM domain, and include it in the major node.

For information on coding the APPL definition statement for interconnected networks, see Chapter 7, “mvs VM SNA Network Interconnection Considerations” on page 319.

mvs If you are using the logon manager facility provided as part of VTAM V3R2, you must define the logon manager and **each TPF application** using the APPL definition statement. See Appendix F, “mvs Logon Manager” on page 433, for more information.

The MODIFY TABLE operator command lets you dynamically replace USS (USSTAB) and logon mode (MODETAB) tables (V3R2 only). See *VTAM Operation*. If you want to use the MODIFY TABLE command against a given USS table, you must reassemble that table using the VTAM V3R2 macroinstruction definition libraries.

mvs If you are defining TSO/VTAM, refer to “Defining TCAS and Each TSO User” on page 404 for the TSO/VTAM requirements when coding the APPL definition statement.

Name	Definition Statement	Operands
name	APPL	[ACBNAME = acbname] [,APPC = (YES NO)] (V3R2) [,AUTH = ([ACQ NOACQ [,CNM NOCNM [,PASS NOPASS [,PPO SPO NOPO [,TSO NOTSO] MVS [,VPACE NVPACE]]) [,AUTHEXIT = (YES NO)] VM [,AUTOSES = n 0]¹ (V3R2) [,DDRAINL = ALLOW NALLOW]¹ (V3R2) [,DLOGMOD = default logmode entry name] [,DMINWNL = n 1]¹ (V3R2) [,DMINWNR = n 1]¹ (V3R2) [,DRESPL = ALLOW NALLOW]¹ (V3R2) [,DSESLIM = n 2]¹ (V3R2) [,EAS = n 509] (V3R2) [,EAS = n 491] (pre-V3R2) [,ENCR = SEL REQD OPT NONE] MVS [,HAVAIL = YES NO] MVS/XA [,LMDENT = n 19]¹ (V3R2) [,MAXPVT = 0 n nK nM] MVS VM [,MODETAB = logon mode table name] [,PARSESS = YES NO] [,PRTCT = password] [,SECACPT = NONE CONV]¹ (V3R2) [,SONSCIP = YES NO] [,SPAN = (spanname)] [,SRBEXIT = YES NO] MVS [,SSCPFM = USSNOP USSPOI] [,USSTAB = USS definition table name] [,VPACING = n 0] [,VTAMFRR = YES NO] MVS

Notes:

1. These operands are valid only when APPC=YES.

name

is a minor node name for this application program, as is the ACBNAME operand. This name must be unique within the domain in which the application resides. It must also be unique throughout the network if the application program is to engage in cross-domain sessions. It must also be unique throughout the networks if the application program is to engage in cross-network sessions, unless the alias translation function is used. **This operand is required.**

A logical unit using the application program's network name can log on to it from any domain in the network. A logical unit using the ACBNAME to log on to an application program must be in the same domain.

If you do not code ACBNAME, this name must be the same as the name in the APPLID operand of the ACB macroinstruction for this application program.

The ACB macroinstruction is described in *VTAM Programming*.

ACBNAME = acbname

is the minor node name assigned to this application program. This name must be unique within the domain in which the application program resides. The name must also be the same as the name in the APPLID operand of the ACB macroinstruction for this application program. If no application program name is coded in the APPLID operand of the ACB macroinstruction, the name in the ACBNAME operand must be the job-step name. However, if the application is started under a jobstep that invokes a procedure, the name in the ACBNAME operand must be the procedure-step name. This can be done for only one application program that is active within a jobstep.

This operand is needed if (1) application programs with the same APPLID are activated in multiple hosts and the application programs wish to enter into a cross-domain session or (2) terminals in the network specify which application program in which host they wish to log on to.

If this operand is not coded, the network-unique name (the name of the APPL statement) is used as the ACBNAME.

MVS/XA For applications used in extended recovery facility (XRF) sessions in MVS/XA, the network name and the ACBNAME must be the same. Therefore, do not code the ACBNAME operand: use the default, which is the network name.

APPC = YES|NO

tells VTAM whether the application program can issue APPCCMD macroinstructions. Refer to *Programming for LU 6.2* for a description of this macroinstruction.

The default is APPC=NO.

The following operands are valid only if APPC=YES is specified in V3R2: AUTOSSES, DDRAINL, DMINWNL, DMINWNR, DRESPL, DSISLIM, LMDENT, and SECAPT.

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

determines whether this application program has the authority to use certain VTAM functions. You can code these operands in any order. The possible operands are listed below:

ACQ|NOACQ

determines whether this application program can use either the OPNDST macroinstruction with the ACQUIRE option or the SIMLOGON macroinstruction. (These macroinstructions enable the application program to initiate a session with a particular logical unit.)

If you code APPC=YES (valid for V3R2 only), ACQ is the default. If you code APPC=YES and AUTH=NOACQ, VTAM supplies an override of ACQ and issues a warning message.

CNM|NOCNM

determines whether this application program can use the communication network management (CNM) interface. This interface allows an application program to send and receive formatted RUS from certain PUS in the application program's domain. For more information, see *VTAM Programming*.

AUTH=CNM must be coded for all application programs for which entries exist in the IBM-supplied CNM routing table or for any user-written applications using the CNM interface. For a complete list of IBM-supplied CNM applications, see *VTAM Customization*.

PASS|NOPASS

determines whether this application program can use the CLSDST macroinstructions with the PASS option to pass session-establishment requests to other application programs.

For more information on the CLSDST macroinstruction and simulating a logon (SIMLOGON), refer to *VTAM Programming*.

PPO|SPO|NOPO

is the status of the application program in regard to issuing VTAM operator commands and receiving responses and unsolicited messages. This facility is described in *VTAM Programming*.

If either primary program operator (PPO) or secondary program operator (SPO) is coded, the application program is authorized to issue SENDCMD and RCVCMD macroinstructions. If this operand is omitted or if no program operator (NOPO) is coded, VTAM does not permit the application program to issue SENDCMD or RCVCMD macroinstructions.

If you code PPO, the application program receives all unsolicited messages, that is, all informational and error messages that are not replies to operator commands. If no PPO-designated application program is active when these messages occur, they are directed to the system console.

TSO|NOTSO mvs

tells VTAM whether the application program is a TSO/VTAM time-sharing program. If it is a TSO/VTAM time-sharing program, code TSO. If not, code NOTSO or take the default.

VSPACE|INVSPACE

determines whether this application program is to be subject to the VPACING specifications of SLUS with which the program is in session. Coding INVSPACE is effectively the same as coding VPACING=0 in the LU statements for all of the SLUS with which the application program is in session. INVSPACE is ignored for same-domain local SNA LUS. See the pacing discussion in *VTAM Customization and Network Program Products Planning*.

AUTHEXIT = YES|NO vm

tells VTAM whether the application program's exit routines are to run in supervisor state. If AUTHEXIT=YES, they will run in supervisor state even if the application is not authorized by GCS to do so. Before returning control to GCS, the application must clean up any recovery environment (ESTAE) it sets up.

The default is AUTHEXIT=NO.

AUTOSES = n|0

tells VTAM the number of contention-winner sessions to activate automatically, rather than by allocation requests from the application program. VTAM establishes the specified number of sessions when the first Change Number of Sessions (CNOS) request is issued for a mode-name group of a given partner LU.

n is a decimal integer 0–32767. The default is 0.

This operand is valid only if the APPC operand is coded as YES.

DDRAINL = ALLOW|NALLOW

tells VTAM whether the application program is allowed to drain waiting allocation requests when the application is the target of a CNOS request that resets the session limit to zero.

DDRAINL=ALLOW allows the application program to drain its allocation requests. The drain-target value in the received CNOS request is not negotiated.

DDRAINL=NALLOW does not allow the application program to drain its allocation requests. The drain-target value in the received CNOS request is negotiated to no draining. NALLOW is the default.

This operand is valid only if the APPC operand is coded as YES.

DLOGMOD = default logon mode table entry name

is the name of the logon mode entry to be used by default if such a name is not otherwise provided.

A logon mode entry determines which entry in the applicable logon mode table is to be used to provide a set of session parameters for the application program if the application program participates as the secondary end of a session (SLU). The name in the DLOGMOD operand must be the name of an entry in a logon mode table. If MODETAB is specified, the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM. If you do not supply a logon mode table for the application program, an IBM-supplied logon mode table is used (ISTINCLM). The user can replace or modify the IBM-supplied logon mode table.

If you do not code this operand and the name of a logon mode entry is not otherwise provided, the first entry in the applicable logon mode table (found on the MODETAB operand or defaulted) is used by default.

For more information, see the description of MODETAB later in this section, and also in *VTAM Customization*.

DMINWNL = n|1

defines the minimum number of parallel sessions for a mode name group for a given remote LU of which **this application program (local LU)**, not the remote LU, is guaranteed to be the contention winner. A mode name group is a group of sessions for a given mode name.

n is a decimal integer 0–32767. The default is 1.

VTAM negotiates the actual number of contention-winner sessions for this application (local LU) when it receives a CNOS request from the remote LU and generates a reply CNOS. The negotiated number is the lesser of:

- The DMINWNL value
- The reply CNOS session limit minus the reply CNOS minimum contention-winner value for the remote LU.

This operand is valid only if the APPC operand is coded as YES.

DMINWNR = n|1

defines the minimum number of parallel sessions for a mode name group for a given remote LU of which **the remote LU**, not this application program (local LU), is guaranteed to be the contention winner.

n is a decimal integer 0–32767. The default is 1.

VTAM negotiates the actual number of contention-winner sessions for the remote LU when it receives a CNOS request from the remote LU and generates the CNOS reply. The resulting number is never greater than the number of contention-winner sessions specified for the remote LU on the CNOS request.

When negotiating the number, VTAM:

1. Determines which is greater: the DMINWNR value or one-half the negotiated session limit on the CNOS reply (see DSESLIM, described on page 76)

2. Determines which is less: the value from Step 1 or the minimum contention-winner value specified for the remote LU on the CNOS request.

VTAM uses the value for the CNOS reply resulting from Step 2.

This operand is valid only if the APPC operand is coded as YES.

DRESPL = ALLOW|NALLOW

tells VTAM whether the local application program (local LU) accepts responsibility for deactivating sessions upon receipt of a CNOS request that specifies the application program as the responsible LU.

DRESPL=ALLOW allows the application program to accept responsibility for deactivating sessions. The responsible value in the reserved CNOS is not negotiated.

DRESPL=NALLOW does not allow the application program to accept responsibility for deactivating sessions. Instead, VTAM assigns the responsibility for deactivating sessions to the remote LU that sent the CNOS request. NALLOW is the default.

This operand is valid only if the APPC operand is coded as YES.

DSESLIM = n|2

defines the maximum number of sessions to be allowed between the local application LU and a remote LU on a given mode.

n is a decimal integer 0–32767. The default is 2.

VTAM uses the defined session limit value to determine the negotiated session limit when the application program (local LU) receives a request from the remote LU. When VTAM generates a reply CNOS, the negotiated session limit value is the lesser of:

- The session limit specified on the CNOS request
- The value specified for DSESLIM.

If you code DSESLIM=0 and the application program is the target of a CNOS request to initialize the session limit for a new mode, VTAM responds to the CNOS request with a mode-closed indication.

Note that the DSESLIM value is always greater than or equal to the combined values for DMINWNL and DMINWNR.

This operand is valid only if the APPC operand is coded as YES.

EAS = n|509 (v3R2)

EAS = n|419 (pre-v3R2)

The function of EAS is to set the approximate number of concurrent sessions this application program can have with other logical units (LU-LU sessions). VTAM uses this operand in a lookup scheme to find the representation of a session between the application program and a logical unit.

n is a decimal integer from 0 through:

- 65535 (v3R2)
- 32737 (pre-v3R2).

The specified number can include LU 6.2 sessions or non-LU 6.2 sessions or both. Only one LU 6.2 conversation can be active on a session at one time. This means that the number of LU 6.2 conversations is always less than or equal to the number of concurrent LU 6.2 sessions.

ENCR = REQD|SEL|OPT|NONE MVS

determines whether this application program has any special requirements for enciphering and deciphering request units.

REQD

means that VTAM must encipher all messages that this application program sends and decipher all messages that the application program receives. ENCR=REQD also means that this application program cannot start a session with a logical unit that cannot encipher and decipher its messages. If you code ENCR=REQD, this application program cannot be activated unless the host in which it resides is capable of handling cryptographic sessions.

SEL

means that this application program can choose which messages are enciphered by VTAM. ENCR=SEL also means that this application program cannot start a session with a logical unit that cannot encipher and decipher its messages. If you code ENCR=SEL, this application program cannot be activated unless the host in which it resides is capable of handling cryptographic sessions.

OPT

means that the application program has no special cryptographic requirements; its cryptographic capability is the same as the host processor's capability.

NONE

means that the application program has no special cryptographic requirements; its cryptographic capability is the same as the host processor's capability.

HAVAIL = YES|NO MVS/XA

determines whether the application can support extended recovery facility (XRF) sessions.

HAVAIL=YES means that this application program can have an XRF session, can initiate an XRF session, or can be the primary logical unit in an XRF session that is initiated by a secondary logical unit.

HAVAIL=NO means that this application program cannot have an XRF session. HAVAIL=NO is the default.

LMDENT = n|19

specifies the number of entries to be used for this application program's hash table of remote LUS. VTAM uses the hash table to identify and locate remote LUS based upon their LU names.

When a remote LU is defined to the local application program, VTAM places the remote LU's definition in a set of definitions known to the ACB (access method control block). VTAM uses an open hashing technique to create and locate specific remote LU definitions based upon their LU names. LMDENT allows you to tune the size of the hash table to suit your needs. LMDENT should be a prime number to reduce the occurrence of aliases in the hashing algorithm. If the number you choose is not prime, VTAM will select a prime near the number you have chosen.

n is a decimal integer 0–65535. The default is 19.

The value that you specify should take into account both the largest possible number of remote LUS and the degree of efficiency in accessing the remote LU definitions. A convenient formula is to divide the number of remote LUS by an efficient average chain length. For example, if the largest possible number of

Application Program Major Node: APPL

remote LUS is 300 and an average chain length of 10 is efficient for searching singularly linked lists, specify a value of 29.

This operand is valid only if the APPC operand is coded as YES.

MAXPVT = Q|n|nK|nM mvs vm

is the maximum additional amount of private storage that VTAM can use for session-related control blocks and messages for this application program. The limit is maintained at the task level (not by the individual application program). The task limit is changed when an OPEN or CLOSE ACB is issued. The MAXPVT for any application program is the sum of the MAXPVT specifications of the currently active application programs (that is, those with OPEN ACBs) running under the task.

This number can be expressed as a single number by up to 8 digits or by up to 7 digits and M or K. *mvs/xa* The limit for MAXPVT is approximately 2 gigabytes, which can be expressed as 2048M; *mvs/370 vm* the limit is approximately 8 megabytes, which can be expressed as 8M.

0

means that no limit is defined and thus, when no storage is available in the address space associated with this application program, the session is cleared. When this occurs, the application program's LOSTERM exit routine is scheduled with a reason code of 36 (X'24').

n|nK

n is the number of one-kilobyte segments that this application program task can use of its private area (address space). *n* is a decimal integer. Its value is rounded up to the next multiple of 4. If storage is not available, the session is cleared and the application program's LOSTERM exit routine is scheduled with a reason code of 36 (X'24').

nM

n is the maximum amount of private area storage, in one-megabyte increments, that VTAM can use. *n* is a decimal integer.

MODETAB = logon mode table name

is the logon mode table to be used to associate each logon mode name with a set of session parameters for the application program if the application program participates as the secondary end of the session (SLU). The name coded on the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*. If you do not supply a logon mode table for the application program, an IBM-supplied logon mode table is used (ISTINCLM). The user can replace or modify the IBM-supplied logon mode table.

PARSESS = YES|NO

tells VTAM that this application program can have multiple concurrent (parallel) sessions with another application program or independent LU in the same domain or in another domain.

YES

allows this application program or independent LU to have multiple LU-LU sessions between the same session partners.

NO

restricts this application program to one LU-LU session, between itself and another LU, at a time. For pre-V3R2, this value is the default. For V3R2, if APPC=NO is coded, defaulted, or not specified, the default for PARSESS is also NO.

If you code APPC=YES (valid for V3R2 only), PARSESS defaults to YES. If you code APPC=YES and PARSESS=NO, VTAM supplies an override of YES for PARSESS and issues a warning message.

See *Network Program Products Planning* for the effect of coding YES on the maximum number of minor nodes that can be defined in the host subarea.

PRTCT = password

is a 1 – 8 character password. VTAM compares this password to the one in the application program's access method control block (ACB) when an OPEN macro-instruction is issued. It uses this password to verify this application program's authority to run (as the program being defined by this APPL definition statement). If you do not code this operand, no password checking is done.

SECACPT = NONE|CONV

default FMH5 access security subfield acceptance. This is valid only if APPC=YES is specified.

NONE

FMH5S containing access security subfields are not supported by this application LU. Requests for conversations specifying access security subfield information will not be accepted.

CONV

FMH5S containing access security subfields are supported by this application LU. Requests for conversations specifying access security subfield information will be accepted.

SONSCIP = YES|NO

determines whether the application program is to receive UNBIND RUS in its SCIP exit routine when the application program is acting as the primary end of a failing session.

If you code YES, VTAM terminates the session on behalf of the application program (no CLSDST need be issued). VTAM schedules the application program's SCIP exit routine with an UNBIND RU that contains information (type codes) describing the nature of the failure. For a description of these type codes, see *VTAM Programming*.

If you code NO or take the default, VTAM schedules the application program's NSEXIT routine with a CLEANUP RU. If the application program does not have an NSEXIT routine, VTAM schedules the LOSTERM exit routine.

Note: Because secondary application programs receive UNBIND RUS in their SCIP exit routines, it is not necessary for these application programs to code SONSCIP=YES to receive the UNBIND type-codes.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SRBEXIT = YES|NO MVS

determines whether this application program is authorized to use service request block (SRB) processing in its exit routines. If yes, all the application program's exit routines are branch-entered in SRB mode, supervisor state, key 0. An application must be APF-authorized, key 0 – 7, or in supervisor state to open an ACB whose corresponding APPL statement includes SRBEXIT=YES.

SSCPFM = USSNOP|USSPOI

applies only to a program operator application program (AUTH=PPO or AUTH=SPO). This operand is ignored if you code it for an application program that is not a program operator.

SSCPFM names the system USS table that is to be used when sending a VTAM operator message to the program operator if the message is not defined in a user-defined table. SSCPFM has no effect on the USS table that is used to process VTAM operator commands.

- SSCPFM=USSNOP means that ISTINCNO is the name of the system USS table to be used for VTAM messages sent to this program operator. Note that ISTINCNO is used only for messages that are not defined in a user-defined table.
- SSCPFM=USSPOI means that ISTCFCMM is the name of the system USS table to be used for VTAM messages sent to this program operator. Note that ISTCFCMM is used only for messages that are not defined in a user-defined table.

The default (SSCPFM=USSPOI) is recommended if you run CLISTS.

USSTAB = USS definition table name

applies only to a program operator application program (AUTH=PPO or AUTH=SPO). This operand is ignored if you code it for an application program that is not a program operator.

USSTAB names a user-defined USS table that contains user-modified VTAM operator commands and VTAM operator messages to be used by the program operator.

If there is no USSTAB operand in the definition for a program operator, VTAM uses the IBM-supplied USS table (ISTINCNO) when processing USS commands issued by the program operator.

VTAM uses the SSCPFM operand to determine which USS table to use when sending a VTAM operator message to a program operator, as described in the section on the SSCPFM operand.

VPACING = n|0

is the maximum number of normal-flow requests that another LU can send to this application program in a session before waiting to receive a pacing response. This value, which controls the pacing of requests to the application program, is exchanged when a session is established. If the value is not 0–63, the maximum of 63 is used. No pacing of requests to the application program is done if VPACING=0 or if you do not code it.

For more information on pacing, refer to *VTAM Customization*.

VTAMFRR = YES|NO MVS

determines whether a VTAM functional recovery routine (FRR) takes effect when control is returned to the application program:

- After an SRB-authorized path application program interface (API) request
- When an SRB exit routine is scheduled.

If VTAMFRR=YES, then a VTAM FRR always takes effect when the application program (1) receives control back from an SRB mode API request or (2) receives control in an SRB exit routine. The default is VTAMFRR=NO, which means that VTAM returns control after purging any VTAM FRRs.

Defining Channel-Attachment Major Nodes

A channel-attachment major node is defined by filing a single `VBUILD` statement for the major node and separate `GROUP`, `LINE`, `PU`, `LU`, `CLUSTER`, and `TERMINAL` statements for each minor node.

A channel-attachment major node may contain definition statements for:

- Channel-to-channel support
- Channel-attached NCP support
- **VSE VM** Integrated communication adapter support (ICA).

You can file these definition statements as one channel-attachment major node or as separate major nodes. Operational considerations such as activation processing overhead or switched-network backup capabilities can be used to determine a practical number of major nodes.

A channel-attachment major node begins with a `VBUILD` statement, but it may contain different types of link groups. Each link group has a unique `GROUP` statement and contains a unique set of minor node statements. The operands and default values also vary according to the particular link group being defined. The following list shows the structure of minor nodes associated with each type of link group that can be defined in a channel-attachment major node.

- `GROUP LNCTL=CTCA` (channel-to-channel support)
 - `LINE`
 - `PU.`
- `GROUP LNCTL=NCP` (channel-attached NCP support)
 - `LINE`
 - `PU.`
- **VSE VM** `GROUP LNCTL=SDLC,DIAL=NO` (integrated communication adapter support)
 - `LINE`
 - `PU`
 - `LU.`
- **VSE VM** `GROUP LNCTL=SDLC,DIAL=YES` (integrated communication adapter support)
 - `LINE`
 - `PU.`
- **VSE VM** `GROUP LNCTL=BSC` (integrated communication adapter support)
 - `LINE`
 - `CLUSTER`
 - `TERMINAL.`

Note: More than one CTCA may be defined, but only one CTCA may be active between two VTAM hosts at one time. All other CTCA links between the two hosts must be inactive before activation is attempted.

The VBUILD Definition Statement

Code a VBUILD statement for each set of channel-attachment definition statements.

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = CA [,CONFIGDS = name] [,CONFIGPW = password]

name

a *name* is optional.

TYPE = CA

means that the VBUILD statement defines a channel-attachment major node to VTAM. This operand is required.

MVS VSE CONFIGDS = name

is a 1 – 8 character data definition name that identifies the configuration restart data set defined by the user to be used for this major node.

MVS Include a DD statement that has this data definition name in the VTAM start procedure.

Refer to *Network Program Products Planning* for a description of configuration restart.

MVS VSE CONFIGPW = password

is the 1 – 7 character alphanumeric password, if required, for VTAM to gain access to the configuration restart data set. If you do not code CONFIGPW, but it is required by VSAM, VSAM prompts the VTAM operator for the correct password when VTAM attempts to open the data set.

You may code CONFIGPW only if you also code CONFIGDS.

Defining Channel-to-Channel Support

The GROUP Definition Statement

The GROUP definition statement defines the type of links that follow and also carries other operands that “sift down” to following statements that do not explicitly override them. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

This GROUP statement shows the valid operands and defaults for a CTCA line group:

Name	Definition Statement	Operands
name	GROUP	LNCTL = CTCA [,DELAY = time .100] ¹ [,ISTATUS = ACTIVE INACTIVE] ² [,MAXBFRU = npage 1] ³ (V3R2) [,MAXBFRU = ([norm 10][,max norm])] ³ (pre-V3R2) [,MIH = YES NO] [,PUTYPE = 4] ¹ [,REPLYTO = time 3.0] [,SPAN = spanname]

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See “The PU Definition Statement” on page 87 for a description of these operands.
2. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units. See “The LINE Definition Statement” on page 85, or “The PU Definition Statement” on page 87 for a description of this operand.
3. You can code this operand in either the GROUP or LINE statement to take advantage of the sift-down effect, although it is meaningful only for the channel. See “The LINE Definition Statement” on page 85 for a description of this operand.

name

is the minor node name of the line group represented by this statement. This operand is required.

LNCTL = CTCA

defines the links that follow as channel-to-channel attachment links. This operand is required.

MIH = YES|NO

causes the link to become inoperative up to 3 minutes after REPLYTO if MIH= YES is specified and a start I/O timeout occurs because the receiving host is in disabled compatibility mode. The default is NO.

Note: If MIH is not coded, the link will appear active but will most likely be hung or unusable.

REPLYTO = time|3.0

tells VTAM how long to wait for completion after starting a channel program. Express *time* in seconds or seconds and tenths of a second. Any value in the range 0.1 – 25.5 is acceptable. The default of 3.0 seconds should be adequate

Channel-Attachment Major Node: GROUP for CTCA

unless the remote system is disabled for long intervals. Should this timeout expire during normal operation, a message is written to inform the operator that a timeout has occurred. A STATION INOP may be scheduled at this time if an MIH purge has already taken place.

Note: The difference between the MIH and REPLYTO operands is:

- The REPLYTO operand causes a message to be generated if a channel program is not completed after the time specified (or 3 seconds, if no time is specified).
- The MIH=YES operand causes the link to become inoperative 3 minutes after the start I/O, if a timeout occurs because of the receiving host.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

The LINE Definition Statement

Code one LINE definition statement for each channel-to-channel adapter. The LINE statement defines to VTAM the characteristics of its side of the adapter.

Name	Definition Statement	Operands
name	LINE	[ADDRESS = channel unit address] [,DELAY = time .100] ¹ [,ISTATUS = ACTIVE INACTIVE] [,MAXBFRU = npage 1] (V3R2) [,MAXBFRU = ([norm 10][,max norm])] (pre-V3R2) [,MIH = YES NO] [,PUTYPE = 4] ¹ [,SPAN = spanname]

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See “The PU Definition Statement” on page 87 for a description of these operands.

name

is the minor node name of the line represented by this statement. This operand is required.

ADDRESS = channel unit address

is the channel unit address of the channel-to-channel adapter. If the ADDRESS operand is omitted, the VTAM operator must supply the channel unit address by using the U operand of the VARY ACT command.

ISTATUS = **ACTIVE**|INACTIVE

determines whether the line is to be activated after the first activation of the channel-attachment major node. It provides a “sifting” value for the PU statement following this line.

When ISTATUS=ACTIVE is coded or assumed by default, this line is activated as part of the major node activation. If ISTATUS=INACTIVE is coded, this line is left inactive after the first activation of an inactive major node that contains this line. Later activations of an already active major node activate all the lines not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXBFRU = npage|1 (V3R2)

is the number of 4K buffer pages VTAM uses to receive data when it activates the channel-to-channel adapter.

npage

is the number of 4K pages that VTAM allocates for receiving data during a read operation. The resulting buffer size is npage multiplied by 4K. Make sure that the buffer size is large enough to contain the largest anticipated data transfer.

The valid range for *npage* is 1 – 16 pages. The default is 1 page.

VTAM automatically substitutes a value of 16 for any coded value larger than 16 without issuing a warning message.

Channel-Attachment Major Node: LINE for CTCA

If the channel-to-channel adapter is communicating with a host, MAXBFRU specifies the number of buffers (rather than pages) to be used.

MAXBFRU = ([norm|10][,max|norm]) (pre-v3R2)

is the number of buffers VTAM uses to receive data when it starts a normal channel program.

norm

is the number of buffers VTAM allocates to receive data whenever it starts a normal channel program. The value of *norm* should be somewhat larger than that required for the average data transfer. If *norm* buffers can hold the data, the path through VTAM is shorter than if more than *norm*, but less than *max*, buffers are required.

The default value is 10 buffers.

max

is the maximum number of buffers VTAM allocates to receive data for a channel program. The value for *max* must be large enough to hold the largest path information unit (PIU) that can be received over the channel-to-channel adapter. If you do not code *max*, it defaults to the value used for *norm*.

MIH = YES|NO

causes the link to become inoperative if a start I/O timeout occurs because the receiving host is in disabled compatibility mode. The default is NO.

Note: In the above situation, if MIH is not coded, the link will appear active but will most likely be hung or unusable.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

The PU Definition Statement

Code one and only one PU definition statement for each LINE statement. (If you are defining a multi-drop SDLC environment, you can code more than one PU statement for each LINE statement.) VTAM uses the PU statement to define the link station for an adjacent host processor.

Name	Definition Statement	Operands
name	PU	[,DELAY = time .100] ¹ [,ISTATUS = ACTIVE INACTIVE] [,PUTYPE = 4] ¹ [,SPAN = spanname]

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See "The PU Definition Statement" for a description of these operands.

name

is the minor node name of the physical unit represented by this statement. This operand is required.

DELAY = time|.100

is a time interval in seconds. Any value 0–9.999 is acceptable. Three decimal places are allowed. DELAY is the maximum time VTAM should wait after getting low priority (that is, PIU transmission priority 0 or 1) data to send to the other VTAM. This is done in the hope that more data will arrive so that several blocks can be sent together. For more efficient operation, this value should be set as high as possible. For maximum speed across the interface this value should be set to 0. (See the description of the DELAY operand in a channel-to-channel-attached host processor in *VTAM Customization* for more information.)

ISTATUS = **ACTIVE**|INACTIVE

determines whether the physical unit is to be activated after the first activation of the channel-attachment major node.

When ISTATUS=ACTIVE is coded or assumed by default, this physical unit is activated automatically when the line to which it is attached is activated. If ISTATUS=INACTIVE is coded, this physical unit is left inactive after the first activation of an inactive major node that contains the LINE for this physical unit. Later activations of an already active major node activate all the lines not previously active and their physical units (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

PUTYPE = 4

is the physical unit type. PUTYPE=4 is the only valid value and is also the default.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Defining Channel-Attached NCP Support

Considerations for Defining a Host-to-NCP Channel

You can define a channel attachment between a host and an NCP in a channel-attachment major node. This data host attachment eliminates the requirement that the host have ownership (control) of network resources. It provides the ability for VTAM to contact a channel attached NCP without activating the NCP. A mechanism is provided that does not require the establishment of an SSCP-NCP session for data transfer to occur over the channel path of the communication controller. This method of attaching to the network prevents the data host from issuing requests on the SSCP-NCP session, which can affect the configuration of the local NCP major nodes or other nodes.

When you plan to do this, be aware of other considerations including:

- Providing a data host to back up a communication management configuration (CMC) host
- Coding the PCCU definition statements in a CMC
- Coding the HOST definition statements in a CMC.

Figure 23 on page 89 shows a possible CMC. In this figure, NCP1 is channel-attached to HOST1, but it is in HOST2's domain. NCP1 is a channel-attached cross-domain NCP with respect to HOST1. The same relationship applies between NCP3 and HOST3. All three NCPs are controlled by HOST2, the CMC host. HOST1 and HOST3 can contact their channel-attached NCPs and communicate with resources attached to them without ever activating those NCPs. CMC HOST2 is responsible for activating all three NCPs. All network problems will be handled by HOST2. HOST1 and HOST3 (designated as data hosts) do not own any of the network resources. All LU-LU sessions to remote network resources are cross-domain sessions.

Note: The NCP must be loaded and active if VTAM is just to contact the NCP but not establish an SSCP-NCP session. If the NCP is varied inactive on the CMC and the channel-attached major node is active, sessions using the channel path to the data host will continue uninterrupted.

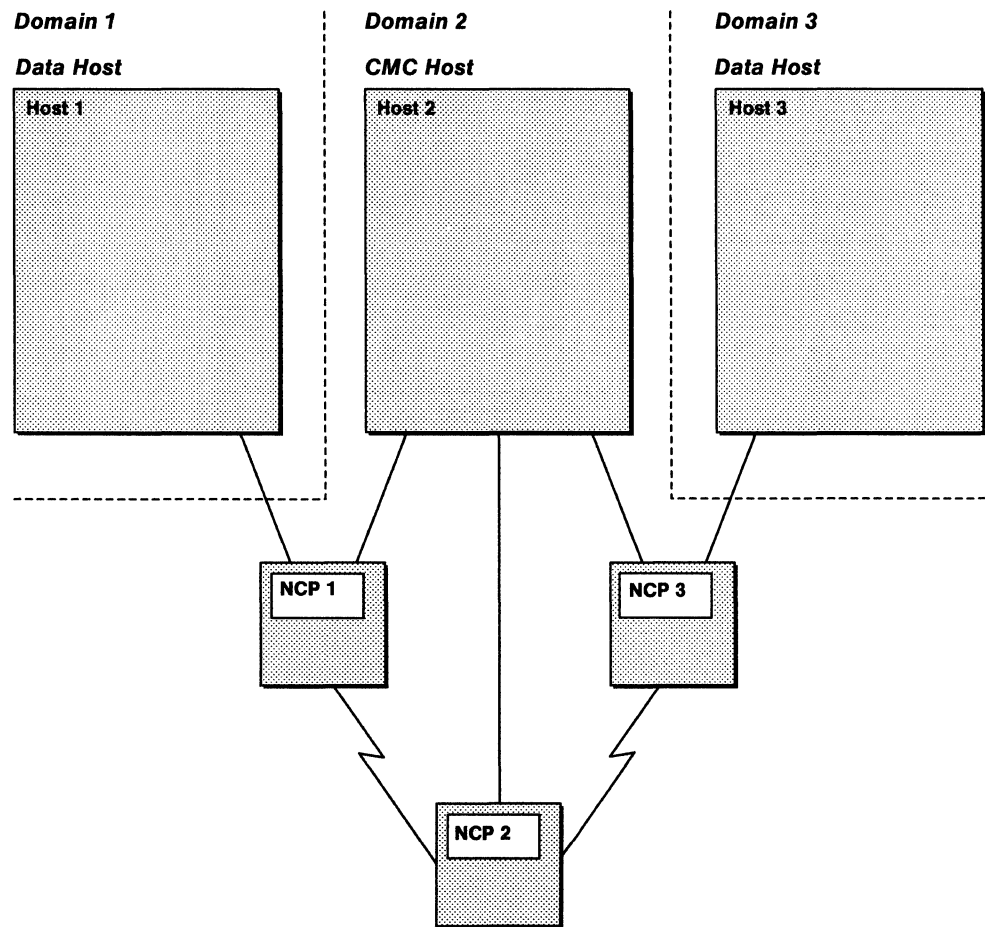


Figure 23. Example of a Communication Management Configuration

Providing for Backup of a CMC Host: The channel connection between HOST2 and NCP1 is defined to HOST2 in a channel-attachment major node. The normal operating activation procedure for a CMC configuration consists of these steps:

1. HOST2 activates its channel-attachment major node.
2. HOST2 activates NCP1.
3. HOST1 activates its channel-attachment major node to contact NCP1.

If for some reason, CMC HOST2 fails and must be backed up by data HOST1, then HOST1 activates NCP1. Activating the NCP establishes an SSCP-PU session between HOST1 and NCP1; HOST1 now becomes the new CMC host. HOST3 can provide backup for HOST2 in much the same way.

Coding the PCCU Definition Statement: Several operands on the PCCU definition statement are used to define channel characteristics. If you do not define a channel in a channel-attachment major node, the values on the PCCU definition statement are used because the channel is implicitly defined and activated automatically when the NCP is activated.

Channel-Attachment Major Node: Considerations for NCP

However, when you define the channel in a channel-attachment major node, the definition statements in the channel-attachment major node contain operands similar to those on the PCCU definition statements. These operands are:

- **CHANCON = COND | UNCOND**

For a data host, the CHANCON operand on the PCCU definition statement is replaced by the CHANCON operand on the LINE statement in the channel-attachment major node.

- **CUADDR = *channel device address***

For a data host, the CUADDR operand on the PCCU definition statement is replaced by the ADDRESS operand on the LINE statement in the channel-attachment major node.

- **MAXDATA = *size***

For a data host, the MAXDATA operand on the PCCU definition statement is replaced by the MAXDATA operand on the PU statement in the channel-attachment major node.

Activating the channel-attachment major node to activate the channel causes VTAM to use the values defined in the channel-attachment major node. Later, if NCP1 is activated, these same operands, if they appear on NCP1's PCCU definition statements, are ignored. If you are defining the channel in a channel-attachment major node and would like to avoid confusion concerning these operands, avoid coding duplicate values on the PCCU definition statement.

The RNAME operand on the PCCU definition statement may name a link station associated with a channel link defined in a channel-attachment major node. When the host activates each NCP, the link station and link defined in the channel-attachment major node representing the channel are activated automatically.

The values defined on the PU statement in the channel-attachment major node are used for the CUADDR, CHANCON, and MAXDATA operands. The PCCU values for these operands are used only when the channel-link station is not defined in a channel-attachment major node.

If the access method in the data host has already contacted the NCP, the PCCU operands (CHANCON, CUADDR, and MAXDATA) coded in the NCP major node are not used.

Coding the HOST Definition Statement: The HOST definition statement in the NCP major node has a MAXBFRU operand for defining the number of buffers that the host can use for receiving data from the NCP.

If you do not define the channel in a channel-attachment major node, the MAXBFRU value on the HOST definition statement is used because the channel is implicitly defined and activated automatically when the NCP is activated.

However, when you define the channel in a channel-attachment major node, the MAXBFRU operand on the LINE statement for that major node defines the number of buffers the host can use for receiving data. Figure 23 on page 89 is an example of this. When HOST1 activates its channel-attachment major node, VTAM uses the value of the MAXBFRU operand on the LINE statement. Later, if NCP1 is activated by HOST1, the MAXBFRU value on the HOST definition statement is ignored.

Channel-Attachment Major Node: Considerations for NCP

When you define the channel in a channel-attachment major node, VTAM also ignores the MAXBFRU value on the HOST definition statement when the link station for the channel is activated automatically. This is because the value is determined by the RNAME operand when the NCP is activated.

Recommendation: The MAXBFRU parameters on the LINE macroinstruction of the CA definition should contain the same value as the MAXBFRU specified on the HOST macroinstruction in the NCP major node definition.

The GROUP Definition Statement

This GROUP definition statement defines channel-to-NCP links. It also carries other operands that “sift down” to following statements that do not explicitly override them. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

When you code LNCTL=NCP, it is not necessary for VTAM to have knowledge of the resources attached to the NCP. If a line is defined in more than one line group, only one group can be active.

Name	Definition Statement	Operands
name	GROUP	LNCTL = NCP [,CHANCON = COND UNCOND] ² [,ISTATUS = ACTIVE INACTIVE] ³ [,MAXBFPU = n] ¹ [,MAXDATA = size 65535] ² [,PUTYPE = 4] ² [,SPAN = spanname]

Notes:

1. You can code this operand in the GROUP or LINE statement to take advantage of the sift-down effect, although it is meaningful only for lines. See “The LINE Definition Statement” on page 93 for a description of this operand.
2. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See “The PU Definition Statement” on page 95 for a description of these operands.
3. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units. See “The LINE Definition Statement” on page 93 or “The PU Definition Statement” on page 95 for a description of this operand.

name

is the minor node name of the line group represented by this statement. This operand is required.

LNCTL = NCP

defines the following links as channel-to-NCP links. This operand is required.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

The LINE Definition Statement

Code one LINE definition statement for each channel-to-NCP link. The LINE statement defines to VTAM:

- The name for the link
- The channel unit address for the link
- Certain procedural options to be used for this line.

Name	Definition Statement	Operands
name	LINE	MAXBFRU = n [,ADDRESS = channel unit address] [,CHANCON = COND UNCOND] ¹ [,ISTATUS = ACTIVE INACTIVE] ² [,MAXDATA = n 65535] ¹ [,PUTYPE = 4] ¹ [,SPAN = spanname]

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See “The PU Definition Statement” on page 95 for a description of these operands.
2. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units. Refer either to this section or “The PU Definition Statement” on page 95 for a description of this operand.

name

is the minor node name of the link represented by this statement. This name is required.

Note: This channel-link definition may conflict with a channel-link name automatically-defined by VTAM if you attempt to have this channel definition and an automatically-defined channel link for the same channel unit address active at the same time. (A channel link is defined automatically if an NCP is activated and a CUADDR value is included on its PCCU statement, or if the operator issues a VARY ACT command with U=channel unit address.) The second activation (either this definition or the automatic definition) will fail. For more information on SDLC and channel-link names, see *Network Program Products Planning*.

MAXBFRU = n

defines the number of buffers to be set aside by the host for receiving data from the NCP. This operand has the same meaning as the MAXBFRU operand on the HOST definition statement in the NCP major node. The minimum value for MAXBFRU is 1; the maximum value is 255.

ADDRESS = channel unit address

is the channel unit address of the channel-attached NCP. If the ADDRESS operand is omitted, the VTAM operator must supply the channel unit address by using the U operand of the VARY ACT command. (See *VTAM Operation* for details on using the U operand.)

Channel-Attachment Major Node: LINE for NCP

ISTATUS = ACTIVE|INACTIVE

determines whether the line is to be activated after the first activation of the channel-attachment major node. It provides a “sifting” value for the PU statement following this line.

When ISTATUS=ACTIVE is coded or assumed by default, this line is activated as part of the major node activation. If ISTATUS=INACTIVE is coded, this line is left inactive after the first activation of an inactive major node that contains this line. Later activations of an already active major node activate all the lines not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

The PU Definition Statement

Code one PU definition statement for each LINE statement.

Name	Definition Statement	Operands
name	PU	[CHANCON = COND UNCOND] [, ISTATUS = ACTIVE INACTIVE] ¹ [, MAXDATA = n 65535] [, PUTYPE = 4] ¹ [, SPAN = spanname]

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units. See "The LINE Definition Statement" on page 93 for a description of this operand as it applies to lines. A description of this item is also included in this section.

name

is the minor node name of the physical unit represented by this statement. This operand is required.

CHANCON = **COND**|UNCOND

tells VTAM whether to send a conditional or an unconditional channel Contact request to the NCP when the host wishes to activate an NCP over a channel.

If you omit CHANCON, or if CHANCON=COND, VTAM allows the NCP to reject the host's Contact request if the host's subarea number is already in use by another host (attached to another of the NCP's channels). This results if duplicate subareas are assigned to more than one host (attached to more than one channel interface). Two hosts may have accidentally been assigned the same number, or they may have been assigned duplicate numbers to allow mutual backup capabilities.

If you code CHANCON=UNCOND, VTAM sets an indicator in the channel Contact request that forces the NCP to accept the Contact request regardless of whether a host, with that subarea number, is currently channel-attached to that NCP. If another host with the same subarea number is channel-attached to the NCP, the NCP breaks contact with the host on the other channel.

ISTATUS = **ACTIVE**|INACTIVE

determines whether the physical unit is to be activated after the first activation of the channel-attachment major node.

When ISTATUS=ACTIVE is coded or assumed by default, this physical unit is activated automatically when the line to which it is attached is activated. If ISTATUS=INACTIVE is coded, this physical unit is left inactive after the first activation of an inactive major node that contains the LINE for this physical unit. Later activations of an already active major node activate all the lines not previously active and their physical units (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

Channel-Attachment Major Node: PU for NCP

MAXDATA = n|65535

is the maximum amount of data in bytes, including the transmission header (TH) and the request/response header (RH), that the NCP can receive in one segment of a path information unit (PIU). The MAXDATA size should, if possible, be equal to the size of the largest PIU the network will handle, but should not exceed the size of MVS VM the IOBUF buffer pool, VSE the VFBUF buffer pool. It also should not exceed the product of the MAXBFRU and UNITSZ values for the NCP. If a MODIFY LOAD command will be issued for a local or remote NCP, the size of MAXDATA must be at least 2048 plus the size of the TH and the RH. The default is the maximum size of 65535 bytes.

This operand applies only to the PCCU definition statement for a channel-attached NCP. However, the MAXDATA value should also not exceed the capacities of any link-attached NCPs or of any cross-domain NCPs. An SNA path error can result if the MAXDATA value exceeds the capacities of the NCPs along the route of a PIU.

Note: If you are **not** defining the channel to the NCP in a channel-attachment major node, code the MAXDATA operand on the PCCU definition statement. Otherwise, code it on the PU statement.

PUTYPE = 4

is the physical unit type. PUTYPE=4 is the only valid value and is also the default.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM Defining SDLC and BSC Communication Adapter Line Support

VSE VM The GROUP Statement for a CA SDLC Nonswitched Line Group

This GROUP statement defines an SDLC nonswitched line group. It also carries other operands that “sift down” unless you code PU and LU statements to override them explicitly.

If a line is defined in more than one line group, only one of the groups can be active at a time.

Name	Definition Statement	Operands
name	GROUP	LNCTL = SDLC [,ACTIVTO = t] ¹ [,DIAL = NO] [,DISCNT = ([YES NO] [,F NF])] ² [,DLOGMOD = default logmode entry name] ³ [,ISTATUS = ACTIVE INACTIVE] ⁴ [,LOGAPPL = controlling primary LU] ³ [,LOGTAB = interpret table name] ³ [,MAXBFRTU = ([norm 1 2][,max 2 8])] ¹ [,MAXDATA = size 261 265] ² [,MAXOUT = n 1] ² [,MODETAB = logon mode table name] ³ [,PACING = n 0 1] ³ [,PASSLIM = n maxout] ² [,PAUSE = t 0.1] ¹ [,PUTYPE = 1 2 4 5] ² [,REPLYTO = n 1] ¹ [,RETRIES = n 7] ² [,SERVLIM = n 4] ¹ [,SPAN = spanname] [,SSCPFM = FSS USSSCS] ³ [,USSTAB = USS definition table name] ³ [,VPACING = n 0 2] ³

Notes:

1. You can code these operands in the GROUP or LINE statement to take advantage of the sift-down effect, although they are meaningful only for lines. See “VSE VM The LINE Statement for a CA SDLC Nonswitched Line” on page 99 for a description of these operands.
2. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See “VSE VM The PU Statement for a Physical Unit on a CA SDLC Nonswitched Line” on page 102 for a description of these operands.
3. You can code these operands in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. See “VSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line” on page 107 for a description of these operands.

Channel-Attachment Major Node: GROUP for CA SDLC Nonswitched

4. You can code this operand in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although it is meaningful only for lines, physical units, and logical units. See “vSE VM The LINE Statement for a CA SDLC Nonswitched Line” on page 99, “vSE VM The PU Statement for a Physical Unit on a CA SDLC Nonswitched Line” on page 102, or “vSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line” on page 107 for a description of this operand.

You can code these operands on the GROUP definition statement. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

name

is the minor node name of the line group represented by this statement. This operand is required.

LNCTL = SDLC

means that the group contains synchronous data link control (SDLC) lines. A line group may contain lines of only one type.

DIAL = NO

means that the lines in the group do not require switched line control protocols.

Note: SDLC nonswitched lines that have switched network backup capability should be defined as DIAL = NO.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM The LINE Statement for a CA SDLC Nonswitched Line

Code one LINE statement for each SDLC nonswitched line. The LINE statement defines to VTAM:

- The name of the line
- The channel unit address for the line
- Certain procedural options to be used for this line.

Name	Definition Statement	Operands
name	LINE	[ADDRESS = channel unit address 030] [,ACTIVTO = t] [,DISCNT = ([YES NO] [,F NF])]¹ [,DLOGMOD = default logmode entry name]² [,ISTATUS = ACTIVE INACTIVE]³ [,LOGAPPL = controlling primary LU]² [,LOGTAB = interpret table name]² [,MAXBFRU = ([norm 1 2][,max 2 8])]² [,MAXDATA = size 261 265]¹ [,MAXOUT = n 1]¹ [,MODETAB = logon mode table name]² [,PACING = n 0 1]² [,PASSLIM = n maxout]¹ [,PAUSE = t 0.1] [,PUTYPE = 1 2 4 5]¹ [,REPLYTO = n 1] [,RETRIES = n Z]¹ [,SERVLIM = n 4] [,SPAN = spanname] [,SSCPFM = FSS USSSCS]² [,USSTAB = USS definition table name]² [,VPACING = n 0 2]²

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for physical units. See “VSE VM The PU Statement for a Physical Unit on a CA SDLC Nonswitched Line” on page 102 for a description of these operands.
2. You can code these operands in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. See “VSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line” on page 107 for a description of these operands.
3. You can code this operand in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although it is meaningful only for lines, physical units, and logical units. Refer either to this section, “VSE VM The PU Statement for a Physical Unit on a CA SDLC Nonswitched Line” on page 102, or “VSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line” on page 107 for a description of this operand.

You can code these operands in the LINE definition statement. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

Channel-Attachment Major Node: LINE for CA SDLC Nonswitched

name

is the minor node name of the communication line represented by this statement. This operand is required.

ADDRESS = cua|030

is the channel unit address for the SDLC nonswitched line represented by this LINE statement. The defined address can be overridden by the U operand of the VARY ACT command.

ACTIVTO = t

is the interval that the communication adapter waits without detecting an SDLC frame from another domain's NCP (PUTYPE=4) or from another VTAM with a communication adapter (PUTYPE=5). After this interval, the communication adapter signals a time-out error to VTAM (SDLC nonproductive receive time-out).

t

is the interval in seconds. The valid range is 1 – 255.

ACTIVTO is defaulted to 60 seconds unless you code REPLYTO. When you code REPLYTO, ACTIVTO is defaulted to a value that is equal to ten times the REPLYTO value.

ISTATUS = ACTIVE|INACTIVE

determines whether the line is to be activated after the first activation of the channel-attachment major node. It provides a “sifting” value for the PU and LU statements following this line.

When ISTATUS=ACTIVE is coded or assumed by default, this line is activated as part of the major node activation. If ISTATUS=INACTIVE is coded, this line is left inactive after the first activation of an inactive major node that contains this line. Later activations of an already active major node activate all the lines not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXBFRU = ([norm|1|2] [,max|2|8])

is the number of buffers VTAM uses whenever it starts a normal channel program.

norm|1|2

is the number of buffers VTAM uses whenever it reads data from the line. The value of *norm* should be somewhat larger than that required for the average data transfer; if *norm* can hold the data, the path through VTAM is shorter than if more than *norm*, but fewer than *max*, buffers are required.

The default for *norm* is 1 for type 1 and 2 physical units and 2 for type 4 and 5 physical units.

max|2|8

is the maximum number of buffers VTAM uses to read data from the line. The value for *max* must allocate enough buffers to hold the largest PIU that can be received over this line. If you do not code *max*, it defaults to 2 for type 1 and 2 physical units and to 8 for type 4 and 5 physical units.

Note: For PU type 4 and 5 lines, the value should be large enough to hold the largest PIU which can be received times the number of PIUs which can be received on this line before a response is requested.

Channel-Attachment Major Node: LINE for CA SDLC Nonswitched

PAUSE = t|0.1

is the interval that the communication adapter waits after completing a normal (data) poll cycle before signaling completion if all stations respond negatively (no data to send).

t

is the interval in seconds and tenths of seconds. The valid range is 0–25.5 seconds.

Note: This operand is not valid for a line associated with a type 4 physical unit.

REPLYTO = t|1.0

is the reply time-out value for the line when operating as the primary station. If the communication adapter has not received a response to poll from the secondary station at the expiration of this interval, it notifies VTAM that a time-out error has occurred (idle detect timeout). VTAM retries the poll, select, or text-write up to the limit defined by RETRIES.

t

is the time-out value, expressed in seconds or seconds and tenths of seconds. The valid range is 0.1–25.5 seconds.

SERVLIM = n|4

is the ratio of data-poll cycles to contact-poll cycles. For example, how many times each active physical unit on the line is asked to send information before attempting to contact additional physical units.

n

n is an integer 0–255. For guidance as to appropriate values, consult the relevant publication for that device.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Channel-Attachment Major Node: PU for CA SDLC Nonswitched

VSE VM The PU Statement for a Physical Unit on a CA SDLC Nonswitched Line

Code one PU statement for each physical unit of any type (1, 2, 4, or 5) with which VTAM communicates over this nonswitched SDLC link.

The PU statement defines:

- The resource name for the physical unit
- The SDLC station address of the physical unit
- The physical unit type (1, 2, 4, or 5)
- The maximum size of a PIU or PIU segment that VTAM sends to the physical unit
- The maximum number of path information units (PIUs) or PIU segments VTAM sends to the physical unit before requesting a response from the unit
- The maximum number of consecutive PIUs or PIU segments VTAM sends to the physical unit before servicing other physical units on the link
- The number of error recovery attempts VTAM makes when transmission errors occur
- The subarea address of the physical unit (types 4 and 5 only).

VTAM uses the PU statement to define the link station for an adjacent host processor (physical unit type 5) or communication controller (physical unit type 4).

Code one and only one PU definition statement for each LINE statement if PUTYPE=4 or PUTYPE=5 is specified on the PU definition statement.

Name	Definition Statement	Operands
name	PU	ADDR = char [,DISCNT = ([YES NO] [,F NF])]

[,DLOGMOD = default logmode entry name]¹
 [,ISTATUS = **ACTIVE**|INACTIVE]²
 [,LOGAPPL = controlling primary LU]¹
 [,LOGTAB = interpret table name]¹
 [,MAXDATA = size|**261**|**265**]
 [,MAXOUT = n|**1**]
 [,MODETAB = logon mode table name]¹
 [,PACING = n|0|**1**]¹
 [,PASSLIM = n|**maxout**]
 [,PUTYPE = 1|**2**|4|5]
 [,RETRIES = n|**7**]
 [,SPAN = spanname]
 [,SSCPFM = **FSS**|USSSCS]¹
 [,SUBAREA = n]
 [,TADDR = chars|**C1**]
 [,USSTAB = USS definition table name]¹
 [,VPACING = n|0|**2**]¹

Notes:

1. You can code these operands in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. See “vSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line” on page 107 for a description of these operands.
2. You can code this operand in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although it is meaningful only for lines, physical units, and logical units. Refer either to this section, “vSE VM The LINE Statement for a CA SDLC Nonswitched Line” on page 99, or “vSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line” on page 107 for a description of this operand.

You can code these operands in the PU definition statement. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

name

is the minor node name of the physical unit represented by this statement. This operand is required.

ADDR = char

is the physical unit’s SDLC address.

char

is the 2-digit hexadecimal SDLC station address. This address must be unique for each physical unit on the same line. The valid range is hexadecimal 01 – FE. Consult the relevant device publication for guidance in assigning this value.

Example: If the station address of a 3601 is C1, code ADDR=C1 on the PU definition statement.

Channel-Attachment Major Node: PU for CA SDLC Nonswitched

Note: This operand is required for PU types 1 and 2. If you code PUTYPE=5, ADDR defaults to C1; you do not have to give any other value for a PU type 5 because the default (hex C1) always works.

DISCNT = ([YES|NO] [,F|NF])

YES|NO

tells VTAM whether to terminate its SSCP-PU and SSCP-LU sessions when the last associated LU-LU session (application program-to-logical unit session) is terminated.

YES

tells VTAM to automatically terminate the SSCP-PU and SSCP-LU sessions as soon as the last logical unit-to-application program (LU-LU) session is terminated. If any of the logical units request their own session termination, VTAM ignores the HOLD part of a character-coded logoff or the LAST-NOTLAST part of a field-formatted Terminate Self request. VTAM also rejects any attempt made by the physical unit to terminate its own SSCP session with a Request Discontact request. Before the physical unit and its logical units can be used again, they must be reactivated by the domain operator.

NO

tells VTAM to terminate the SSCP-PU and SSCP-LU sessions when one of the following conditions is met:

- VTAM receives a Request Discontact normal request from the physical unit. VTAM allows any LU-LU sessions associated with that physical unit to terminate normally.
- VTAM receives a Request Discontact immediate request from the physical unit. VTAM immediately terminates any existing LU-LU sessions associated with that physical unit. This request overrides any previous Request Discontact normal request from the physical unit.
- All LU-LU sessions have been terminated as a result of a character-coded logoff with HOLD=NO, a Terminate Self request with LAST specified, or a VARY INACT command. If any LU-LU sessions were terminated by any other means (for example, by an application program CLSDST macroinstruction), the SSCP-PU and SSCP-LU sessions are not terminated.

F|NF

determines whether VTAM is to indicate “final-use” status in the DACTPU request unit when it deactivates a physical unit as a result of DISCNT=YES. This operand does not apply when DISCNT=NO, nor does it have any effect on the VARY INACT command. If you code F or take the default, “final-use” status is indicated and the physical connection may be broken. If you code NF, “not-final-use” status is indicated and the physical connection should not be broken. Each device has its own requirements regarding “final-use” status. To determine whether to code F or NF for a given device, consult the appropriate installation publication for the device.

ISTATUS = ACTIVE|INACTIVE

determines whether the physical unit is to be activated after the first activation of the channel-attachment major node. Also provides a “sifting” value for the LU statements following this PU statement.

Channel-Attachment Major Node: PU for CA SDLC Nonswitched

When ISTATUS=ACTIVE is coded or assumed by default, this physical unit is activated automatically when the line to which it is attached is activated. If ISTATUS=INACTIVE is coded, this physical unit is left inactive after the first activation of an inactive major node that contains the LINE for this physical unit. Later activations of an already active major node activate all the lines not previously active and their physical units (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXDATA = size|261 (for PU type 1)|265 (for PU type 2)

is the maximum number of bytes that the physical unit can receive in one PIU or PIU segment. A PIU includes data and both the transmission header and the request/response header.

size is an integer 5 – 65535.

To determine the maximum PIU (or PIU segment) size that the physical unit can receive, consult the publications for the specific type of SDLC station represented by this PU statement. This value varies with the device; for example, the 3276 requires MAXDATA = 262.

The maximum amount of user data that VTAM sends to the physical unit in one PIU is the value of MAXDATA minus 5 bytes (for a PU type 1) or minus 9 bytes (for a PU type 2). (These subtracted values represent the lengths of the request/response header [always 3 bytes] and the transmission header [either 2 bytes for a PU type 1 or 6 bytes for a PU type 2].)

MAXOUT = n|1

is the maximum number of PIUs (or PIU segments if the session parameters allow segmenting of data) that VTAM sends to the physical unit represented by this statement before requesting a response.

For performance reasons it is recommended that you code MAXOUT=7 if the physical unit represented by this statement can handle more than one PIU before sending out a link-level response (consult publications for the specific type of SDLC station).

n is an integer 1 – 7.

PASSLIM = n|maxout

is the maximum number of consecutive PIUs or PIU segments VTAM will send at one time to the physical unit represented by this PU statement.

n is an integer 1 – 254.

If you omit PASSLIM or code it incorrectly, the value of MAXOUT is used.

PUTYPE = 1|2|4|5

is the physical unit type constituting the SDLC station represented by this PU definition statement:

- 1**
an SNA terminal
- 2**
an SNA cluster controller
- 4**
another domain's NCP in a communication controller

5

another domain's VTAM and a communication adapter.

VTAM allows PUTYPE=1 and PUTYPE=2 stations to be intermixed on the same multipoint line. PUTYPE=4 and PUTYPE=5 stations are supported only on point-to-point (single station) lines.

RETRIES = n|z

is the number of times VTAM tries to recover from errors that occur during transmission to or from the physical unit represented by this PU statement.

n is an integer 0 – 255.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SUBAREA = n

is the subarea address assigned to another domain's NCP (PUTYPE=4) or to another domain's VTAM (PUTYPE=5), whichever is represented by this PU statement.

n is an integer 1 – 255. This value must be the same as the subarea address defined for this physical unit in other domains of the network.

VTAM uses the subarea value to determine the primary of two type 5 physical units; the one with the highest subarea is always primary. (In a connection through a communication adapter, VTAM is always secondary to an NCP, a PU type 4.)

TADDR = char|C1

is the SDLC station address to use when VTAM is acting as a secondary station to a PU type 4 (an NCP). This operand is valid only on a PU definition statement for a type 4 physical unit.

char

is the 2-digit hexadecimal SDLC station address.

VSE VM The LU Statement for a Logical Unit on a CA SDLC Nonswitched Line

Code one LU statement for each logical unit associated with an SDLC station (type 1 or 2 physical unit) attached to a nonswitched SDLC line.

The LU statement defines:

- The resource name for the logical unit
- The local address for the logical unit
- Use of the pacing option.

You must have a separate LU definition statement for each logical unit associated with a PU type 1 or 2 on a nonswitched line. LU statements immediately follow the PU statement for the physical unit with which they are associated.

The MODIFY TABLE operator command lets you dynamically replace USS (USSTAB), logon mode (MODETAB), and interpret (LOGTAB) tables (V3R2 only). See *VTAM Operation*. If you want to use the MODIFY TABLE command against a given USS or interpret table, you must reassemble that table using the VTAM V3R2 macroinstruction definition libraries.

Name	Definition Statement	Operands
name	LU	LOCADDR = n [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] ¹ [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]

Notes:

1. You can code this operand in the GROUP, LINE, PU, or LU statement to take advantage of the sift-down effect, although it is meaningful only for lines, physical units, and logical units. Refer either to this section, “VSE VM The LINE Statement for a CA SDLC Nonswitched Line” on page 99, or “VSE VM The PU Statement for a Physical Unit on a CA SDLC Nonswitched Line” on page 102 for a description of this operand.

name

is the minor node name of the logical unit represented by this statement. This operand is required.

LOCADDR = n

is the local address (a decimal integer, without leading zeros) of the logical unit. The valid range of addresses for logical units associated with a PU type 1 is 0–63; for logical units associated with a PU type 2, the valid range is 1–255.

Note: The value of LOCADDR depends upon the requirements of the device being defined. Consult the appropriate component description manual for these restrictions; for example, logical units associated with a 3279 or 3276 control unit must have a LOCADDR in the range 2–33.

Channel-Attachment Major Node: LU for CA SDLC Nonswitched

DLOGMOD = default logon mode table entry name

is the name of the logmode entry to be used by default if one is not otherwise provided. If this operand is not coded and the name of a logmode entry is not otherwise provided, the first entry in the applicable logmode table (given on the MODETAB operand or defaulted) is used by default. If MODETAB is specified, the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM.

ISTATUS = ACTIVE|INACTIVE

determines whether this logical unit is to be automatically activated when the physical unit is activated.

When ISTATUS=ACTIVE is coded or assumed by default, this logical unit is activated automatically when the physical unit to which it is attached is first activated. If ISTATUS=INACTIVE is coded, this logical unit is left inactive after the first activation of its major node. Later activations of an already active major node activate all logical units not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LOGAPPL = controlling primary LU

identifies the name of the primary LU as known in the network of the secondary LU onto which this SLU is to be logged automatically when this SLU is activated. The name specified may also be a USERVAR that will be resolved into its current value before being used to establish or redrive the session with the controlling primary LU. The LOGAPPL operand is a convenient way of establishing sessions.

If you do not code LOGAPPL, logons are initiated via the USS facilities by the terminal operator, a request from an independent LU, an application program, a VARY LOGON issued in behalf of this LU, or the domain operator.

Starting with VTAM V3R1.1, this automatic logon definition can be cancelled at any time with the VARY NOLOGON command. However, upon inactivation and reactivation of the major node, the controlling relationship would again take effect.

Note: You should be aware that when you VARY LOGON to TSO, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I is issued repeatedly with sense 0821 indicated. To stop this, you must break the automatic logon relationship.

Note: You should not specify the NetView program as the application program on the LOGAPPL operand, as results are unpredictable in recovery scenarios.

For more information on establishing sessions, see *Network Program Products Planning*.

LOGTAB = interpret table name

is the name of an interpret table to be used by VTAM when processing logons originating from the logical unit. See *VTAM Customization*.

MODETAB = logon mode table

is the name of a logon mode table to be used for the LU. The name you code for the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*.

If you do not name a logon mode table for a logical unit by the MODETAB operand, an IBM-supplied logon mode table (ISTINCLM) is used.

PACING = n|0|1

determines how the flow of data is to be paced from VTAM (the boundary node) to the secondary logical unit. For more information on pacing, see *VTAM Customization*.

n

determines how many normal-flow requests VTAM is to send for a given LU-LU session before waiting for a pacing response. No further normal-flow requests can be sent to the logical unit until the logical unit is ready to receive more requests.

n is a decimal integer 1 – 255.

0

means that no pacing is to be performed for sessions with the logical unit.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SSCPFM = FSS|USSSCS

determines whether the logical unit uses formatted commands (FSS) or character-coded commands (USSSCS) when communicating with the SSCP.

See the publications for each individual device to determine whether formatted or character-coded commands are supported by that device.

USSTAB = USS definition table name

is the name of a USS definition table that is created as described in *VTAM Customization*. If you do not code USSTAB, an IBM-supplied USS definition table (ISTINCDT) is searched when character-coded input is received by VTAM from a logical unit.

VPACING = n|0|2

Determines how the flow of data is to be paced between the primary logical unit and VTAM's boundary function (2-stage pacing). For more information on pacing, see *VTAM Customization*.

n

determines how many normal-flow requests the primary logical unit is to send for a given LU-LU session before waiting for a pacing response. No further normal-flow requests can be sent to the logical unit until VTAM's boundary function is ready to receive more requests.

n is a decimal integer 1 – 63.

0

means that no pacing is to be performed for sessions with the logical unit; that is, VTAM will not wait for a pacing response.

vse vm The GROUP Statement for an SDLC Switched Line Group

This GROUP statement defines an SDLC switched line group; it also carries other operands that “sift down” to following statements that do not explicitly override them.

If a line is defined in more than one line group, only one of the groups can be active.

Name	Definition Statement	Operands
name	GROUP	LNCTL = SDLC ,DIAL = YES [,ACTIVTO = t] ¹ [,ANSWER = ON OFF] ¹ [,AUTODL = YES NO] ¹ vSE [,CALL = IN OUT INOUT] ¹ [,DIALNO = telephone number] vSE ⁴ [,ISTATUS = ACTIVE INACTIVE] ² [,MAXBFRU = ([norm 1 2 ,max 2 8])] ¹ [,MAXLU = n 2] ³ [,PAUSE = t 0.1] ¹ [,REPLYTO = t 1] ¹ [,RETRIES = n 7] ¹ [,RETRYTO = t 12] ¹ vSE [,SERVLIM = n 4] ¹ [,SHOLD = NO (free,npoll)] vSE ⁴ [,SPAN = spanname] [,SUBADIAL = YES NO] (v3R1.2 and later) [,X21SW = YES NO] vSE

Notes:

1. You can code these operands in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although they are meaningful only for lines. See “vse vm The LINE Statement for an SDLC Switched Line” on page 113 for a description of these operands.
2. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units. See “vse vm The LINE Statement for an SDLC Switched Line” on page 113, or “vse vm The PU Statement for a Physical Unit on an SDLC Switched Line” on page 117 for a description of this operand.
3. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for physical units. See “vse vm The PU Statement for a Physical Unit on an SDLC Switched Line” on page 117 for a description of this operand.
4. vSE For x.21 short-hold mode/multiple port sharing (SHM/MPS) feature.

You can code these operands in the GROUP definition statement. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

name

is the minor node name of the line group represented by this statement. This operand is required.

LNCTL = SDLC

means that the group contains synchronous data link control (SDLC) lines. A line group may contain lines of only one type.

DIAL = YES

means that the lines in the group require switched line control protocols.

DIALNO = telephone number VSE

is the telephone number (in EBCDIC) used to initiate a connection with a physical unit over a switched link. You can insert special characters in the number according to the following rules:

- You can insert as many vertical bars (“|”; X'FA') as you need to denote dialing pauses.
- For separator characters, use underscores (“_”; X'6D') or vertical bars (“|”; X'FA').
- Some modems require end-of-number characters. For end-of-number characters, use asterisks (“*”; X'5C'), percent signs (“%”; X'6C'), or at-signs (“@”; X'7C'). For example, you could code DIALNO=8_5799*, where “_” is the separator character and “*” is the end-of-number character.
- The maximum length of the operand is 32 characters including vertical bars, the separator character, and the end-of-number character.

For more information on this operand, refer to *NCP Resource Definition Reference*.

For auto call (address call), x.21 switched lines always require a unique end-of-number character which must follow the dial digits. Do not code the required end-of-number character after the telephone number on the DIALNO operand because VTAM supplies it.

For x.21 lines, the *abbreviated address call* facility lets you use a shorter number instead of the full telephone number. Coding an abbreviated number is like coding a full number except that a period (X'4B') must **precede** the abbreviated number.

For example, suppose the common carrier facility defined the number 27 as the abbreviated number for the telephone number 555-1235.

Instead of coding:

```
P1 PATH DIALNO=5551235 FULL DIAL ADDRESS FOR GROUP G1
```

you would code:

```
P1 PATH DIALNO=.27 ABBREVIATED DIAL ADDRESS FOR GROUP G1
```

For x.21 lines, the *closed user group* facility lets you limit the number of physical units that can call or be called on a particular x.21 line. When you have defined the line to a switched physical unit as a member of a closed user group, that physical unit can call and be called only by other members of the group. For information on format requirements for closed user group numbers, contact your common carrier facility.

DIALNO is required if SHOLD is coded.

For more information on x.21 switched line features, see *General Information: X.21 Interface Features*.

Channel-Attachment Major Node: GROUP for CA SDLC Switched

SHOLD = NO|(free,npoll) VSE

tells VTAM whether this group is an X.21 short-hold mode/multiple port sharing (SHM/MPS) group. (X.21 short hold mode/multiple port sharing is a feature available with VTAM V3R1 and after.)

SHOLD=NO is the default and means this group is not an SHM/MPS group.

SHOLD=(free,npoll) means this group is an SHM/MPS group and defines default values for the lines in the group. These values mean:

free is the free period, in seconds, after dial completion. It is a decimal number 0.1–3276.7.

npoll is the nonproductive polling count. It is a decimal number 1–32767.

If you code SHOLD=(free,npoll), you must also code X21SW=YES, AUTODL=YES and DIALNO= *telephone number*. You may allow AUTODL to default to YES.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SUBADIAL = YES|NO

tells VTAM whether the lines in the group are used for switched subarea connections. If SUBADIAL=YES, every line in the group is a switched subarea line. The default is NO.

Note: For switched subarea connections, you must code either AUTO=ADDRESS (for non-X.21 lines) if CALL=OUT or CALL=INOUT, or AUTODL=YES (for X.21 lines, YES is the default.)

This is a new operand for switched subarea connections.

X21SW = YES|NO VSE

Tells VTAM whether the lines in the group are X.21 switched lines. If X21SW=YES, every line in the group is an X.21 switched line. You must set this operand to YES if X.21 short hold mode is activated. (X.21 short hold mode/multiple port sharing is a feature available with VTAM V3R1, V3R2 only). X21SW=NO is the default.

VSE VM The LINE Statement for an SDLC Switched Line

Code one LINE statement for each SDLC switched line. The LINE statement defines to VTAM:

- The name of the line
- The channel unit address of the line
- Certain procedural options to be used for this line.

Name	Definition Statement	Operands
name	LINE	[ACTIVTO = t] [,ADDRESS = channel unit address 030] [,ANSWER = ON OFF] [,AUTO = address] [,AUTODL = YES NO] vse ³ [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] ² [,MAXBFRU = ([norm 1 2][,max 2 8])] ⁴ [,MAXLU = n 2] ¹ [,PAUSE = t 0.1] [,REPLYTO = t 1] [,RETRIES = n 7] [,RETRYTO = t 12] vse ³ [,SERVLIM = n 4] [,SPAN = spanname]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for physical units. See "VSE VM The PU Statement for a Physical Unit on an SDLC Switched Line" on page 117 for a description of this operand.
2. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units. Refer either to this section, or "VSE VM The PU Statement for a Physical Unit on an SDLC Switched Line" on page 117 for a description of this operand.
3. For VSE x.21 short hold mode/multiple port sharing feature.
4. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for physical units. Its explanation appears in the LINE statement description.

You can code these operands in the LINE definition statement. See "Sift-Down Effect in VTAM Definition Statements" on page 64 for more information.

name

is the minor node name of the communication line represented by this statement. This operand is required.

ACTIVTO = t

determines how long the telecommunications subsystem or communication adapter waits without detecting an SDLC frame from another domain's NCP (PUTYPE=4) or from another VTAM with a subsystem or adapter (PUTYPE=5). After this interval, the subsystem or adapter signals a time-out error to VTAM (SDLC nonproductive receive time-out).

Channel-Attachment Major Node: LINE for CA SDLC Switched

t

is the interval in seconds. The valid range is 1 – 255.

ACTIVTO is defaulted to 60 seconds unless you code REPLYTO. When you code REPLYTO, ACTIVTO is defaulted to a value that is equal to ten times the REPLYTO value.

ADDRESS = channel unit address|030

is the channel unit address for the SDLC switched line represented by this LINE statement. The defined address can be overridden by the U operand of the VARY ACT command.

ANSWER = ON|OFF

determines whether physical units can dial in to VTAM. If ANSWER=ON (the default), physical units can dial in to VTAM when the line is activated. If ANSWER=OFF, the physical units cannot dial in to VTAM, regardless of the active-inactive status of the line. The answer state of the line can be altered after activation by a VARY ANS command.

AUTO = address

is the presence of an automatic calling unit (autocall unit) for this line. The address of the autocall unit is the same as the address of the line.

This operand is required if the line is a non-X.21 switched subarea connection and CALL=OUT or CALL=INOUT has been specified.

AUTODL = YES|NO VSE

tells VTAM whether an X.21 switched interface with the direct call facility accepts dial digits for outgoing calls:

- If the direct call facility is provided on a **per-call** basis, code AUTODL=YES (the default).
- If the X.21 switched interface function is being used, code AUTODL=YES.
- If the direct call facility is provided on a **subscription** basis, code AUTODL=NO.

VTAM uses this information to avoid using a line that does not accept dial digits (AUTODL=NO) when a switched path statement is defined with dial digits.

This operand must be set to YES if you coded SHOLD=(free,npoll) on the GROUP statement for this line or if you coded SUBADIAL=YES and X21SW=YES on the GROUP statement for this line.

CALL = IN|OUT|INOUT

determines whether stations, or VTAM, or both, can initiate calls over the line represented by this LINE statement.

If the line is to be used only for incoming calls (the stations call VTAM), code CALL=IN, which is the default. If the line is to be used only for outgoing calls (VTAM calls the physical unit), call CALL=OUT. If the line is to be used for both incoming and outgoing calls, code CALL=INOUT.

VSE If X.21 short hold mode is activated, you must code CALL=INOUT. (X.21 short hold mode/multiple port sharing is a feature available with VTAM V3R2 only.)

If you code CALL=OUT or CALL=INOUT for a non-X.21 switched subarea line, the AUTO operand is required.

This operand is valid only if DIAL=YES on the GROUP statement, and applies only to line operation in network control mode.

ISTATUS = ACTIVE|INACTIVE

determines whether the line is to be activated after the first activation of the channel-attachment major node. It provides a “sifting” value for the PU statement following this line.

When ISTATUS=ACTIVE is coded or assumed by default, this line is activated as part of the major node activation. If ISTATUS=INACTIVE is coded, this line is left inactive after the first activation of an inactive major node that contains this line. Later activations of an already active major node activate all the lines not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXBFRU = ([norm|1|2] [,max|2|8])

is the number of buffers VTAM will use whenever it starts a normal channel program.

norm|1|2

is the number of buffers VTAM will use whenever it reads data from the line. The value of *norm* should be somewhat larger than that required for the average data transfer; if *norm* can hold the data, the path through VTAM is shorter than if more than *norm*, but fewer than *max*, buffers are required.

The default for *norm* is 1 for type 1 and 2 physical units and 2 for type 4 and 5 physical units.

max|2|8

is the maximum number of buffers VTAM will use to read data from the line. The value for *max* must allocate enough buffers to hold the largest PIU that can be received over this line. If you do not code *max*, it defaults to 2 for type 1 and 2 physical units and to 8 for type 4 and 5 physical units.

PAUSE = t|0.1

determines how long the telecommunications subsystem or communication adapter waits after completing a normal (data) poll cycle before signalling completion if all stations respond negatively (no data to send).

t

is the interval in seconds and tenths of seconds. The valid range is 0–25.5 seconds.

Note: This operand is not valid for a line associated with a type 4 physical unit.

REPLYTO = t|1.0

is the reply time-out value for the line when operating as the primary station. If, at the expiration of this interval, the telecommunications subsystem or communication adapter has not received a response to poll from the secondary station, it notifies VTAM that a timeout error has occurred (idle detect time-out). VTAM retries the poll, select, or text-write up to the limit defined by RETRIES.

t

is the timeout value, expressed in seconds or in seconds and tenths of seconds. The valid range is 0.1–25.5 seconds.

RETRIES = n|7

determines how many times VTAM tries to recover from errors that occur during transmission on this line. *n* is an integer 0–255.

Channel-Attachment Major Node: LINE for CA SDLC Switched

RETRYTO = t|12 VSE

is the time interval that the telecommunication subsystem or communication adapter waits, after receiving a retrievable call process signal, before it presents the signal to VTAM. *t* is expressed in seconds and can be 0, 1, 3, 6, 12, 18, or 24. The default is 12 seconds.

This operand is valid only if you coded X21SW=YES on the GROUP statement for this line.

SERVLIM = n|4

is the maximum number of output operations (WRITES) that will be allowed before a polling operation is started.

n

n is an integer 0–255. The value selected for *n* is application dependent and must consider the amount of data sent with each output operation. As a guide, the value should allow a polling operation to occur, in order to solicit operator input, before subsequent output operations overwrite the 3270 screen.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM **The PU Statement for a Physical Unit on an SDLC Switched Line**

Code one PU statement under each line here. Code definitions for each PU that can connect via this line in a switched major node.

The PU statement defines:

- The resource name of the physical unit
- The maximum number of logical units to be associated with the physical unit.

Name	Definition Statement	Operands
name	PU	[I STATUS = ACTIVE INACTIVE] ¹ [,MAXLU = n 2] [,SPAN = spanname]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement to take advantage of the sift-down effect, although it is meaningful only for lines and physical units.

name

is the minor node name of the physical unit represented by this statement. This operand is required.

ISTATUS** = **ACTIVE**|**INACTIVE****

determines whether the physical unit is to be activated after the first activation of the channel-attachment major node. Also provides a “sifting” value for other minor nodes in this group.

When ISTATUS=ACTIVE is coded or assumed by default, a group is automatically activated when the channel-attachment major node to which it belongs is activated. If ISTATUS=INACTIVE is coded, this physical unit is left inactive after the first activation of an inactive major node that contains this PU. Later activations of an already active major node activate all the channel-attachment major nodes not previously active and their physical units (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXLU = n|2

is, for a type 1 or 2 physical unit on a switched line (DIAL=YES), the maximum number of logical units associated with the physical unit that can communicate with VTAM.

n is an integer 1 – 255.

Note: For a type 4 or 5 physical unit on a switched subarea connection, MAXLU is not applicable.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

vse vm The GROUP Statement for a BSC Line Group

This GROUP statement defines a BSC line group. It also carries other operands that “sift down” to following statements that do not explicitly override them.

If a line is defined in more than one line group, only one of the groups can be active.

Name	Definition Statement	Operands
name	GROUP	LNCTL = BSC [,CUTYPE = 3271 3275] ² [,DLOGMOD = default logmode entry name] ³ [,FEATUR2 = ([MODEL1 MODEL2] [,PRINTR NOPINTR])] ³ [,ISTATUS = ACTIVE INACTIVE] ⁴ [,LOGAPPL = controlling primary LU] ³ [,LOGTAB = interpret table name] ³ [,MODETAB = logon mode table name] ³ [,RETRIES = n Z] ¹ [,SERVLIM = n 4] ¹ [,SPAN = spanname] [,TERM = 3275 3277 3284 3286] ³ [,USSTAB = USS definition table name] ³

Notes:

1. You can code these operands in the GROUP or LINE statement to take advantage of the sift-down effect, although they are meaningful only for lines. See “vse vm The LINE Statement for a BSC Nonswitched Line” on page 120 for a description of these operands.
2. You can code this operand in the GROUP, LINE, or CLUSTER statement to take advantage of the sift-down effect, although it is meaningful only for clusters. See “vse vm The CLUSTER Statement for a BSC Cluster Controller” on page 122 for a description of this operand.
3. You can code these operands in the GROUP, LINE, CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although they are meaningful only for terminals. See “vse vm The TERMINAL Statement for a BSC Terminal” on page 125 for a description of these operands.
4. You can code this operand in the GROUP, LINE, CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although it is meaningful only for lines, clusters, and terminals. See “vse vm The LINE Statement for a BSC Nonswitched Line” on page 120, “vse vm The CLUSTER Statement for a BSC Cluster Controller” on page 122, or “vse vm The TERMINAL Statement for a BSC Terminal” on page 125 for a description of this operand.

You can code these operands in the GROUP definition statement. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

name

is the minor node name of the line group represented by this statement. This operand is required.

LNCTL = BSC

means that the group contains binary synchronous communication (BSC) lines. A line group may contain lines of only one type.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Channel-Attachment Major Node: LINE for CA BSC

VSE VM The LINE Statement for a BSC Nonswitched Line

Code one LINE statement for each BSC nonswitched line. The LINE statement defines to VTAM:

- The name of the line
- The channel unit address of the line
- Certain procedural options to be used for this line.

Name	Definition Statement	Operands
name	LINE	[ADDRESS = channel unit address 030] [,CUTYPE = 3271 3275] ¹ [,DLOGMOD = default logmode entry name] ² [,FEATUR2 = ([MODEL1 MODEL2] [,PRINTR NOPINTR])] ² [,ISTATUS = ACTIVE INACTIVE] ³ [,LOGAPPL = controlling primary LU] ² [,LOGTAB = interpret table name] ² [,MODETAB = logon mode table name] ² [,RETRIES = n 7] [,SERVLIM = n 4] [,SPAN = spanname] [,TERM = 3275 3277 3284 3286] ² [,USSTAB = USS definition table name] ²

Notes:

1. You can code this operand in the GROUP, LINE, or CLUSTER statement to take advantage of the sift-down effect, although it is meaningful only for clusters. See "VSE VM The CLUSTER Statement for a BSC Cluster Controller" on page 122 for a description of this operand.
2. You can code these operands in the GROUP, LINE, CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although they are meaningful only for terminals. See "VSE VM The TERMINAL Statement for a BSC Terminal" on page 125 for a description of these operands.
3. You can code this operand in the GROUP, LINE, CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although it is meaningful only for lines, clusters, and terminals. Refer either to this section, "VSE VM The CLUSTER Statement for a BSC Cluster Controller" on page 122, or "VSE VM The TERMINAL Statement for a BSC Terminal" on page 125 for a description of this operand.

You can code these operands in the LINE definition statement. See "Sift-Down Effect in VTAM Definition Statements" on page 64 for more information.

name

is the minor node name of the communication line represented by this statement. This operand is required.

ADDRESS = cua|030

is the channel unit address for the BSC line represented by this LINE statement. The defined address can be overridden by the U operand of the VARY ACT command.

ISTATUS = ACTIVE|INACTIVE

determines whether the line is to be activated after the first activation of the channel-attachment major node. It provides a “sifting” value for the CLUSTER and TERMINAL statements following this line.

When ISTATUS=ACTIVE is coded or assumed by default, this line is activated as part of the major node activation. If ISTATUS=INACTIVE is coded, this line is left inactive after the first activation of an inactive major node that contains this line. Later activations of an already active major node activate all the lines not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

RETRIES = n|7

determines how many times VTAM tries to recover from errors that occur during transmission to or from the physical unit represented by this LINE statement.

n is an integer 0–255.

SERVLIM = n|4

is the maximum number of output operations (WRITES) that will be allowed before a polling operation is started.

n

n is an integer 0–255. The value selected for *n* is application dependent and must consider the amount of data sent with each output operation. As a guide, the value should allow a polling operation to occur, in order to solicit operator input, before subsequent output operations overwrite the 3270 screen.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Channel-Attachment Major Node: CLUSTER for CA BSC

VSE VM The CLUSTER Statement for a BSC Cluster Controller

Code one CLUSTER statement for each BSC 3270 cluster controller on the line.

The CLUSTER statement defines:

- The resource name of the cluster controller
- The type of station
- The general polling character of the station
- Certain procedural options VTAM is to use when communicating with the station.

Name	Definition Statement	Operands
name	CLUSTER	GPOLL = char [,CUTYPE = 3271 3275] [,DLOGMOD = default logmode entry name] ¹ [,FEATUR2 = (MODEL1 MODEL2) [,PRINTR NOPINTR]] ¹ [,ISTATUS = ACTIVE INACTIVE] ² [,LOGAPPL = controlling primary LU] ¹ [,LOGTAB = interpret table name] ¹ [,MODETAB = logon mode table name] ¹ [,SPAN = spanname] [,SSCPFM = USS3275 USS3270] ³ [,TERM = 3275 3277 3284 3286] ¹ [,USSTAB = USS definition table name] ¹

Notes:

1. You can code these operands in the GROUP, LINE, CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although they are meaningful only for terminals. See "VSE VM The TERMINAL Statement for a BSC Terminal" on page 125 for a description of these operands.
2. You can code this operand in the GROUP, LINE, CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although it is meaningful only for lines, clusters, and terminals. Refer either to this section, "VSE VM The LINE Statement for a BSC Nonswitched Line" on page 120, or "VSE VM The TERMINAL Statement for a BSC Terminal" on page 125 for a description of this operand.
3. You can code these operands in the CLUSTER, or TERMINAL statement to take advantage of the sift-down effect, although they are meaningful only for terminals. See "VSE VM The TERMINAL Statement for a BSC Terminal" on page 125 for a description of these operands.

name

is the minor node name of the cluster controller represented by this statement. This operand is required.

GPOLL = char

is the general polling character assigned to the cluster controller.

char

is the 2-digit hexadecimal representation of a single EBCDIC polling character.

Channel-Attachment Major Node: CLUSTER for CA BSC

Refer to Figure 24 on page 124 to find the right value for GPOLL.

Example: If the controller address is A, code GPOLL=C1.

CUTYPE = 3271|3275

tells whether the controller of the station is a 3271 or 3275 BSC Controller.

Note: Code **3271** for a BSC 3274, 3276, or 5937 Controller. Code **3275** for a BSC 5275 Controller.

ISTATUS = ACTIVE|INACTIVE

determines whether this CLUSTER should be automatically activated when the line to which it is attached is activated. Also, it provides a “sifting” value for the TERMINAL statements following this CLUSTER.

When ISTATUS=ACTIVE is coded or assumed by default, this CLUSTER is activated automatically when the line to which it is attached is activated. If ISTATUS=INACTIVE is coded, this line is left inactive after the first activation of an inactive major node that contains this line. Later activations of an already activate major node activate all the lines not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Channel-Attachment Major Node: CLUSTER for CA BSC

If CU or Device Number is	CU or Device Address is	Code GPOLL = or ADDR =
0	SP ¹	40
1	A	C1
2	B	C2
3	C	C3
4	D	C4
5	E	C5
6	F	C6
7	G	C7
8	H	C8
9	I	C9
10	¢	4A
11	.	4B
12	<	4C
13	(4D
14	+	4E
15		4F
16	&	50
17	J	D1
18	K	D2
19	L	D3
20	M	D4
21	N	D5
22	O	D6
23	P	D7
24	Q	D8
25	R	D9
26	!	5A
27	\$	5B
28	*	5C
29)	5D
30	;	5E
31	┘	5F

¹ Address SP (GPOLL or ADDR = 40) is always used as the device address when selecting a 3275.

Figure 24. BSC 3270 General Polling (GPOLL) and Device Selection (ADDR) Characters

VSE VM The TERMINAL Statement for a BSC Terminal

Code one **TERMINAL** statement for each BSC terminal attached to a 3270 Cluster Controller.

The **TERMINAL** statement defines:

- The resource name of the terminal
- The type of terminal
- The terminal features
- The device address (device selection character) by which VTAM contacts the terminal (multipoint line control)
- Certain procedural options VTAM is to use when communicating with the terminal.

A printer attached to a 3275 is defined by coding the **FEATUR2=PRINTR** operand in the **TERMINAL** statement definition statement for the 3275, and not by coding a separate **TERMINAL** statement for the printer.

Name	Definition Statement	Operands
name	TERMINAL	ADDR = char , TERM = 3275 3277 3284 3286 [,DLOGMOD = default logmode entry name] [,FEATUR2 = (MODEL1 MODEL2) [,PRINTR NOPRINTR])] [,ISTATUS = ACTIVE INACTIVE] ¹ [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,SPAN = spanname] [,SSCPFM = USS3275 USS3270] [,USSTAB = USS definition table name]

Notes:

1. You can code this operand in the **GROUP**, **LINE**, **CLUSTER**, or **TERMINAL** statement to take advantage of the sift-down effect, although it is meaningful only for lines, clusters, and terminals. Refer either to this section, "VSE VM The **LINE** Statement for a BSC Nonswitched Line" on page 120, or "VSE VM The **CLUSTER** Statement for a BSC Cluster Controller" on page 122 for a description of this operand.

name

is the minor node name of the logical unit represented by this statement. This operand is required.

ADDR = char

is the device address (device selection character) assigned to this terminal.

char

is the 2-digit hexadecimal representation of a single EBCDIC component selection. Refer to Figure 24 on page 124 to find the right value for **ADDR**.

Example: If the terminal's device selection character is 'C', code **ADDR=C3**.

TERM = 3275|3277|3284|3286

identifies the specific type of device represented by this TERMINAL definition statement. Code 3277 for a BSC 3278; code 3286 for a 3287 or 3288.

DLOGMOD = default logmode entry name

is the name of the logmode entry to be used by default if one is not otherwise provided. If this operand is not coded and the name of a logmode entry is not otherwise provided, the first entry in the applicable logmode table (given on the MODETAB operand or defaulted) is used by default. If MODETAB is specified the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM, the IBM supplied logmode table.

FEATUR2 = ([operand] [,operand])

identifies the machine features for this terminal.

MODEL1|MODEL2

identifies the specific model number (Model 1 or 2) for this 3275, 3277, 3284, or 3286 component. Code MODEL1 for those devices that have a default screen or buffer size of 480 bytes. Code MODEL2 for those devices that have a default screen or buffer size of 1920 bytes.

PRINTR|NOPRINTR

tells VTAM whether this terminal has an attached IBM 3284 Model 3 printer. This operand is valid only for a 3275 terminal.

ISTATUS = ACTIVE|INACTIVE

determines whether this terminal should be automatically activated when the cluster controller is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, this terminal is activated automatically when the controller to which it is attached is activated. If ISTATUS=INACTIVE is coded, this terminal is left inactive after the first activation of an inactive major node that contains this terminal. Later activations of an already active major node activate all the terminals not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LOGAPPL = controlling primary LU

identifies the name of the primary LU as known in the network of the secondary LU onto which this SLU is to be logged automatically when this SLU is activated. The name specified may also be a USERVAR which will be resolved into its current value before being used to establish or redrive the session with the controlling primary LU. The LOGAPPL operand is a convenient way of establishing sessions.

If you do not code LOGAPPL, logons are initiated via the USS facilities by the terminal operator, a request from an independent LU, an application program, a VARY LOGON issued in behalf of this LU, or the domain operator.

This automatic logon definition can be cancelled at any time with the VARY NOLOGON command. However, upon inactivation and reactivation of the major node, the controlling relationship would again take effect.

Note: You should be aware that when you access TSO via VARY LOGON, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I will be issued repeatedly with sense 0821 indicated. To stop this, you must break the automatic logon relationship.

Channel-Attachment Major Node: **TERMINAL** for CA BSC

Note: You should not specify the NetView program as the application program on the LOGAPPL operand as results are unpredictable in recovery scenarios.

LOGTAB = interpret table name

is the name of an interpret table to be used by VTAM when processing logon requests that come from the terminal. The interpret table is used to interpret the name received from an initiation request. See *VTAM Customization* for a description of how an interpret table is defined.

MODETAB = logon mode table name

is the name of a logon mode table to be used for the terminal. The name you code for the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*.

If you do not name a logon mode table for the terminal using the MODETAB operand on the GROUP, LINE, CLUSTER or TERMINAL definition, an IBM-supplied logon mode table (ISTINCLM) is used. If you do specify a table, then both the table you specify and the default table are used. The user can replace or modify the IBM-supplied logon mode table. The user-written table must be assembled, link-edited, and placed in VTAMLIB.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SSCPFM = USS3275|USS3270

Code SSCPFM=USS3270 to allow printing of the "Good Morning" message (USSMSG10) on BSC printers. Code SSCPFM=USS3275 to prevent printing of the "Good Morning" message on BSC printers. The SSCPFM operand has no effect on BSC terminals that are not printers.

Note: Coding SSCPFM=USS3275 prevents the local copy hardware function key from working with certain BSC printers. To make sure the local copy function works, code SSCPFM=USS3270.

USSTAB = USS definition table name

is the name of a USS definition table that is created as described in *VTAM Customization*. If you do not code USSTAB, an IBM-supplied USS definition table (ISTINCDT) is searched when character-coded input is received by VTAM from a logical unit.

VSE VM 9370 **Defining a LAN Major Node**

Defining a local area network major node requires coding statements to define the node type, the port the LAN uses, and the stations (including IBM 9370s) attached to the LAN.

VSE The LAN major node applies only to V3R2.

The following terms are used in defining a LAN major node:

LAN An IBM Token-Ring local area network

Token-Ring Subsystem

A pair of Input/Output Processor (IOP) and Input/Output Adapter (IOA) cards that provide a connection to a LAN

9370/LAN A 9370 Information Processor and its Token-Ring Subsystem.

You must file a VBUILD statement and a PORT statement for the major node and GROUP, LINE, and PU statements for minor nodes.

One VBUILD statement must be included for each local area network major node, but it may contain different link groups. Each link group has a unique GROUP statement and contains a unique set of minor node statements. See Figure 25 on page 129 for an example of statements defining a local area network major node.

LAN1	VBUILD	TYPE=LAN	LOCAL AREA NETWORK MAJOR NODE	X
PORT1	PORT	CUADDR=840,	LOCAL AREA NETWORK	X
		LANCON=(10.1,3),	CHANNEL UNIT ADDRESS	X
			LOCAL AREA NETWORK	X
		MACADDR=00000031,	CONNECTION VALUES (DEFAULTS)	X
			LOCAL AREA NETWORK	X
		MAXDATA=2012,	MEDIUM ACCESS CONTROL ADDRESS	X
			LOCAL AREA NETWORK	X
		MAXSTN=8,	MAXIMUM DATA LENGTH	X
			LOCAL AREA NETWORK	X
		SAPADDR=4	MAXIMUM STATIONS	X
			LOCAL AREA NETWORK	X
			SERVICE ACCESS POINT ADDRESS	
GP1LAN	GROUP	DIAL=NO, ISTATUS=INACTIVE	LEASED (PEER 9370) ATTACHMENT	X
LN1LAN	LINE			
PU1LAN	PU	ISTATUS=ACTIVE, LANACK=(5.0,2),	LOCAL AREA NETWORK	X
			ACKNOWLEDGEMENT VALUES	X
		LANCON=(10.0,5),	LOCAL AREA NETWORK	X
			CONNECTION VALUES	X
		LANINACT=25.5,	LOCAL AREA NETWORK	X
			INACTIVITY VALUE	X
		LANRESP=(25.4,9),	LOCAL AREA NETWORK	X
			RESPONSE VALUES	X
		LANSDDW=(7,1),	LOCAL AREA NETWORK	X
			WINDOWING VALUES	X
		MACADDR=400000000032,	LOCAL AREA NETWORK	X
			MEDIUM ACCESS CONTROL ADDRESS	X
		SAPADDR=4	LOCAL AREA NETWORK	X
			SERVICE ACCESS POINT ADDRESS	
GP2LAN	GROUP	DIAL=YES, ISTATUS=INACTIVE, LNCTL=SDLC	SWITCHED ATTACHMENT	X
				X
LN2001	LINE	CALL=IN	APPEAR TO VTAM AS SDLC LINES INCOMING CALL (STATION CALLS VTAM)	X
PU2001	PU	MAXLU=10		
LN2002	LINE			
PU2002	PU	MAXLU=10		
GP3LAN	GROUP	DIAL=YES, ISTATUS=INACTIVE	SWITCHED ATTACHMENT	X
LN3001	LINE	CALL=OUT	OUTGOING CALL (VTAM CALLS STATION)	X
PU3001	PU	MAXLU=10		
GP4LAN	GROUP	DIAL=YES, ISTATUS=INACTIVE	SWITCHED ATTACHMENT	X
LN4LAN	LINE	CALL=INOUT	INCOMING/OUTGOING CALLS	
PU4LAN	PU	MAXLU=10		

Figure 25. VSE VM 9370 An Example of Statements Defining a LAN Major Node

VSE VM 9370 **The VBUILD Statement**

To define the node type of the LAN, you must code a VBUILD statement to identify the LAN to VTAM. Code a VBUILD statement for each connection between VTAM and a LAN.

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = LAN

name

A name is optional.

TYPE = LAN

means that the VBUILD statement defines a local area network major node to VTAM. This is a new value for the TYPE operand of the VBUILD statement. This operand is required.

VSE VM 9370 **The PORT Statement**

Code a PORT statement to identify the connection between VTAM and a LAN. The PORT definition statement identifies the address of the access protocol group in the Token-Ring Subsystem of the IBM 9370. Its keywords define parameters that are passed to the subsystem.

Figure 26 illustrates how these parameters are used by the subsystem.

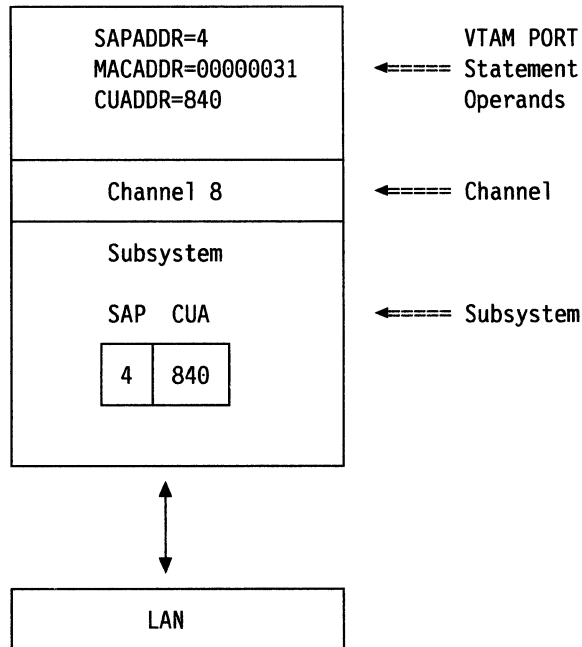


Figure 26. VSE VM 9370 The IBM 9370 Token-Ring Subsystem and the PORT Statement Operands

The parameters for the MACADDR, SAPADDR, and CUADDR operands are used to route information between the LAN and VTAM.

When information flows from VTAM down to the LAN, the first digit of the CUADDR operand defines the channel used to route the information to the subsystem.

When information flows from the LAN up to VTAM, the MACADDR operand is used to route the information to the subsystem. The subsystem builds a table from the SAPADDR and CUADDR operands, and uses the table to route the information to the channel unit address (CUA) corresponding to the service access point (SAP).

If there is more than one connection to the subsystem, see "VSE VM 9370 Considerations for Multiple LAN Connections" on page 144.

LAN Major Node: PORT

Only one PORT statement is coded for each VBUILD TYPE=LAN definition statement. Coding the PORT statement causes the LNCTL operand of the GROUP statements that follow to use the default of LNCTL=SDLC.

Name	Definition Statement	Operands
[name]	PORT	CUADDR = <i>cua</i> [,LANCON = ([ct1] [,cn2 5])] [,MACADDR = <i>macaddr</i>] [,MAXDATA = <i>n</i> 2000] [,MAXSTN = <i>n</i>] [,SAPADDR = <i>n</i> 4]

name

A name is optional.

CUADDR = *cua*

defines the channel unit addresses used for the attached LAN.

This operand is required.

The address that is specified by *cua* is a 3-digit hexadecimal channel address. The first digit of the channel unit address is the channel number and has a range 0–F. The second and third digits are the subchannel address, in the range X'00' – X'FB'.

VTAM uses *cua* and the next three sequential addresses as channel unit addresses. For example, if you specify CUADDR=848, VTAM assigns 848, 849, 84A, and 84B as the channel unit addresses. When VTAM attaches to the LAN, it verifies that the device at each of the four *cuas* is defined to the operating system as follows:

VM As a 3088 device
VSE As a 3705,10 device.

The access protocol group is referred to as a continuously executing transfer interface (CETI) group. Using CETI reduces the number of START I/O commands and interrupts required to transfer data.

The DMKRIO example below is for a 9370/LAN. In this example, the device is off channel two. It is assumed that CUADDR=240, which matches the address given below.

```

*****
*                C H A N N E L   T W O                *
*****
SPACE
RDEVICE ADDRESS=(240,12),DEVTYPE=3088
EJECT
*****
*                C O N T R O L   U N I T S            *
*****
SPACE
RCTLUNIT ADDRESS=240,CUTYPE=3088,FEATURE=32-DEVICE
EJECT
*****
*                C H A N N E L S                      *
*****
SPACE
RCHANNEL ADDRESS=2,CHTYPE=MULTIPLEXOR   ILAN
EJECT

```

There are enough channel unit addresses defined in this example to support up to three CETI groups. For example, VTAM can use addresses 240, 241, 242, and 243 for the access protocol group; a second CETI group can use addresses 244, 245, 246, and 247; and a third CETI group can use addresses 248, 249, 24A, and 24B.

If there is more than one access protocol group in the subsystem, see “[VSE VM 9370 Considerations for Multiple LAN Connections](#)” on page 144.

LANCON = ([ct1] [,cn2|5])

specifies the timer (*ct1*) and the retry count (*cn2*) for the connection LLC protocol data units (LPDUS). This is a new operand of the PORT statement. The timer specifies the time period to elapse before a retry is attempted during connection or disconnection of a link station. The retry count specifies the number of times to retry a transmission during connection or disconnection of a link station. When the number of retries (*cn2*) has been reached and the timer (*ct1*) has elapsed for each retry, the link station is considered to be in an inoperative condition.

The timer value is expressed in seconds or tenths of seconds, in the range 0–25.5 seconds. If no value is specified for the timer or if 0 is specified, then the Token-Ring Subsystem default timer value is used. Consult the appropriate documentation for your subsystem to determine the default timer value.

The valid range for the retry count is an integer in the range 0–255. A value of 0 means no retry will be attempted.

The timer and retry count values specified on the PORT statement are used as default values for the timer and retry count values on the LANCON and LANRESP operands of the PU statements for any LAN resources.

MACADDR = macaddr

specifies the 12-digit hexadecimal medium access control (MAC) address for the connection to the LAN that this major node defines. This is a new operand of the PORT statement.

The MAC address may also be specified as an 8-digit hexadecimal number. VTAM prefixes the 8-digit number with 4000 to form the 12-digit address.

This operand is optional. If it is not specified, then the pre-set MAC address of the Token-Ring Subsystem is used.

LAN Major Node: PORT

A value of 000000000000 is not allowed for the MACADDR operand on the PORT statement.

MAXDATA = n|2000

specifies the maximum number of bytes in the information field of an LPDU that can be transmitted on the LAN. This is a new operand of the PORT statement.

The valid range for *n* is 64–65535.

Note: The value specified for MAXDATA must be within the minimum and maximum values allowed by the Token-Ring Subsystem in the IBM 9370. Consult the appropriate documentation for your subsystem to determine the minimum and maximum values to be coded.

MAXSTN = n

specifies the maximum number of stations (including IBM 9370s) that can be connected on the LAN. This is a new operand of the PORT statement.

The valid range for *n* is 1–65535. The default value is the number of stations (including IBM 9370s) that are defined in the LAN major node.

Note: The value specified for MAXSTN cannot exceed the maximum value allowed by the Token-Ring Subsystem in the IBM 9370. Consult the appropriate documentation for your subsystem to determine the maximum value to be coded.

SAPADDR = n|4

specifies the service access point (SAP) address for the connection to the LAN that this major node defines. This is a new operand of the PORT statement.

The valid range for *n* is 4–252. The value of *n* must be a multiple of 4.

VSE VM 9370 **Defining a LAN Major Node: 9370/LAN**

A 9370/LAN attached to the ring as a peer processor is defined to VTAM by the LINE and PU statements. The LINE and PU statements must be specified as pairs in a non-switched line group with a GROUP statement.

VSE VM 9370 **The GROUP Statement**

The GROUP statement defines a line group for 9370/LANS attached to the ring that is attached to VTAM.

Name	Definition Statement	Operands
name	GROUP	LNCTL = SDLC [,DIAL = NO] [,ISTATUS = ACTIVE INACTIVE] ¹ [,LANACK = ([t2 0] [,n3 0])] ² [,LANCON = ([ct1] [,cn2])] ² [,LANINACT = ti 4.8] ² [,LANRESP = ([t1] [,n2])] ² [,LANSDWDW = ([k 2] [,nw 1])] ² [,PUTYPE = 5] ² [,SPAN = (spanname)]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.
2. You can code this operand in the GROUP, LINE, or PU statement. It applies to a PU definition statement for a physical unit on a nonswitched line. Its explanation appears in the PU statement description.

You can code these operands on the GROUP definition statement. See "Sift-Down Effect in VTAM Definition Statements" on page 64 for more information.

name

is the minor node name of the line group represented by this statement.

This operand is required.

LNCTL = SDLC

means that the lines under a LAN port appear to VTAM like SDLC lines.

DIAL = NO

means that the lines in the group do not require switched line control protocols.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM 9370 **The LINE Statement**

Code a LINE statement for each peer 9370/LAN on the token ring. The LINE statement defines to VTAM the name of the line and certain procedural options to be used for this line.

Name	Definition Statement	Operands
name	LINE	[ISTATUS = ACTIVE INACTIVE] ¹ [,LANACK = ([t2 0] [,n3 0])] ² [,LANCON = ([ct1] [,cn2])] ² [,LANINACT = ti 4.8] ² [,LANRESP = ([t1] [,n2])] ² [,LANSDWDW = ([k 2] [,nw 1])] ² [,PUTYPE = 5] ² [,SPAN = (spanname)]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.
2. You can code this operand in the GROUP, LINE, or PU statement. It applies to a PU definition statement for a physical unit on a nonswitched line. Its explanation appears in the PU statement description.

You can code these operands on the LINE definition statement. See "Sift-Down Effect in VTAM Definition Statements" on page 64 for more information.

name

is the minor node name of the link represented by this statement.

This operand is required.

ISTATUS = ACTIVE|INACTIVE

determines whether this line should be automatically activated when the LAN major node to which it belongs is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM 9370 **The PU Statement**

Code a PU statement for each 9370/LAN with which VTAM will communicate over this token-ring.

Name	Definition Statement	Operands
name	PU	MACADDR = macaddr [, ISTATUS = ACTIVE INACTIVE] ¹ [, LANACK = ([t2 0] [,n3 0])] [, LANCON = ([ct1] [,cn2])] [, LANINACT = ti 4.8] [, LANRESP = ([t1] [,n2])] [, LANSDDWDW = ([k 2] [,nw 1])] [, PUTYPE = 5] [, SAPADDR = n 4] [, SPAN = (spanname)]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.

name

is the minor node name of the physical unit represented by this statement.

This operand is required.

MACADDR = macaddr

specifies the 12-digit hexadecimal medium access control (MAC) address for the 9370/LAN on the ring that this PU statement defines. This is a new operand of the PU statement.

The MAC address may also be specified as an 8-digit hexadecimal number. VTAM prefixes the 8-digit number with 4000 to form the 12-digit address.

A value of 000000000000 is not allowed for the MACADDR operand on the PU statement.

This operand is required.

ISTATUS = ACTIVE|INACTIVE

determines whether this PU should be automatically activated when the LAN major node to which it belongs is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LANACK = ([t2|0] [,n3|0])

specifies the acknowledgement delay timer (t2) and number (n3) of Information-LPDUS (I-LPDUS) received prior to sending an acknowledgement. This is a new operand of the PU statement. If either the timer expires or the count is reached, then an acknowledgement is sent for any outstanding data.

The timer value is expressed in seconds or tenths of seconds. The valid range is 0–25.5 seconds. A value of 0, however, means that the timer is disabled.

The valid range for *n3* is an integer in the range 0–127.

If either the timer or the counter is specified as 0, then the other must be specified as 0.

LANCON = ([ct1] [,cn2])

specifies the timer (*ct1*) and the retry count (*cn2*) for the connection LPDUS. This is a new operand of the PU statement. The timer specifies the time period to elapse before a retry is attempted during connection or disconnection of a link station. The retry count specifies the number of times to retry a transmission during connection or disconnection of a link station. When the number of retries (*cn2*) has been reached and the timer (*ct1*) has elapsed for each retry, the link station is considered to be in an inoperative condition.

The timer value is expressed in seconds or tenths of seconds. The valid range for the timer is 0–25.4 seconds. If a value of 0 is specified, then the Token-Ring Subsystem uses its default timer value. Consult the appropriate documentation for your subsystem to determine the default timer value.

The valid range for the retry count is an integer in the range 0–254. A value of 0 means no retry will be attempted.

The default values for the timer and the retry count are the values that are specified on the LANCON operand of the PORT statement. The only way to achieve these defaults is to not specify the values for the LANCON operand.

LANINACT = ti|4.8

specifies the inactivity timer (*ti*). This is a new operand of the PU statement. This timer specifies the time period used to determine an inactive condition on a link station.

The timer value is expressed in seconds or tenths of seconds. The valid range is 0–25.5 seconds. If no value is specified for the timer, the default of 4.8 is used. If 0 is specified, then the timer is disabled.

LANRESP = ([t1] [,n2])

specifies the timer (*t1*) and retry count (*n2*) for a station in connected state. This is a new operand of the PU statement. The timer specifies the time period to elapse before a retry is attempted when a station is connected. The retry count specifies the number of times to retry a transmission while a station is connected. When the number of retries (*n2*) has been reached, and the timer (*t1*) has elapsed for each retry, the link station is considered to be in an inoperative condition.

The timer value is expressed in seconds or tenths of seconds. The valid range is 0–25.4 seconds. If a value of 0 is specified, then the Token-Ring Subsystem uses its default timer value. Consult the appropriate documentation for your subsystem to determine the default timer value.

The valid range for the retry count is an integer in the range 0–254. A value of 0 means no retry will be attempted.

The default values for the timer and the retry count are the values that are specified on the LANCON operand of the PORT statement. The only way to achieve these defaults is to not specify the values for the LANRESP operand.

LANSWDW = ([k|2] [,nw|1])

specifies the send window (*k*) and window step (*nw*). This is a new operand of the PU statement. The send window specifies the maximum number of sequentially numbered I-LPDUS that the link station may have outstanding at any time. The window step specifies the number of sequentially numbered I-LPDUS that a link station must receive before increasing the local window.

The valid range for the send window is an integer in the range 1 – 127.

The valid range for the window step is an integer between 0 and the value of *k*. A value of 0 for the window step (*nw*) means that the send window (*k*) is static, and dynamic windowing is disabled.

PUTYPE = 5

specifies that the 9370/LAN is a type 5 node.

SAPADDR = n|4

specifies the service access point (SAP) address of the 9370/LAN that this PU statement defines. This is a new operand of the PU statement.

The valid range for *n* is 4 – 252. The value of *n* must be a multiple of 4.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM 9370 **Defining a LAN Major Node: Station**

A station attached to the ring is defined to VTAM by the LINE and PU statements. The LINE and PU statements must be specified in pairs in a switched line group with a GROUP statement.

VSE VM 9370 **The GROUP Statement**

The GROUP statement defines a line group for type 2 physical unit stations attached to the ring that is attached to VTAM.

Name	Definition Statement	Operands
name	GROUP	DIAL = YES ,LNCTL = SDLC [,ANSWER = ON OFF] ² [,CALL = IN OUT INOUT] ² [,ISTATUS = ACTIVE INACTIVE] ¹ [,MAXLU = n 2] ³ [,SPAN = (spanname)]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.
2. You can code this operand in either the GROUP or LINE statement. It applies to a LINE definition statement for a switched line. Its explanation appears in the LINE statement description.
3. You can code this operand in the GROUP, LINE, or PU statement. It applies to a PU definition statement for a physical unit on a switched line. Its explanation appears in the PU statement description.

You can code these operands on the GROUP definition statement. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

name

provides the minor node name for the line group.

This operand is required.

DIAL = YES

means that the lines in the group require switched line control protocols.

LNCTL = SDLC

means that the lines under a LAN port appear to VTAM like SDLC lines.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM 9370 **The LINE Statement**

Code a LINE statement for each switched line. The LINE statement defines to VTAM the name of the line and certain procedural options to be used for this line.

Name	Definition Statement	Operands
name	LINE	[ANSWER = ON OFF] [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] ¹ [,MAXLU = n 2] ² [,SPAN = (spanname)]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.
2. You can code this operand in the GROUP, LINE, or PU statement. It applies to a PU definition statement for a physical unit on a switched line. Its explanation appears in the PU statement description.

You can code these operands on the LINE definition statement. See "Sift-Down Effect in VTAM Definition Statements" on page 64 for more information.

name

provides the minor node name for the communication line.

This operand is required.

ANSWER = ON|OFF

specifies whether physical units can dial in to VTAM. If ANSWER=ON (the default) is coded, physical units can dial in to VTAM when the line is activated. If ANSWER=OFF is coded, the physical units cannot dial in to VTAM, regardless of whether the line is active or inactive. The answer state of the line can be altered after activation by a VARY ANS command.

CALL = IN|OUT|INOUT

specifies whether stations, or VTAM, or both, can initiate calls over the line represented by this LINE statement.

If the line is to be used only for incoming calls (the stations are to call VTAM), code CALL=IN, which is the default. If the line is to be used only for outgoing calls (VTAM is to call the physical unit), code CALL=OUT. If the line is to be used for both incoming and outgoing calls, code CALL=INOUT.

ISTATUS = ACTIVE|INACTIVE

determines whether this line should be automatically activated when the LAN major node to which it belongs is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LAN Major Node: LINE for a Station

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM 9370 **The PU Statement**

Code a PU statement for each station with which VTAM will communicate over this switched link.

Name	Definition Statement	Operands
name	PU	[ISTATUS = ACTIVE INACTIVE] ¹ [, MAXLU = n 2] [, SPAN = (spanname)]

Notes:

1. You can code this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.

name

is the minor node name of the physical unit represented by this statement.

This operand is required.

ISTATUS = ACTIVE|INACTIVE

determines whether this PU should be automatically activated when the LAN major node to which it belongs is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXLU = n|2

is, for a type 1 or 2 physical unit on a switched subarea connection (DIAL=YES), the maximum number of logical units associated with the physical unit that can communicate with VTAM.

n is an integer in the range 1 – 255.

Note: For a type 4 or 5 physical unit on a switched subarea connection, MAXLU is not applicable.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

LAN Major Node: Multiple LAN Connections

VSE VM 9370 Considerations for Multiple LAN Connections

There can be multiple Token-Ring Subsystems in an IBM 9370 Information Processor. Each subsystem is attached to a different channel and supports up to three connections to a LAN. If more than one connection is made through a subsystem or if more than one subsystem is installed, you must be aware of certain considerations when coding the operands on the PORT definition statement.

Figure 27 illustrates three subsystems installed in the IBM 9370 Information Processor. In the figure, all of the users connected to the LANs through the subsystems are VTAMs. However, applications other than VTAM can be users of the subsystems.

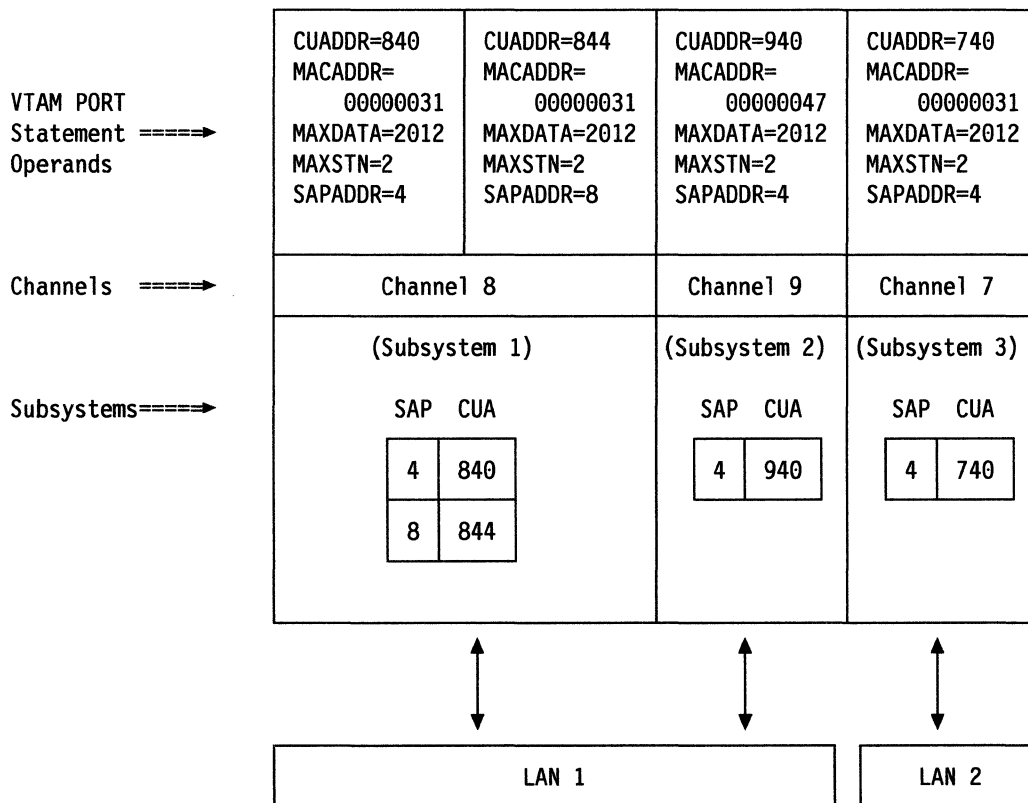


Figure 27. VSE VM 9370 Multiple Subsystems in the IBM 9370 Information Processor

VSE VM 9370 Multiple Connections to the Same Subsystem

Subsystem 1 has two connections between VTAM and LAN 1. When a connection is made to LAN 1, VTAM passes parameters coded on operands of the PORT statement to the subsystem.

The values coded on the MACADDR, MAXDATA, and MAXSTN operands of the first VTAM to connect to Subsystem 1 set parameters used for all connections to the subsystem. Therefore, subsequent connections to Subsystem 1 must use the same values for these operands. The parameter for MAXSTN must include the total number of stations for all connections to Subsystem 1. The values coded for the CUADDR and SAPADDR operands must be different for each VTAM connected to Subsystem 1.

VSE VM 9370 **Multiple Connections to the Same LAN**

Subsystem 1 and Subsystem 2 are both connected to LAN 1. When information flows from the LAN up to VTAM, the MACADDR operand identifies the subsystem to which the information should be routed. The values of the MACADDR operand must be different for each subsystem connected to the same LAN. Subsystem 3 has the same value for MACADDR as Subsystem 1, but the subsystems are connected to different LANS.

Defining Local Non-SNA Major Nodes

A local non-SNA major node is defined by an LBUILD statement followed by a collection of VTAM definition statements defining each channel-attached non-SNA terminal as part of a logical set (group) of channel-attached non-SNA terminals. The controller to which the terminal is attached is not defined to VTAM. All terminals defined within a local non-SNA major node do not need to be on the same controller. Different terminals on the same controller can be defined to VTAM in different local non-SNA major nodes. See Figure 28 for an example of statements defining local non-SNA major nodes.

You do not need to code a definition statement for the non-SNA cluster controller (3272 or compatible device). Non-SNA terminals connected to a single cluster controller do not have to be defined as a single major node.

```
LC3270NS LBUILD
LOC3277 LOCAL CUADDR=00A,TERM=3277,DLOGMOD=S3270,          X
              LOGAPPL=AACCTS
```

Figure 28. An Example of Statements Defining a Local Non-SNA Major Node

The LBUILD Statement

You must code one LBUILD statement for each logical group (major node) of channel-attached non-SNA terminals. Define each terminal (minor node) in the group by using a LOCAL definition statement.

The format of the LBUILD statement is:

Name	Definition Statement	Operands
[name]	LBUILD	[CONFIGDS = name] [,CONFIGPW = password]

name

a *name* is optional.

MVS VSE CONFIGDS = name

is a 1–8 character data definition name that identifies the configuration-restart data set defined by the user for this major node. Include a DD statement with this data definition name in the VTAM start procedure.

Refer to *Network Program Products Planning* for a discussion of configuration restart.

MVS VSE CONFIGPW = password

is the 1–7 character password, if required, for VTAM to gain access to the configuration restart data set. If you do not code CONFIGPW, and it is required by VSAM, VSAM prompts the VTAM operator for the correct password when VTAM attempts to use the data set.

You may code CONFIGPW only if you also code CONFIGDS.

The LOCAL Definition Statement

One or more LOCAL definition statements can be grouped with an LBUILD statement.

Code one LOCAL statement for each channel-attached non-SNA terminal that is in the VTAM domain.

The format of the LOCAL definition statement is:

Name	Definition Statement	Operands
name	LOCAL	CUADDR = channel device address ,TERM = 3277 3284 3286 [,DLOGMOD = default logmode entry name] [,FEATUR2 = ([EDATS NOEDATS] [, MODEL1 MODEL2] [,PRINTR NOPRINTR])] (V3R1.1 & V3R2) [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,SPAN = spanname] [,USSTAB = USS definition table name]

name

is the minor node name assigned to the device whose address appears in the CUADDR operand in this LOCAL definition statement. This operand is required.

CUADDR = channel device address (000 – FFF)

consists of 3 hexadecimal digits that identify the channel unit address for this channel-attached terminal. Note that you must **not** enclose the address within quotation marks or apostrophes. This operand is required and cannot be overridden.

TERM = 3277|3284|3286

is the specific, channel-attached non-SNA terminal (printer or display station component). You can only code 3277, 3284, or 3286. This operand is required.

DLOGMOD = default logon mode table entry name

is the name of the logon mode entry used by default if one is not otherwise provided. If this operand is not coded and the name of a logon mode entry is not otherwise provided, IBM-supplied session parameters for BSC 3270 terminals are used. If MODETAB is specified the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM. For more information on logon mode entries, see *VTAM Customization*.

FEATUR2 = ([EDATS|**NOEDATS**]

[,**MODEL1**|MODEL2]

[,PRINTR|**NOPRINTR**)

identifies the machine features for a specific, channel-attached non-SNA terminal. These values are optional. The operands are listed below.

EDATS|**NOEDATS**

tells VTAM whether this terminal has the extended data stream feature.

MODEL1|MODEL2

is the specific model number (Model 1 or 2) for this 3277, 3284, or 3286 component. Code MODEL1 for those devices that have a default screen or buffer size of 480 bytes. Code Model 2 for those devices that have a default screen or buffer size of 1920 bytes. This information is available to an application program as part of the device characteristics pertaining to this channel-attached terminal. These characteristics are obtained using the INQUIRE macroinstruction. For more information, see *VTAM Programming*.

Note: The preferred way to communicate information about the defaults to be used for a session is with session parameters. See *Network Program Products Planning* for a discussion on session parameter sources.

PRINTR|NOPINTR

tells VTAM whether or not the local device is a printer. This definition is optional, and the default is NOPINTR. If a local non-SNA printer is not defined as a printer, then raising the cover on the printer may break the session between the printer and the application.

By defining it as a printer, you make VTAM aware that an asynchronous device-end from this device (caused by lifting the cover) is not to break the session.

See also the description of the VTAM START command option ASYDE.

ISTATUS = ACTIVE|INACTIVE

determines whether this terminal (LOCAL) should be automatically activated when the local non-SNA major node to which it belongs is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LOGAPPL = controlling primary LU

identifies the name of the primary LU as known in the network of the secondary LU onto which this SLU is to be automatically logged when this SLU is activated. The name specified may also be a USERVAR that will be resolved into its current value before being used to establish or redrive the session with the controlling primary LU. The LOGAPPL operand is a convenient way of establishing sessions.

If you do not code LOGAPPL, logons are initiated via the USS facilities by the terminal operator, a request from an independent LU, an application program, a VARY LOGON issued in behalf of this LU, or the domain operator.

Starting with VTAM V3R1.1, this automatic logon definition can be cancelled at any time with the VARY NOLOGON command. However, upon inactivation and reactivation of the major node, the controlling relationship would again take effect.

Note: You should be aware that when you access TSO via VARY LOGON, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I is issued repeatedly with sense 0821 indicated. To stop this, you must break the auto logon relationship.

Local Non-SNA Major Node: LOCAL

Note: You should not specify the NetView program as the application program on the LOGAPPL operand since results are unpredictable in recovery scenarios.

LOGTAB = interpret table name

is the name of an interpret table to be used by VTAM when processing logon requests that come from the LOCAL LU. The interpret table is used to interpret the name received from an initiation request. See *VTAM Customization* for a description of how an interpret table is defined.

MODETAB = logon mode table name

is the name of a logon mode table to be used for the LU. The name you code for the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*.

If you do not name a logon mode table for a logical unit by the MODETAB operand, an IBM-supplied logon mode table (ISTINCLM) is used. The user can replace or modify the IBM-supplied logon mode table. The user-written table must be assembled, link-edited, and placed in VTAMLIB.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

USSTAB = USS definition table name

is the name of a USS definition table created as described in *VTAM Customization*. If you do not code USSTAB, an IBM-supplied USS definition table (ISTINCDT) is searched when character-coded input is received by VTAM from a channel-attached non-SNA terminal.

Defining Local SNA Major Nodes

A local SNA major node is defined by filing a single VBUILD statement for the major node and a separate PU or LU statement for each minor node. One VBUILD statement, placed before the first PU statement, must be included for each major node.

A PU statement is required for each physical unit (such as a cluster controller) in the major node. An LU statement for each logical unit is placed after the associated PU statement. Note that a physical unit and all its logical units must be defined within a single major node.

The PU and LU statements used to define a local SNA major node are very similar to the PU and LU statements that define a switched major node and that define an NCP major node. The statements used for the local SNA major node are called PU (local) and LU (local) statements. See Figure 29 for an example of statements defining a local SNA major node.

```

LOCALSNA      VBUILD  TYPE=LOCAL
LPU3790       PU      CUADDR=080,MODETAB=TAB3791,SSCPFM=FSS,      X
                VPACING=2
LOC3790A      LU      LOCADDR=1,LOGAPPL=APAYR0
LOC3790B      LU      LOCADDR=2,LOGAPPL=AACCTS
LOC3790C      LU      LOCADDR=3,LOGAPPL=AACCTS

```

Figure 29. An Example of Statements Defining a Local SNA Major Node

VSE VM Note that PU and LU definition statements can be used to define devices that are attached to the host processor through a loop adapter. SNA devices, such as the 8775 and the 3276, are defined as if they were channel-attached physical units; there is a PU statement representing the controller and an LU statement for each associated logical unit. Non-SNA devices, such as the 3641 and the 3647, are defined as logical units associated with a single PU statement that represents physical unit functions provided by the loop adapter.

In the 4331 processor, the physical unit functions for non-SNA devices are assigned a channel unit address of 040. The 3644 is a special case. Although it is a non-SNA device, each 3644 must be defined with a PU definition statement. The 3644 and SNA physical units are assigned a channel unit address 041–07F. The 3644 PU definition statement may also be followed by more than one LU definition statement. The definition statements starting with LPU3790 in Figure 29 represent a 3790 and its logical units that are attached to a loop adapter. For more information, see the appropriate device publications.

The VBUILD Statement

Code a VBUILD statement for each set of channel-attached SNA devices.

Code the VBUILD statement like this:

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = LOCAL [,CONFIGDS = name] [,CONFGPW = password]

name

a *name* is optional.

TYPE = LOCAL

means that the VBUILD statement defines a local SNA major node to VTAM. This operand is required.

MVS VSE CONFIGDS = name

is a 1–8 character data definition name that identifies the configuration restart data set defined by the user for this major node. Include a DD statement with this operand in the VTAM start procedure. Refer to *Network Program Products Planning* for a description of configuration restart.

MVS VSE CONFGPW = password

is the 1–7 character alphanumeric password used by VTAM to gain access to the configuration restart data set. If you do not code CONFGPW, and it is required by VSAM, VSAM prompts the VTAM operator for the correct password when VTAM attempts to open the data set.

You may code CONFGPW only if you also code CONFIGDS.

The PU (Local) Definition Statement

Code a PU definition statement for each physical unit in the local SNA major node.

Code the PU statement like this:

Name	Definition Statement	Operands
name	PU	[CUADDR = channel device address] [DISCNT = ([YES NO],[F NF])] [DLOGMOD = default logmode entry name] ¹ [ENCR = REQD SEL OPT NONE] ¹ mvs [ISTATUS = ACTIVE INACTIVE] ² [LOGAPPL = controlling primary LU] ¹ [LOGTAB = interpret table name] ¹ [MAXBFRU = n 1] [MODETAB = logon mode table name] ¹ [PACING = n 0 1] ¹ [PUTYPE = 2] [SECTNET = YES NO] V3R1.1 and later [SPAN = spanname] [SSCPFM = FSS USSSCS] ¹ [USSTAB = USS definition table name] ¹ [VPACING = n 0 1] ¹

Notes:

1. You can code these operands in the PU or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. See “The LU (Local) Definition Statement” on page 156 for a description of these operands.
2. You can code this operand in the PU or LU statement to take advantage of the sift-down effect. It is meaningful for both physical units and logical units. Refer either to this section or “The LU (Local) Definition Statement” on page 156 for a description of this operand.

name

is the minor node name of the physical unit represented by this statement. This operand is required.

CUADDR = channel device address (000 – FFF)

contains the 3 hexadecimal digits that identify the channel device address used when activating the physical unit. If CUADDR is omitted, you must code ISTATUS=INACTIVE and include the address in the U operand in the VARY command that activates the unit.

The value must match a channel device name supplied when the operating system is generated. The address must not be enclosed in quotation marks or apostrophes.

DISCNT = ([YES|**NO**],[F|NF])

YES|NO

tells VTAM whether to terminate its SSCP-LU and SSCP-PU sessions when the last LU-LU session (involving the logical unit associated with this physical unit) is terminated. The device remains assigned to VTAM and is still active. (That is, sessions can be requested with its LUS; such a request

causes SSCP-PU and SSCP-LU sessions to be re-established. The physical unit itself may also request an SSCP-PU session.)

If you code YES, VTAM automatically terminates the SSCP-LU and SSCP-PU sessions as soon as the last LU-LU session is terminated. If any of the logical units, or the physical unit, request their own session termination, VTAM ignores the HOLD part of a character-coded logoff or the LAST-NOTLAST part of a field-formatted Terminate Self request. VTAM also rejects any attempt made by the physical unit to terminate its own SSCP session with a Request Discontact request.

If you code NO, VTAM terminates the SSCP-LU and SSCP-PU sessions when one of the following conditions is met:

1. VTAM receives a normal Request Discontact request from the physical unit, and all the LU-LU sessions associated with that physical unit have been terminated. All other existing LU-LU sessions are allowed to end normally.
2. VTAM receives an immediate Request Discontact request from the physical unit and immediately terminates any existing LU-LU sessions associated with that physical unit. This command overrides any previous normal Request Discontact request from the physical unit.
3. All LU-LU sessions have been terminated as a result of a character-coded logoff from the SLU with HOLD=NO, a terminate self request with LAST specified, a VARY INACT or TERM command from the operator, a Cross-Domain Takedown request, or a TERMSESS macroinstruction. If any LU-LU sessions were terminated by any other means (for example, by an application program CLSDST macroinstruction), the SSCP-LU and SSCP-PU sessions are not terminated.

F|NF

tells VTAM whether to indicate “final-use” status in the DACTPU request unit when it deactivates a physical unit as a result of DISCNT=YES. This operand does not apply when DISCNT=NO, nor does it have any effect on the VARY INACT command. If you code F or take the default, “final-use” status is indicated. If you code NF, “not-final-use” status is indicated. Each device has its own requirements regarding “final-use” status. To determine whether to code F or NF for a given device, consult the appropriate installation publication for the device.

ISTATUS = ACTIVE|INACTIVE

determines whether the physical unit is to be activated after the first activation of the channel-attachment major node. Also provides a “sifting” value for the LU statements following this PU statement.

When ISTATUS=ACTIVE is coded or assumed by default, this physical unit is activated automatically when the line to which it is attached is activated. If ISTATUS=INACTIVE is coded, this physical unit is left inactive after the first activation of an inactive major node that contains the LINE for this physical unit. Later activations of an already active major node activate all the lines not previously active and their physical units (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

MAXBFRU = n|1

is the number of buffer units (elements of the MVS VM IOBUF or VSE VFBUF buffer pool) that are used to receive data from the physical unit. *n* is a decimal integer.

PUTYPE = 2

is the physical unit type. Only PUTYPE=2 (the default) is valid. Physical unit types are described in *SNA Formats*.

SECNET = YES|NO

means that this physical unit is associated with a secondary network containing resources whose connectivity is not defined to VTAM. When SECNET=YES, data that is received by VTAM from this physical unit is flagged as requiring special problem determination considerations when routed to a communication management application.

Code this operand only if you have 3710s in your network.

This operand is valid for V3R1.1 and later releases.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

The LU (Local) Definition Statement

Code an LU definition statement for each logical unit associated with a physical unit within a local SNA major node. The LU statement must follow the PU statement that defines the physical unit with which this logical unit is associated.

The MODIFY TABLE operator command lets you dynamically replace USS (USSTAB), logon mode (MODETAB), and interpret (LOGTAB) tables (V3R2 only). See *VTAM Operation*. If you want to use the MODIFY TABLE command against a given USS or interpret table, you must reassemble that table using the VTAM V3R2 macroinstruction libraries.

Code the LU statement like this:

Name	Definition Statement	Operands
name	LU	LOCADDR = n [,DLOGMOD = default logmode entry name] ¹ [,ENCR = REQD SEL OPT NONE] ¹ mvs [,ISTATUS = ACTIVE INACTIVE] ² [,LOGAPPL = controlling primary LU] ¹ [,LOGTAB = interpret table name] ¹ [,MODETAB = logon mode table name] ¹ [,PACING = n 0 <u>1</u>] ¹ [,SPAN = spanname] [,SSCPFM = FSS USSSCS] ¹ [,USSTAB = USS definition table name] ¹ [,VPACING = n 0 <u>1</u>] ¹

Notes:

1. You can code these operands in the PU or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. Refer to this section for a description of these operands.
2. You can code this operand in the PU or LU statement to take advantage of the sift-down effect. It is meaningful for both physical units and logical units. Refer either to this section or “The PU (Local) Definition Statement” on page 153 for a description of this operand.

name

is the minor node name of the logical unit represented by this statement. This operand is required.

LOCADDR = n

is the logical unit’s local address at the physical unit. *n* is a decimal integer 1 – 255.

An LU statement is not required for every possible local address, and LOCADDR values need not be consecutive. Unused local addresses smaller than the largest local address at a station are not assigned network resources.

Note: The value of LOCADDR depends upon the requirements of the device being defined. Consult the appropriate component description manual for these restrictions; for example, logical units associated with a 3279 or 3276 control unit must have a LOCADDR in the range 2 – 33.

DLOGMOD = default logon mode table entry name

is the name of the logon mode table entry used by default if one is not otherwise provided. If this operand is not coded and the name of a logon mode table entry is not otherwise provided, the first entry in the applicable logon mode table (given on the MODETAB operand or defaulted) is used by default. If MODETAB is specified, the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM.

ENCR = REQD|SEL|OPT|NONE MVS

tells whether this logical unit has any special requirements for enciphering and deciphering messages.

REQD

means that VTAM must encipher all messages to and from this logical unit. If ENCR=REQD, no sessions can be established with this logical unit unless the host with which it is associated is able to handle cryptographic sessions.

SEL

has no meaning for LUS. If ENCR=SEL is entered, ENCR=OPT is used instead.

OPT

means that this logical unit can engage in cryptographic sessions, but allows the application program to determine whether to use cryptography.

NONE

means that this logical unit cannot engage in cryptographic sessions.

ISTATUS = ACTIVE|INACTIVE

determines whether this logical unit is to be automatically activated when the physical unit is activated.

When ISTATUS=ACTIVE is coded or assumed by default, this logical unit is activated automatically when the physical unit to which it is attached is first activated. If ISTATUS=INACTIVE is coded, this logical unit is left inactive after the first activation of its major node. Later activations of an already active major node activate all logical units not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LOGAPPL = controlling primary LU

identifies the name of the primary LU as known in the network of the secondary LU on to which this SLU is to be automatically logged when this SLU is activated. The name specified may also be a USERVAR which will be resolved into its current value before being used to establish or redrive the session with the controlling primary LU. The LOGAPPL operand is a convenient way of establishing sessions.

If you do not code LOGAPPL, logons are initiated via the USS facilities by the terminal operator, a request from an independent LU, an application program, a VARY LOGON issued in behalf of this LU, or the domain operator.

Starting with VTAM V3R1.1, this automatic logon definition can be cancelled at any time with the VARY NOLOGON command. However, upon inactivation and reactivation of the major node, the controlling relationship would again take effect.

Note: You should be aware that when you VARY LOGON to TSO, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I is issued

repeatedly with sense 0821 indicated. To stop this, you must break the auto logon relationship.

Note: You should not specify the NetView program as the application program on the LOGAPPL operand as results are unpredictable in recovery scenarios.

LOGTAB = interpret table name

is the name of an interpret table to be used by VTAM when processing logon requests that come from the logical unit. The interpret table is used to interpret the name received from an initiation request. See *VTAM Customization* for a description of how an interpret table is defined.

MODETAB = logon mode table name

is the name of a logon mode table to be used for the LU. The name you code for the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*.

If you do not name a logon mode table for the logical unit using the MODETAB operand on either the PU or the LU statement, an IBM-supplied logon mode table (ISTINCLM) is used. The user can replace or modify the IBM-supplied logon mode table. The user-written table must be assembled, link-edited, and placed in VTAMLIB.

PACING = n|0|1

determines how VTAM is to pace the flow of data from the boundary node, which performs pacing for the channel-attached SNA device, to the secondary logical unit (SLU). If the primary logical unit (PLU) with which this SLU is in session is in another domain, the boundary node is still the host in this domain. In this case, 2-stage pacing can be done between the SLU and VTAM, and between VTAM and the host containing the PLU. If the SLU, and the PLU with which this SLU is in session, are in the same domain, VTAM is the boundary node and the SRCVPAC operand in the MODEENT macroinstruction (used to describe the session parameters in the logon mode table) is used to pace the flow of data directly from VTAM to the SLU (one-stage pacing). If SRCVPAC is zero, the VPACING value is used. When the SLU and the PLU are in the same domain, the PACING value is ignored. For more information on pacing, see *VTAM Customization*.

n

is the number of normal-flow requests that VTAM sends for a given LU-LU session before waiting for a pacing response. No further normal-flow requests can be sent to the logical unit until it is ready to receive more requests. This value is ignored if the PLU and the SLU are in the same domain.

n is a decimal integer 1 – 63.

0

means that no pacing is performed for sessions with the logical unit.

If you omit the PACING operand, the default is PACING = 1.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SSCPFM = FSS|USSSCS

determines whether a logical unit can support character-coded messages (SSCPFM = USSSCS) in its communications with the SSCP. If not, only formatted commands (SSCPFM = FSS) are used.

See the publications for each individual device to see if formatted or character-coded messages are supported by that device.

USSTAB = USS definition table name

is the name of a USS definition table that is created as described in *VTAM Customization*. If you do not code USSTAB, an IBM-supplied USS definition table (ISTINCDT) is searched when character-coded input is received by VTAM from a logical unit.

VPACING = n|0|1

determines how VTAM is to pace the flow of data from the boundary node containing the primary logical unit (PLU) to the boundary node that performs pacing for the channel-attached SNA device. If the PLU is in another domain, the host in this domain is the boundary node for the secondary logical unit (SLU) and the host in the other domain contains the boundary node for the PLU. If the SLU and the PLU are in the same domain, VTAM ignores the PACING value and uses the VPACING value to pace the data flow directly from VTAM to the SLU (one-stage pacing). For more information on pacing, see *VTAM Customization*.

n

is the number of normal-flow requests that the PLU sends for a given LU-LU session before waiting for a pacing response. No further normal-flow requests can be sent to the LU until it is ready to receive them.

n is a decimal integer 1–63.

0

means that no pacing is to be performed for sessions with the logical unit.

If you omit the VPACING operand, the default is VPACING=1.

VSE VM Defining a Packet Major Node

The packet major node contains statements to define the node type, the x.25 port, flow control parameters for virtual circuits, the line group, the lines, the physical units, and the logical units that may be connected over the lines.

Figure 30 on page 161 gives an example of statements defining a packet major node.

```

X25PORT VBUILD TYPE=PACKET
PORT1 PORT CUADDR=(804,80C), X
        NETTYPE=2, X
        CHARGACC=NO, X
        CHARGE=NO, X
        VCALLS=(,007,00A,,), X
        DIALNO=95501234506, X
        MAXOUT=7, X
        NETLEVEL=84, X
        PLENGTH=128, X
        PMOD=8, X
        PWINDOW=7, X
        REPLYTO=25, X
        RETRIES=31
VCPVC VCPARMS LC=(1,6), X
        PWINDOW=7,PLENGTH=128
*CSVC VCPARMS LC=(7,A),
* PLENGTH=2048
X25GROUP GROUP DIAL=NO, ISTATUS=INACTIVE, LNCTL=SDLC
NPDAPVC LINE ADDRESS=999, ISTATUS=INACTIVE
NPDAPU PU ADDR=C1, ISTATUS=INACTIVE
NPDALU LU LOCADDR=2
XLINE01 LINE ADDRESS=001, ISTATUS=INACTIVE
PU001 PU PUTYPE=5, SUBAREA=05
XLINE02 LINE ADDRESS=002, ISTATUS=INACTIVE
PU002 PU PUTYPE=2, ADDR=C1
X252LU1 LU LOCADDR=2
X252LU2 LU LOCADDR=3
X252LU3 LU LOCADDR=4
X252LU4 LU LOCADDR=5
XLINE03 LINE ADDRESS=003, ISTATUS=INACTIVE
PU003 PU PUTYPE=2, ADDR=C1
X253LU1 LU LOCADDR=2
X253LU2 LU LOCADDR=3
X253LU3 LU LOCADDR=4
X253LU4 LU LOCADDR=5
XLINE04 LINE ADDRESS=004, ISTATUS=INACTIVE
PU004 PU PUTYPE=2, ADDR=C1
X254LU1 LU LOCADDR=2
X254LU2 LU LOCADDR=3
X254LU3 LU LOCADDR=4
X254LU4 LU LOCADDR=5
XLINE05 LINE ADDRESS=005, ISTATUS=INACTIVE
PU005 PU PUTYPE=4, SUBAREA=255
XLINE06 LINE ADDRESS=006, ISTATUS=INACTIVE
PU006 PU PUTYPE=5, SUBAREA=05
X25SVC1 GROUP DIAL=YES, ISTATUS=INACTIVE, LNCTL=SDLC, CALL=INOUT
XLINE07 LINE ADDRESS=007, ISTATUS=INACTIVE, AUTO=007
XPSVC07 PU
XLINE08 LINE ADDRESS=008, ISTATUS=INACTIVE, AUTO=008
XPSVC08 PU
XLINE09 LINE ADDRESS=009, ISTATUS=INACTIVE, AUTO=009
XPSVC09 PU
X25SVC2 GROUP DIAL=YES, ISTATUS=ACTIVE, LNCTL=SDLC, X
        SUBADIAL=YES
XLINE10 LINE ADDRESS=00A, ISTATUS=INACTIVE, CALL=INOUT, AUTO=00A
XPSVC10 PU
XLINE11 LINE ADDRESS=00B, ISTATUS=INACTIVE, CALL=INOUT, AUTO=00B
XPSVC11 PU

```

Figure 30. VSE VM Statements Defining a Packet Major Node

VSE VM The VBUILD Statement

Code a VBUILD statement for each channel unit address pair configured as an X.25 port on your telecommunications subsystem or communication adapter.

Any number of VBUILD TYPE=PACKET statements up to the number of X.25 ports supported by the host processor can be coded and filed. Each channel unit address pair of the subsystem or adapter, which is configured as an X.25 port, requires a separate VBUILD TYPE=PACKET definition deck to be filed.

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = PACKET [,CONFIGDS = name] ¹ [,CONFGPW = password] ¹

Notes:

1. This operand is ignored if coded on a VM system.

name

Specification of a *name* is optional.

TYPE = PACKET

specifies that the VBUILD statement defines a packet major node to VTAM. This operand is required.

CONFIGDS = name

is a 1–8 character file name that identifies the configuration restart file defined by the user for this major node. Include DLBL and EXTENT statements using this file name in the VTAM start procedure. For a description of configuration restart, see *VTAM Installation and Resource Definition*.

CONFGPW = password

specifies the 1–7 character alphanumeric password, if required, for VTAM to gain access to the configuration restart file. If CONFGPW is not specified but is required by VSAM, VSAM prompts for the correct password when VTAM attempts to open the file. You can specify this operand only if the CONFIGDS operand is specified.

Note for users of the NetView program or NPDA:

To provide a unique address for the NetView program or NPDA to display alert and statistical data associated with the physical attachment to the network, the VBUILD TYPE=PACKET major node definition must have certain specifications. The first GROUP and LINE statements under the VBUILD major node definition must be for a nonswitched line with a physical unit representing a permanent virtual circuit (PVC). This LINE statement must specify an address that is **not** a valid address subscribed to with the network common carrier. The invalid address (999 in the example below) is used as a target SNA network address for NMVT records associated with the telecommunications subsystem or communication adapter port. These records are the counter-set NMVT statistical records and the following hardware-caused alerts:

- Local modem error
- Subsystem or adapter hardware failure
- Exceptional link condition.

Figure 31 shows an example of a VBUILD TYPE=PACKET for a switched virtual circuit (SVC) line, including the dummy PVC definition.

```

PACKET99 VBUILD TYPE=PACKET
PORT99  PORT  CUADDR=(031,039),NETTYPE=1,VCALLS=(, ,00c,00c),    X
          DIALNO=457031203
NPDAGRP GROUP DIAL=NO, LNCTL=SDLC
NPDALN  LINE  ADDRESS=999, ISTATUS=INACTIVE
NPDAPU  PU    ADDR=C1, ISTATUS=INACTIVE
NPDALU  LU    LOCADDR=2
SVC99   GROUP DIAL=YES, LNCTL=SDLC, CALL=OUT
SVC99LN LINE  ADDRESS=000, ISTATUS=INACTIVE, AUTO=000
SVC99PU PU
    
```

Figure 31. VSE VM VBUILD TYPE=PACKET for an SVC Line with a Dummy PVC Definition

Notes:

1. The address of 999 is not a valid logical channel identifier for a defined PVC regardless of whether the line is active or inactive.
2. The PVC line is active while the physical unit is inactive.
3. The NetView or NPDA PVC line must be the first line in the VBUILD definition.

VSE VM The PORT Statement

The PORT definition statement identifies the x.25 port. It specifies the x.25 link level options, network type, network level, switched virtual circuit definitions, and options selected for all virtual circuits on that port.

One PORT statement is coded for each VBUILD TYPE=PACKET definition statement. The PORT statement must immediately follow the VBUILD statement.

The PORT statement will default the GROUP statements that follow under the PORT to LNCTL=SDLC.

Name	Definition Statement	Operands
[name]	PORT	CUADDR = (cualo,cuahi) ,NETTYPE = n [,CHARGACC = YES NO] [,CHARGE = YES NO] [,DIALNO = DTE address] [,MAXOUT = <u>7</u> n] [,NETLEVEL = 80 84] (V3R1.2 or later) [,PLENGTH = 16 32 64 128 256 512 1024 2048 4096] [,PMOD = 8 128] [,PWINDOW = <u>2</u> n] [,REPLYTO = <u>3</u> n] [,RETRIES = <u>7</u> n] [,VCALLS = (lic,hic,lrc,htc,loc,hoc)]

name

Specification of a *name* is optional.

CUADDR = (cualo,cuahi)

defines the channel unit address pair that will be used for an x.25 port. The low address of the address pair must be specified first.

vse At initial program load (IPL), you must supply an ADD statement for each of the channel unit addresses of your x.25 ports. You must code the device type on the ADD statements as 3705,10. For example:

```
ADD 031,3705,10
ADD 039,3705,10
```

You must also include the x.25 ports in the number of I/O devices on the IOTAB (I/O table) macroinstruction. IOTAB defines the storage to be set aside for various system device tables.

VM In DMKRIO for X.25 support, the address pair that you specify on the PORT statement must be of the format: x,x+8 bytes. That is, the second address in the pair must be the first address, plus 8 bytes. In the example below, the device is off channel eight, and the addresses used are 800 and 808:

```
RIO      TITLE 'DMKRIO - 9332 - STARTER SYSTEM SAMPLE'
*****
*              C H A N N E L   E I G H T              *
*****
          SPACE
          RDEVICE ADDRESS=(800,08),DEVTYPE=ICA,ADAPTER=SDLC
          RDEVICE ADDRESS=(808,08),DEVTYPE=ICA,ADAPTER=SDLC
          EJECT
*****
*              C O N T R O L   U N I T S              *
*****
          SPACE
RCTLU8  RCTLUNIT ADDRESS=800,CUTYPE=ICA
          RCTLUNIT ADDRESS=808,CUTYPE=ICA
          EJECT
*****
*              C H A N N E L S                        *
*****
          SPACE
          RCHANNEL ADDRESS=8,CHTYPE=MULTIPLEXOR
          EJECT
```

This operand is required.

NETTYPE = n

specifies the identification number of the network that may be attached through this port. The identification number tells VTAM what differences must be accommodated for a specific packet-switched data network. This operand is required.

Figure 32 lists the valid values for *n* and the represented networks.

NETTYPE Value	Vendors' Network Names
1	AT&T DATAPAK (see note) DATEX-AC DATEX-P EIRPAC ENTEL ERICSON INFONET INTELPAC ISRANET (see note) MAYPAC MCI PAXNET RC/KTAS/JT SWITCHSTREAM-1 (see note) TELENET (see note) TELEPAC (see note) TYMNET VENUS-P (see note) YUPAK
2	TRANSPAC
3 and 4	Reserved (see note)
5	AUSTPAC DACOM-NET DATAPAK (Finland) LUXPAC NZPO PACNET RENPAC
6	ARPAC IBERPAC INFOSWITCH
7	DCS ITAPAC TELEPAC (Singapore)
8	DDX-P '80 SAPONET
9	DATANET-1
10 and 11	Reserved (see note)

Figure 32. VSE VM Network Types for VTAM X.25 Support

Note: VSE The values 3, 4, 10, and 11 are reserved. If you have previously used these values to define your networks, there is no need to change them. Network types that were defined with 3, 4, 10, and 11 are now defined as shown in Figure 33.

Previous NETTYPE Value	Vendors' Network Names	Current NETTYPE Value
3	TELEPAC — Switzerland	1
4	DATAPAC — Denmark DATAPAK — Norway ISRANET — Israel SWITCHSTREAM1 — U.K. TELEPAC — Mexico	1
10	VENUS-P — Japan	1
11	DDX-P — Japan	8

Figure 33. VSE Valid Network Types from Previous Releases of VTAM

CHARGACC = YES|NO

specifies whether incoming calls with reverse charging will be accepted or rejected by VTAM. CHARGACC applies to all switched virtual circuits on this port with incoming call capability.

You need to specify it only when the optional user facility reverse charging acceptance is subscribed to, but incoming calls with reverse charging will not be honored by VTAM.

YES

specifies that reverse charging requests will be honored.

NO

specifies that reverse charging acceptance will **not** be honored.

CHARGE = YES|NO

specifies the charging method for outgoing call requests established through this port.

YES

specifies that all outgoing calls through this port request reverse charging by indicating the optional user facility, Reverse Charging, in the Call Request packet.

NO

specifies that outgoing calls on this port do **not** request reverse charging. This port will be charged for the call.

CHARGE=NO can be overridden by the DIALNO operand on the PATH definition statement. See “The VTAM PATH Definition Statement” on page 248.

DIALNO = DTE address

specifies the DTE address of this port. This number must match the number assigned by the network common carrier during network subscription. It can be from 1 – 15 decimal digits.

Note: DIALNO must be specified for some networks when calling out from the X.25 port; it is optional for others. Contact your network common carrier for more details.

MAXOUT = 7|n

specifies the maximum number of link level I-frames that will be transmitted before waiting for an acknowledgement. The maximum value cannot exceed 7. Specify *n* as an integer in the range 1 – 7.

For most networks this value is fixed at 7. Consult your network documentation or network common carrier representative.

NETLEVEL = 80|84

specifies the level of CCITT standards used in the x.25 network. VTAM must know this level in order to do the processing appropriate to that level.

80 is the default and indicates that the network is at the level of the 1980 CCITT x.25 Recommendation.

84 indicates that the network is at the level of the 1984 CCITT x.25 Recommendation.

PLENGTH = 16|32|64|128|256|512|1024|2048|4096

specifies the maximum user data field length selected for nonstandard default packet size. This packet size is common to all switched virtual circuits defined by the VCALLS operand. The size is the same for both directions of transmission. If you do not specify a PLENGTH value, the default packet size of 128 bytes is used.

To specify a packet size for switched virtual circuits that is different from the default, you must have subscribed to the optional user facility, Nonstandard Default Packet Size.

To specify a packet size for permanent virtual circuits that is different from the default, see "VSE VM The VCPARMS Statement" on page 171.

Note: If your PSDN uses a packet size other than 128 bytes, or if you subscribe to an extended facility that uses a packet size other than 128 bytes, you must specify a value for PLENGTH that matches that packet size. You **must not** allow PLENGTH to default to 128 bytes.

PMOD = 8|128

specifies the packet sequence number modulus.

If you do not specify PMOD, the modulus defaults to 8. If you specify 128, you are specifying extended packet sequence numbering, an optional user facility allowed by some networks. In order to specify PMOD=128, you must have specified this optional user facility when you subscribed to packet-switched data network.

PWINDOW = 2|n

specifies the window size selected as the nonstandard default window size common to all switched virtual circuits defined by the VCALLS operand. You can specify PWINDOW as a decimal value from 1 up to a value less than, but not including, the PMOD specification (that is, $1 \leq \text{PWINDOW} < \text{PMOD}$). If you do not specify this operand, the default window size is 2.

Note: The window size is the same for both directions of the transmission. If the window sizes are not the same, hung sessions will occur.

To specify a window size for switched virtual circuits that is different from the default, you must have subscribed to the optional user facility, Nonstandard Default Window Size.

To specify a window size for permanent virtual circuits that is different from the default, see "VSE VM The VCPARMS Statement" on page 171.

Note: If your PSDN uses a window size other than 2, or if you subscribe to an extended facility that uses a window size other than 2, you must specify a value for PWINDOW that matches that window size. You **must not** allow PWINDOW to default to 2.

REPLYTO = 3|n

specifies in seconds the time allowed by the DTE between the transmission of frames and receipt of an acknowledgement frame. The value of REPLYTO must match the actual speed of the physical access line. The range of valid specifications is 0.1 – 25.5 seconds in 0.1 second intervals.

Check with your network common carrier for values allowed or required by your network.

RETRIES = 7|n

specifies the maximum number of times a frame is retransmitted following expiration of the REPLYTO timer interval. The range of valid specifications is 3 – 31.

Check with your network common carrier for values allowed or required by your network.

VCALLS = (lic,hic,ltc,htc,loc,hoc)

defines how the switched virtual circuits are allocated among the logical channels on this port. This operand is required for switched virtual circuits.

lic,hic

specifies the range of logical channel identifiers for one-way logical channels incoming. It is required when you subscribe to one-way logical channels incoming.

lic specifies the identifier of the lowest incoming channel.

hic specifies the identifier of the highest incoming channel.

Note: Any logical channel identifiers for permanent virtual circuits must be lower than this range.

ltc,htc

specifies the range of logical channel identifiers for two-way channels.

ltc specifies the identifier of the lowest two-way channel.

htc specifies the identifier of the highest two-way channel.

loc,hoc

specifies the range of logical channel identifiers for one-way channels outgoing. It is required when you subscribe to one-way logical channels outgoing.

loc specifies the identifier of the lowest outgoing channel.

hoc specifies the identifier of the highest outgoing channel.

Valid specifications for this operand are 3 hex digits in the range X'000' – X'FFF'.

Note: Although value X'000' can be coded, most packet-switched data networks reserve use of logical channel 0. If your network reserves use of logical channel 0, do not specify X'000'.

The range of value pairs must be in increasing number order, such that,

lic is a value less than or the same as *hic*.

ltc is greater than *hic* but a value less than or the same as *htc*.

loc is greater than *htc* but a value less than or the same as *hoc*.

If a specification is omitted, commas must be inserted with no blank spaces unless they trail the last specification. For example, to specify two-way logical

Packet Major Node: PORT

channels and one-way logical channels outgoing but no one-way logical channels incoming, you might use the following:

```
VCALLS=(, ,004,005,006,008)
```

To specify one-way logical channels incoming and outgoing but no two-way logical channels, you might use the following:

```
VCALLS=(004,005,,,006,008)
```

To specify one-way logical channels incoming and two-way logical channels but no one-way logical channels outgoing, you might use the following:

```
VCALLS=(004,005,006,008)
```

VSE VM The VCPARMS Statement

VCPARMS is an optional definition statement.

For permanent virtual circuits: The VCPARMS statement specifies values for packet and window sizes other than the standard values for each permanent virtual circuit or group of permanent virtual circuits for which the VCPARMS is coded.

For switched virtual circuits: The VCPARMS statement specifies values used to negotiate requested flow control parameters on incoming calls. A user who requested the optional user facility, Flow Control Parameter Negotiation, can specify VCPARMS to negotiate the packet and window sizes when the switched virtual circuits are set up. When a remote DTE calls, the network will indicate the packet and window size it proposes for each direction of the transmission. The values in the VCPARMS statement are used to tell the network the values that your installation will accept. The values for packet size must be between the value subscribed to and the standard value of 128. The value of window size must be between the standard value of 2 and the window size subscribed to.

Negotiating flow control parameters begins differently for different networks. For details of your network, consult your network documentation.

In order to negotiate flow control parameters, you must have subscribed to the optional user facility, Flow Control Parameter Negotiation. Additionally, your network must accept Call Accepted packets with facility fields. Negotiating packet and window values enables your installation to limit the amount of storage used by connections established by incoming calls.

The values defined by PLENGTH and PWINDOW on the PORT definition statement are always used when the call originates from your host.

You can code up to seven VCPARMS definition statements for each packet major node. VCPARMS definition statements immediately follow the PORT definition statement under a packet major node.

Name	Definition Statement	Operands
[name]	VCPARMS	LC = (lcn,hcn) [,PLENGTH = 16 32 64 <u>128</u> 256 512 1024 2048 4096] [,PWINDOW = <u>2</u> n]

name

Specification of a *name* is optional.

LC = lcn,hcn

specifies the logical channel identifier or the range of logical channel identifiers for which this VCPARMS statement will apply.

lcn

specifies the lowest logical channel identifier in the range of channels to which this VCPARMS statement applies. Valid specifications consist of 3 hexadecimal digits in the range X'000' – X'FFF'.

hcn

specifies the highest logical channel identifier in the range of channels to which this VCPARMS statement applies. Valid specifications consist of 3 hexadecimal digits in the range X'000' – X'FFF'.

If this VCPARMS statement applies to only one channel, specify that logical channel identifier for both *lcn* and *hcn*.

The values for logical channel identifiers must be in ascending order. Additionally, a logical channel identifier may occur only once in a group of VCPARMS statements.

In most networks, logical channel zero (0) is reserved and should not be coded. Consult your network common carrier representative to learn if your network allows logical channel zero.

If this operand is incorrectly coded, this VCPARMS statement is ignored, and the standard default packet and window sizes will be used. This operand is required if VCPARMS is coded.

When logical channel identifiers are for switched virtual circuits, the range of *lcn* and *hcn* must be a subset of or identical to the VCALLS specifications for *lic* and *hic*, or *ltc* and *htc*, or both.

PLENGTH = 16|32|64|128|256|512|1024|2048|4096

specifies the maximum length of the user data field in a data packet. The value is the same for both directions of the transmission.

For permanent virtual circuits, the value specified must be agreed upon by your installation and the packet-switched data network (PSDN).

For switched virtual circuits, the PLENGTH value specifies the limit to which the packet size is negotiated as described above.

PWINDOW = 2|n

specifies the window size used for each logical channel on this VCPARMS. You can specify PWINDOW as a decimal value from 1 up to a value less than, but not including, the PMOD specification on the PORT definition statement (that is, $1 \leq \text{PWINDOW} < \text{PMOD}$). If you do not specify this operand, the default window size is 2.

Note: The window size is the same for both directions of the transmission. If the window sizes are not the same, hung sessions will occur.

If you do not specify this operand, the default window size is 2.

For permanent virtual circuits, the value specified must be agreed upon by your installation and by the PSDN.

For switched virtual circuits, the value specified for PWINDOW specifies the limit to which the window size is negotiated (as described above).

VSE VM **Defining a Packet Major Node: Nonswitched Lines**

A permanent virtual circuit appears to VTAM as an SDLC nonswitched line. For each permanent virtual circuit you have subscribed, code an SDLC nonswitched line.

Note: Whenever “nonswitched line” appears in this chapter, it refers to the line representing the permanent virtual circuit to VTAM.

This section contains all the definition statements with operands needed to code a nonswitched line. In this section, you will find the

- GROUP statement
- LINE statement
- PU statement
- LU statement.

VSE VM **The GROUP Statement for a Nonswitched Line**

This GROUP statement defines a nonswitched line group. It also carries other operands that “sift down” to following statements that do not explicitly override them.

You can code these operands in the GROUP definition statement. The explanation of each operand appears in the description of the definition statement to which the operand applies. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

Name	Definition Statement	Operands
name	GROUP	DIAL = NO [,DISCNT = ([YES NO] [,F NF])]¹ [,DLOGMOD = default logmode entry name]² [,ISTATUS = ACTIVE INACTIVE]³ [,LNCTL = SDLC] [,LOGAPPL = application program name]² [,LOGTAB = interpret table name]² [,MAXDATA = size 261 265]¹ [,MODETAB = logon mode table name]² [,PACING = n 0 1]² [,PUTYPE = 1 2 4 5]¹ [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS]² [,USSTAB = USS definition table name]² [,VPACING = n 0 2]²

Notes:

1. Applies to a PU definition statement for a physical unit on a nonswitched line.
2. Applies to an LU definition statement.
3. You can specify this operand in the GROUP, LINE, PU, or LU statement. It is meaningful for lines, physical units, and logical units. Its explanation appears in the LINE, PU, and LU statement descriptions.

name

provides the minor node name for the line group. It contains 1 – 8 alphanumeric characters beginning with an alphabetic character other than a \$ character.

This operand is required.

DIAL = NO

specifies that the lines in the group represent permanent virtual circuits.

LNCTL = SDLC

specifies that the virtual circuits under an X.25 port appear to VTAM like SDLC lines. If you do not code this operand, the lines will default to SDLC, and notification of this default is sent to the VTAM operator.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description of this operand, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM The LINE Statement for a Nonswitched Line

Code one LINE statement for each nonswitched line. The LINE statement defines to VTAM:

- The name for the line
- The logical channel identifier for the permanent virtual circuit represented by this line
- Certain procedural options to be used for this line.

The line identified by the ADDRESS operand on this statement may be defined only once under a packet major node.

You can code these operands in the LINE definition statement. The explanation of each operand appears in the description of the definition statement to which the operand applies. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

Name	Definition Statement	Operands
name	LINE	ADDRESS = logical channel identifier [,DISCNT = ([YES NO] [,E INF])]¹ [,DLOGMOD = default logmode entry name]² [,ISTATUS = ACTIVE INACTIVE]³ [,LOGAPPL = application program name]² [,LOGTAB = interpret table name]² [,MAXDATA = size 261 265]¹ [,MODETAB = logon mode table name]² [,PACING = n 0 1]² [,PUTYPE = 1 2 4 5]¹ [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS]² [,USSTAB = USS definition table name]² [,VPACING = n 0 2]²

Notes:

1. Applies to a PU definition statement for a physical unit on a nonswitched line.
2. Applies to an LU definition statement.
3. You can specify this operand in the GROUP, LINE, PU, or LU statement. It is meaningful for lines, physical units, and logical units. Its explanation appears in the LINE, PU, and LU statement descriptions.

name

provides the minor node name for the line. It contains 1 – 8 alphanumeric characters beginning with an alphabetic character other than a \$ character.

This operand is required.

ADDRESS = logical channel identifier

specifies (as a hexadecimal value X'000' – X'FFF') the logical channel identifier for the permanent virtual circuit represented by this LINE statement. The defined address cannot be overridden by the U operand of the VARY NET,ACT command.

Packet Major Node: LINE for a Nonswitched Line

ISTATUS = ACTIVE|INACTIVE

indicates whether this line is activated when the packet major node to which it belongs is activated and provides a “sifting” value for the PU and LU statements following this line.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE). This can be overridden by the SCOPE operand on the VARY ACT command when the major node is activated.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM The PU Statement for a Physical Unit on a Nonswitched Line

Code one PU statement for the physical unit of any type (1, 2, 4, or 5) with which VTAM will communicate over this nonswitched line. The PU statement specifies:

- The resource name for the physical unit
- The physical unit type (1, 2, 4, or 5)
- The station address of the physical unit
- The maximum size of a PIU or PIU segment that VTAM will send to the physical unit
- The subarea address of the physical unit (types 4 and 5 only).

Note: VTAM uses the PU statement to define the link station for an adjacent host processor (physical unit type 5) or communication controller (physical unit type 4).

You can code these operands in the PU definition statement. The explanation of each operand appears in the description of the definition statement to which the operand applies. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

Name	Definition Statement	Operands
name	PU	ADDR = char [,DISCNT = ([YES NO] [,F NF])] [,DLOGMOD = default logmode entry name] ¹ [,ISTATUS = ACTIVE INACTIVE] ² [,LOGAPPL = application program name] ¹ [,LOGTAB = interpret table name] ¹ [,MAXDATA = size 261 (PUTYPE = 1) 265 (PUTYPE = 2)] [,MODETAB = logon mode table name] ¹ [,PACING = n 0 1] ¹ [,PUTYPE = 1 2 4 5] [,SPAN = (spanname)] [,SSCPFM = FSS USSCS] ¹ [,SUBAREA = n] [,USSTAB = USS definition table name] ¹ [,VPACING = n 0 2] ¹

Notes:

1. Applies to LU definition statement.
2. You can specify this operand in the GROUP, LINE, PU, or LU statement. It is meaningful for lines, physical units, and logical units. Its explanation appears in the LINE, PU, and LU statement descriptions.

name

is the minor node name of the physical unit represented by this statement.

This operand is required.

ADDR = char

specifies the physical unit’s station address by which the physical unit is identified at the logical link control level.

Packet Major Node: PU for a Nonswitched Line

char

is the 2-digit hexadecimal station address. The valid range is X'01' – X'FE'. Consult the relevant device publication for guidance in assigning this value.

For example, if the station address is X'C1', you should code ADDR=C1 on the PU definition statement.

Note: This operand is required for type 1 and 2 physical units. If PUTYPE=5 is specified, ADDR defaults to X'C1'; no other value need be given for a type 5 physical unit because the default (X'C1') will always work.

DISCNT = ([YES|NO] [F|NF])

YES|NO

specifies whether VTAM is to terminate its SSCP-PU and SSCP-LU sessions when the last associated LU-LU session (application program-to-logical unit session) is terminated.

YES

indicates that VTAM is to automatically terminate the SSCP-PU and SSCP-LU sessions as soon as the last logical unit-to-application program (LU-LU) session is terminated. If any of the LUS request their own session termination, VTAM ignores the HOLD part of a character-coded layoff or the LAST-NOTLAST part of a field-formatted Terminate Self request. VTAM also rejects any attempt made by the physical unit to terminate its own SSCP session with a Request Disconnect request. Before the physical unit and its logical units can be used again, they must be reactivated by the domain operator.

NO

indicates that VTAM is to terminate the SSCP-PU and SSCP-LU sessions when one of the following conditions is met:

- When VTAM receives a normal Request Disconnect request from the physical unit. VTAM allows any LU-LU sessions associated with that physical unit to terminate normally.
- When VTAM receives an immediate Request Disconnect request from the physical unit. VTAM immediately terminates any existing LU-LU sessions associated with that physical unit. This request overrides any previous normal Request Disconnect request from the physical unit.
- All LU-LU sessions have been terminated as a result of a character-coded logoff for which HOLD=NO was specified (or inserted using a USS definition table), a Terminate Self request for which LAST was specified, or a VARY NET,INACT command. If any LU-LU sessions were terminated by any other means (for example, by an application program CLSDST macroinstruction), the SSCP-PU and SSCP-LU sessions are not terminated.

F|NF

specifies whether VTAM is to indicate "final-use" status in the DACTPU request unit when it deactivates a physical unit as a result of DISCNT=YES. This operand does not apply when DISCNT=NO is specified, nor does it have any effect on the VARY NET,INACT command. If F is specified or assumed by default, "final-use" status is indicated and the physical connection may be broken. If NF is specified, "not-final-use" status is indicated and the phys-

ical connection should not be broken. Each device has its own requirements regarding “final-use” status. To determine whether F or NF should be specified for a given device, consult the appropriate installation publication for the device.

ISTATUS = ACTIVE|INACTIVE

provides a “sifting” value for the LU statements following this physical unit.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE). Note that this specification can be overridden by the SCOPE operand on the VARY ACT command when the major node or the line is activated.

MAXDATA = size|261(for type 1 PU)|265(for type 2 PU)

specifies the maximum number of bytes that the physical unit can receive in one PIU or PIU segment. A PIU includes data and both the transmission header and the request/response header.

Specify *size* as an integer in the range 5 – 65535.

This specification varies with the device and the default may not be used for all devices. To determine the maximum PIU (or PIU segment) size that the physical unit can receive, consult the publications for the specific type of station represented by this PU statement.

The maximum amount of user data that VTAM sends to the physical unit in one PIU 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 (always 3 bytes) and the transmission header (either 2 bytes for a type 1 physical unit or 6 bytes for a type 2 physical unit).

For type 4 and 5 physical units, you do not have to specify this value.

PUTYPE = 1|2|4|5

specifies the physical type constituting the SNA station represented by this PU definition statement.

- 1**
indicates an SNA terminal.
- 2**
indicates an SNA cluster controller.
- 4**
indicates another domain's NCP (with NPSI) in a communication controller.
- 5**
indicates another domain's VTAM and a telecommunications subsystem or communication adapter.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Packet Major Node: PU for a Nonswitched Line

SUBAREA = n

specifies the subarea address assigned to the physical unit (NCP or VTAM) represented by this PU statement.

n is an integer in the range 1 – 255. (Or from 1 through the value of the RACSASUP field of ISTRACON, if you have modified that field. See *VTAM Customization* for descriptions of RACSASUP and ISTRACON).

The value of *n* must be the same as the subarea address defined for this physical unit in the other domains of the network.

VTAM uses the subarea value to determine the primary of two physical units; the one with the highest subarea is always primary.

VSE VM The LU Statement for an LU on a Nonswitched Line

Code one LU statement for each logical unit associated with a physical unit (type 1 or 2) attached to a nonswitched line.

The LU statement specifies:

- The resource name for the logical unit
- The local address for the logical unit
- Use of the pacing option.

Each logical unit associated with a type 1 or 2 physical unit on a nonswitched line must be represented by a separate LU definition statement. LU statements immediately follow the PU statement for the physical unit with which they are associated.

Name	Definition Statement	Operands
name	LU	LOCADDR = n [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] ¹ [,LOGAPPL = application program name] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]

Notes:

1. You can specify this operand in the GROUP, LINE, PU, or LU statement. It is meaningful for lines, physical units, and logical units. Its explanation appears in the LINE, PU, and LU statement descriptions.

name

provides the minor node name for the logical unit.

This operand is required.

LOCADDR = n

specifies the local address (in decimal, without leading zeros) of the logical unit. The valid range of addresses for logical units associated with a type 1 physical unit is 0 – 63; for logical units associated with a type 2 physical unit, the valid range is 1 – 255.

Note: The specification of LOCADDR depends upon the requirements of the device being defined. Consult the appropriate component description manual for these restrictions.

Note: The value of LOCADDR depends upon the requirements of the device being defined. Consult the appropriate component description manual for these restrictions; for example, logical units associated with a 3279 or 3276 control unit must have a LOCADDR in the range 2 – 33.

DLOGMOD = default logmode entry name

specifies the name of the logmode entry to be used by default if one is not otherwise provided. If this operand is not coded and the name of a logmode entry is not otherwise provided, the first entry in the applicable logmode table is used by default.

ISTATUS = ACTIVE|INACTIVE

specifies whether this logical unit is to be activated when the physical unit is first activated.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE). Note that this can be overridden by the SCOPE operand on the VARY ACT command when the major node is activated.

LOGAPPL = application program name

indicates the name of an application program to which this logical unit is to be automatically logged on when it is activated. The name must correspond to the network-unique name assigned to the application program by an APPL definition statement.

If LOGAPPL is not coded, the terminal operator, an application program, or the domain operator initiates logons through USS facilities. For more information on establishing sessions, see *VTAM Installation and Resource Definition*.

LOGTAB = interpret table name

specifies the name of an interpret table to be used by VTAM when processing logons originating from the logical unit.

MODETAB = logon mode table name

is the name of a logon mode table to be used for the LU. The name you code for the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*. If you do not name a logon mode table for a logical unit by the MODETAB operand, an IBM-supplied logon mode table (ISTINCLM) is used.

PACING = n|0|1

specifies the way that the flow of data is to be paced from VTAM (the boundary node) to the secondary logical unit. For more information on pacing, see *VTAM Installation and Resource Definition*.

Note: You should consider the effects of x.25 flow control when specifying this value.

n

specifies the number of normal-flow requests that VTAM is to send for a given LU-LU session before waiting for a pacing response. No further normal-flow requests can be sent to the logical unit until the logical unit is ready to receive more requests.

Specify *n* as a decimal integer in the range 1 – 255.

0

specifies that no pacing is to be performed for sessions with the logical unit.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SSCPFM = FSS|USSCS

specifies whether the logical unit uses formatted commands (FSS) or character-coded commands (USSCS) when communicating with the SSCP.

See the publications for each individual device to determine whether formatted or character-coded commands are supported by that device.

USSTAB = USS definition table name

specifies the name of a USS definition table to be used for the logical unit. USS definition tables are described in *VTAM Installation and Resource Definition*. If this operand is omitted, the IBM-supplied USS definition table (ISTINCDT) is used for the logical unit when character-coded requests are received.

VPACING = n|0|2

specifies the way that the flow of data is to be paced between the primary logical unit and VTAM's boundary function (2-stage pacing). For more information on pacing, see *VTAM Installation and Resource Definition*.

n

specifies the number of normal-flow requests that the primary logical unit is to send for a given LU-LU session before waiting for a pacing response. No further normal-flow requests can be sent to the logical unit until VTAM's boundary function is ready to receive more requests.

Specify *n* as a decimal integer in the range 1 – 63.

0

specifies that no pacing is to be performed for session with the logical unit; that is, VTAM will not wait for a pacing response.

VSE VM **Defining a Packet Major Node: Switched Lines**

A switched virtual circuit appears to VTAM as an SDLC switched line. However, there is no one-to-one relationship with the switched virtual circuit you coded on the VCALLS operand. Rather, the mapping of a switched virtual circuit to a particular switched line occurs when a connection is made.

Note: Whenever “switched line” appears in this chapter, it refers to the line representing the switched virtual circuit to VTAM.

This section contains all the definition statements with operands needed to code a switched line of the packet major node. In this section, you will find the:

- GROUP statement
- LINE statement
- PU statement.

VSE VM The GROUP Statement for a Switched Line

This GROUP statement defines a switched line group; it also carries other operands that “sift down” to following statements that do not explicitly override them.

If a line is defined in more than one line group, only one of the groups can be active.

You can code these operands in the GROUP definition statement. The explanation of each operand appears in the description of the definition statement to which the operand applies. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

Name	Definition Statement	Operands
name	GROUP	DIAL = YES [,ANSWER = ON OFF] ¹ [,CALL = IN OUT INOUT] ¹ [,ISTATUS = ACTIVE INACTIVE] ² [,LNCTL = SDLC] [,MAXLU = n 2] ³ [,SPAN = (spanname)] [,SUBADIAL = YES NO] (V3R1.2 and later)

Notes:

1. Applies to a LINE definition statement for a switched line.
2. You can specify this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.
3. Applies to a PU definition statement for a physical unit on a switched line.

name

provides the minor node name for the line group. It contains 1 – 8 alphanumeric characters beginning with an alphabetic character other than a \$ character.

This operand is required.

DIAL = YES

specifies that the lines in the group require switched line control protocols.

LNCTL = SDLC

specifies that the virtual circuits under an X.25 port appears to VTAM like SDLC lines. If you do not code this operand, the lines will default to SDLC, and notification of this default is sent to the VTAM operator.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SUBADIAL = YES|NO

tells VTAM whether the lines in the group are used for switched subarea connections. If SUBADIAL = YES, every line in the group is a switched subarea line. The default is NO.

Packet Major Node: GROUP for a Switched Line

This is a new operand for the GROUP statement, for switched subarea connections.

VSE VM The LINE Statement for a Switched Line

Code one LINE statement for each switched line. The LINE statement defines to VTAM:

- The name for the line
- Certain procedural options to be used for this line.

You can code these operands in the LINE definition statement. The explanation of each operand appears in the description of the definition statement to which the operand applies. See “Sift-Down Effect in VTAM Definition Statements” on page 64 for more information.

Name	Definition Statement	Operands
name	LINE	[,ADDRESS = address] [,ANSWER = ON OFF] [,AUTO = address] [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] ¹ [,MAXLU = n 2] ² [,SPAN = (spanname)]

Notes:

1. You can specify this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.
2. Applies to a PU definition statement for a physical unit on a switched line.

name

provides the minor node name for the communication line. It contains 1–8 alphanumeric characters beginning with an alphabetic character other than a \$ character.

This operand is required.

ADDRESS = address

specifies an address for the line that is associated with a switched virtual circuit. Valid specifications are in the range X'000' – X'FFF'.

ANSWER = **ON**|OFF

specifies whether lines can be used for incoming calls. If ANSWER=ON (the default) is specified, physical units can dial into VTAM when the line is activated. If ANSWER=OFF is specified, the physical units cannot dial into VTAM, regardless of whether the line is active or inactive. The answer state of the line can be altered after activation by a VARY NET,ANS command.

This operand is ignored for switched subarea connections.

AUTO = address

specifies an address for lines with CALL=OUT or CALL=INOUT. The specification can be any address in the range X'000' – X'FFF' and must match the address specified on the ADDRESS operand.

CALL = **IN**|OUT|INOUT

specifies whether stations, or VTAM, or both, can initiate calls over the line represented by this LINE statement.

Packet Major Node: LINE for a Switched Line

If the line is to be used only for incoming calls (the stations call VTAM), code CALL=IN, which is the default. If the line is to be used only for outgoing calls (VTAM calls the physical unit), code CALL=OUT. If the line is to be used for both incoming and outgoing calls, code CALL=INOUT.

If you code CALL=OUT or CALL=INOUT for a **non-X.21** SDLC switched subarea line, the AUTO operand is required.

The VCALLS operand specification is related to the specification of this operand as follows:

Notes:

1. If *lic* and *hic*, or *ltc* and *htc*, were specified for VCALLS, at least one LINE definition statement must be specified with CALL=IN or CALL=INOUT in order to accept incoming calls.
2. If CALL=OUT or CALL=INOUT is specified, VCALLS must be specified with *loc* and *hoc*, or *ltc* and *htc*, in order for VTAM to dial-out.
3. For X.25 connections, if you specify CALL=OUT or CALL=INOUT, you must specify an AUTO operand, because manual dialing by the operator is not supported.

ISTATUS = ACTIVE|INACTIVE

specifies whether the line is to be activated after the first activation of the packet major node and provides a “sifting” value for the PU statements following this line.

When ISTATUS=ACTIVE is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If ISTATUS=INACTIVE is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded ISTATUS=INACTIVE). Note that this can be overridden by the SCOPE operand on the VARY ACT command when the major node is activated.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VSE VM The PU Statement for a PU on a Switched Line

Code one PU statement for each physical unit with which VTAM will communicate over this switched line.

The PU statement specifies:

- The resource name for the physical unit
- The maximum number of logical units to be associated with the physical unit.

Name	Definition Statement	Operands
name	PU	[ISTATUS = ACTIVE INACTIVE] ¹ [, MAXLU = n 2] [, SPAN = (spanname)]

Notes:

1. You can specify this operand in the GROUP, LINE, or PU statement. It is meaningful for lines and physical units. Its explanation appears in the LINE and PU statement descriptions.

name

is the minor node name of the physical unit represented by this statement.

This operand is required.

ISTATUS = ACTIVE|INACTIVE

provides a “sifting” value for other minor nodes in this group.

When **ISTATUS = ACTIVE** is coded or assumed by default, the LOCAL is activated automatically when the major node to which it is attached is activated. If **ISTATUS = INACTIVE** is coded, the LOCAL is left inactive after the first activation of an inactive major node that contains the LOCAL. Later activations of an already active major node activate all the LOCALS not previously active (including the ones for which you coded **ISTATUS = INACTIVE**). Note that this specification can be overridden by the SCOPE operand on the VARY ACT command when the major node is activated.

MAXLU = n|2

is, for a physical unit on a switched line (DIAL = YES), the maximum number of logical units associated with the physical unit that can communicate with VTAM.

n is an integer in the range 1 – 255.

Note: For a type 4 or 5 physical unit on a switched subarea connection, MAXLU is not applicable.

SPAN = (spanname)

Code this operand if you are using the NetView program or NCCF. For a full description, see either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

Defining Switched Major Nodes

A switched major node contains definitions for potential switched connections. These can be switched connections to a subarea node or to a peripheral node, across the following facilities:

- SDLC lines
- X.25 networks
- Local area networks (peripheral nodes only).

Attachment to these facilities can be through an NCP or directly to a host processor, such as an IBM 9370 with a telecommunications subsystem.

A switched major node is defined by filing a single VBUILD statement for the major node and separate PU, PATH, and LU statements for each minor node. (The LU statement is not applicable for a switched subarea connection.) One VBUILD statement must be included in each member and placed before the first PU statement.

A peripheral physical unit on a switched line is identified by means of the unit's station identification number, which is also specified on the PU statement.

A subarea physical unit on a switched line is identified by means of its subarea number and its NETID.

Note: Because a subarea physical unit can have multiple connections, a connection identifier (IDNUM) is used to distinguish the multiple PU statements that may apply to a subarea physical unit.

If VTAM is to establish communication with a physical unit by means of a dial-out operation, PATH statements must be placed after the PU statement to define the paths over which contact can be established. The PATH statement tells VTAM the line group and the dial characters to be used.

The PU and LU statements define physical units and logical units, on switched SDLC lines, that can be dialed into or dialed out from communication controllers. (These SDLC lines are defined in switched line groups in the NCP major node.) For dial-out operations, the PATH statement defines the possible paths used to establish connection between the communication controller and the physical unit. Additionally, PU and LU statements that define virtual physical units and logical units with dial-in capability (for example, NTO-controlled devices), should be coded in a switched major node. Virtual physical units and logical units can be coded only for switched lines defined in an NCP major node.

The PU and LU statements used in a switched major node are very similar to the PU and LU statements used in a local SNA major node, and to the PU and LU statements used in an NCP major node. The statements used for the switched major nodes are called PU (switched) and LU (switched) statements. See Figure 34 on page 191 for an example of statements defining a switched major node. For planning information on switched major nodes, see *Network Program Products Planning*.

Switched type 2.1 peripheral nodes are fully supported by VTAM only if they establish a connection through an NCP that supports type 2.1 attachment (V4R3). If a type 2.1 peripheral node establishes a connection through a VTAM communication adapter or a pre-V4R3 NCP, VTAM will support the connection but will not permit activation of any independent LUS defined to the peripheral node.

VTAM does not support CP-CP sessions with a type 2.1 peripheral node.

For information on defining a controlling PLU for a switched SNA device in an inter-connected network, see "Defining a Cross-Network Controlling Primary Logical Unit" on page 320.

```

SWNODES1 VBUILD TYPE=SWNET,MAXGRP=2,MAXNO=4
SWPUS1  PU  ADDR=C1,          SDLC ADDRESS OF STATION      X
          ANS=CONTINUE,      S/1 CONTINUES IF NCP IN SHUTDOWN X
          CPNAME=SWPUS1,     CONTROL POINT NAME FOR S/1    X
          ISTATUS=ACTIVE,    INITIAL STATUS OF ACTIVE      X
          MAXDATA=256,       MAXIMUM DATA S/1 CAN RECEIVE X
          MAXOUT=7,          VTAM CAN SEND 7 FRAMES TO S/1  X
          MAXPATH=2,         MAXIMUM NUMBER OF DIAL OUT PATHS X
          MODETAB=S1TABLE,   X
          PACING=7,          X
          PASSLIM=7,         X
          PUTYPE=2,          SNA CLUSTER CONTROLLER (PU_T2.1) X
          SSCPFM=FSS,        USS NOT INVOLVED IN LOGONS     X
          VPACING=14

*
PATH01  PATH DIALNO=12345678, TELEPHONE NUMBER OF S/1      X
          GID=5,             SWITCHED LINE GROUP IDENTIFIER X
          GRPNM=GROUPS1,     SWITCHED LINE GROUP NAME     X
          PID=1,             DIAL PATH IDENTIFIER         X
          REDIAL=3,          NUMBER OF DIAL RETRIES       X
          USE=NO

*
PATH02  PATH DIALNO=12345678901, TELEPHONE NUMBER OF S/1      X
          GID=6,             SWITCHED LINE GROUP IDENTIFIER X
          GRPNM=GROUPS1,     SWITCHED LINE GROUP NAME     X
          PID=2,             DIAL PATH IDENTIFIER         X
          REDIAL=3,          NUMBER OF DIAL RETRIES       X
          USE=YES

*
INDS1LU1 LU  LOCADDR=0,      INDEPENDENT LU                X
          ISTATUS=INACTIVE,  INITIAL STATUS INACTIVE      X
          LOGAPPL=CICSAPPL   CONTROLLING PRIMARY LU CICSAPPL

INDS1LU2 LU  LOCADDR=0,      INDEPENDENT LU                X
          ISTATUS=ACTIVE     INITIAL STATUS ACTIVE

*
DEPS1LU1 LU  LOCADDR=1,      DEPENDENT LU                  X
          ISTATUS=ACTIVE,    INITIAL STATUS ACTIVE        X
          LOGAPPL=CICSAPPL   CONTROLLING PRIMARY LU CICSAPPL

DEPS1LU2 LU  LOCADDR=2,      DEPENDENT LU                  X
          ISTATUS=INACTIVE,  INITIAL STATUS INACTIVE      X
          PACING=1

```

Figure 34. An Example of Statements Defining a Switched Major Node

Note: The 'X' to the right of the statements represents the nonblank character that must be in position 72 of these statements for continuation.

Switched Major Nodes

PU and PATH Statements for a Switched Subarea

The PU statements define subareas attached over switched lines that can be dialed into or dialed out from one of the following:

- A communication controller using NCP
- VSE VM An IBM 9370 with a telecommunications subsystem
- VSE VM An IBM 4361 with a communication adapter.

These lines are defined in switched line groups in an NCP major node, a channel-attachment major node, or a packet major node. For dial-out operations, the PATH statement defines the possible paths to be used to establish connection between the communication controller or host processor and the other subarea.

See Figure 35 for an example of statements defining a switched major node for switched subarea connections.

```
SMN01  VBUILD TYPE=SWNET,MAXGRP=5,MAXNO=5
PU2    PU ADDR=C1,MAXDATA=265,SUBAREA=005,IDNUM=00001,MAXPATH=2,      X
        PUTYPE=5,NETID=NETC,TGN=1
        PATH DIALNO=45408*,GID=2,PID=2,REDIAL=4,GRPNM=GRP14
PU3    PU ADDR=C1,MAXDATA=265,SUBAREA=005,IDNUM=00003,MAXPATH=1,      X
        PUTYPE=5,NETID=NETC
        PATH DIALNO=45196*,GID=1,PID=1,REDIAL=4,GRPNM=GRP14
PU7    PU ADDR=C1,MAXDATA=265,SUBAREA=002,IDNUM=00001,MAXPATH=2,      X
        PUTYPE=4,NETID=NETC,TGN=1
        PATH DIALNO=45423*,GID=2,PID=2,REDIAL=4,GRPNM=GRP14
```

Figure 35. Statements Defining a Switched Major Node for Switched Subarea Connections

VSE VM PU, PATH, and LU Statements for X.25

The PU and LU statements define physical units and logical units on switched lines that correspond to switched virtual circuits through an x.25 port. These lines are defined in switched line groups in the packet major node. For call-out operations the PATH statement defines paths to be used to establish connection between an x.25 port and the physical unit.

See Figure 36 on page 193 for an example of statements defining a switched major node for x.25 connections.

```

X25SVC10 VBUILD TYPE=SWNET,                X
          MAXGRP=8,                          X
          MAXNO=8
PU10SVC  PU ADDR=C1,                        X
          IDNUM=00001,                       X
          MAXDATA=256,                      X
          SUBAREA=005,                      X
          TGN=1,                            X
          PUTYPE=5,                          X
          MAXPATH=5
SVCPTH10 PATH DIALNO=(95501234502),        X
             GID=1,                          X
             PID=1,                          X
             REDIAL=0,                       X
             GRPNM=X25SVC2
PU8SVC   PU ADDR=C1,                        X
          IDBLK=017,                        X
          MAXDATA=256,                      X
          DISCNT=YES,                      X
          IDNUM=31744,                      X
          MAXPATH=5
SVCPTH8  PATH DIALNO=(95501234504),        X
             GID=1,                          X
             PID=1,                          X
             REDIAL=0,                       X
             GRPNM=X25SVC1
LU8SVC1  LU LOCADDR=2
LU8SVC2  LU LOCADDR=3

```

Figure 36. VSE VM Statements Defining a Switched Major Node for X.25 Connections

VSE VM 9370 PU, PATH, and LU Statements for Local Area Network

The PU and LU statements define peripheral physical units and logical units on switched lines that can be dialed in to or dialed out from the 9370/LAN. These lines are defined in switched line groups in the LAN major node. For dial-out operations, the PATH statement defines the possible paths to be used to establish connection between the 9370/LAN and the physical unit.

See Figure 37 on page 194 for an example of statements defining a switched major node for LAN connections. If you have a switched major node defined in your network, you can use a copy of that definition for the switched major node in the LAN environment, and add the operands required for the LAN environment. Operands coded in your present definition that are not required for the LAN environment are allowed, but will have no meaning.

Switched Major Nodes

SWNODE1	VBUILD	TYPE=SWNET,		X
		MAXGRP=4,		X
		MAXNO=400		
PU1	PU	ADDR=04,	SDLC ADDRESS OF STATION	X
			(not used for LAN)	X
		IDBLK=017,		X
		IDNUM=00011,		X
		PUTYPE=2,	SNA CLUSTER CONTROLLER	X
			(PU_T2)	X
		MAXPATH=4,		X
		LANSWDW=(7,1),	LOCAL AREA NETWORK	X
			WINDOWING VALUES	X
		LANSW=YES,	LOCAL AREA NETWORK	X
			PU CAN BE A LAN STATION	X
		MACADDR=00001987,	LOCAL AREA NETWORK	X
			MEDIUM ACCESS CONTROL ADDRESS	X
		SAPADDR=4	LOCAL AREA NETWORK	X
			SERVICE ACCESS POINT ADDRESS	
NCPPATH	PATH	DIALNO=0104400000001987,	NTRI STATION DEFINITION	X
			(not used for LAN)	X
		GRPNM=GP3NCP	GROUP IN AN NCP MAJOR NODE	
LANPATH1	PATH	GRPNM=GP3LAN	LOCAL AREA NETWORK	X
			GROUP IN A LAN MAJOR NODE	
LU31741	LU	LOCADDR=2,		X
		DLOGMOD=D4A32782,		X
		USSTAB=VMUSSTAB		
LU31742	LU	LOCADDR=3,		X
		DLOGMOD=D4A32793,		X
		USSTAB=VMUSSTAB		
PU3	PU	IDBLK=017,		X
		IDNUM=00013,		X
		LANACK=(5.0,2),	LOCAL AREA NETWORK	X
			ACKNOWLEDGEMENT VALUES	X
		LANCON=(10.0,5),	LOCAL AREA NETWORK	X
			CONNECTION VALUES	X
		LANINACT=25.5,	LOCAL AREA NETWORK	X
			INACTIVITY VALUE	X
		LANRESP=(25.4,9),	LOCAL AREA NETWORK	X
			RESPONSE VALUES	X
		MAXPATH=4,		X
		MACADDR=400000000013	LOCAL AREA NETWORK	X
			MEDIUM ACCESS CONTROL ADDRESS	
LANPATH3	PATH	GRPNM=GP3LAN	LOCAL AREA NETWORK	X
			GROUP IN A LAN MAJOR NODE	
LU3	LU	LOCADDR=2,		X
		DLOGMOD=D4A32782,		X
		PACING=0,	NO BOUNDARY FUNCTION	X
			TO LU PACING	X
		USSTAB=VMUSSTAB,		X
		VPACING=0	NO VTAM TO BOUNDARY	X
			FUNCTION PACING	
PU17	PU	IDBLK=017,		X
		IDNUM=00017,		X
		LANSW=YES	LOCAL AREA NETWORK	X
			STATION IS LAN CAPABLE	
LU17	LU	LOCADDR=4		

Figure 37. VSE VM 9370 Statements Defining a Switched Major Node for LAN Connections

The VBUILD Statement

Code a VBUILD statement for each switched major node.

Code the VBUILD statement like this:

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = SWNET [,CONFIGDS = name] [,CONFIGPW = password] [,MAXGRP = n] [,MAXNO = n]

name

a *name* is optional.

TYPE = SWNET

means that the VBUILD statement defines a switched major node to VTAM. All physical units defined in this major node can be connected only by means of a switched link. This operand is required.

MVS VSE CONFIGDS = name

is a 1–8 character data definition name that identifies the configuration restart data set defined by the user for this major node. Include a MVS DD statement using this data definition name (or VSE DLBL and EXTENT statements using this file name) in the VTAM start procedure.

Refer to *Network Program Products Planning* for a description of configuration restart.

MVS VSE CONFIGPW = password

is the 1–7 character password, if required, for VTAM to gain access to the configuration restart data set. If you do not code CONFIGPW, and it is required by VSAM, VSAM prompts the operator for the correct password when VTAM attempts to open the data set.

You may code CONFIGPW only if you also code CONFIGDS.

MAXGRP = n

is the number of unique path groups (GROUP names) that are defined in the GRPNM operand of all PATH statements within the switched major node. The maximum value of *n* is 32767. (Code this operand only if you also code the switched PATH statement.)

MAXNO = n

is the number of unique telephone numbers that are defined in the DIALNO operand (or VSE the number of unique line names defined in the LINENM operand) of all PATH statements within the switched major node. The maximum value of *n* is 32767. Code this operand only if you also code the switched PATH statement. For VTAM LAN support, if you code switched PATH statements with no DIALNO operands, you must code a value of 1 for the MAXNO operand.

The PU (Switched) Definition Statement

Code a PU definition statement for each physical unit in the switched major node. The PU statement is used to define a peripheral or subarea physical unit connected by an SDLC line, an X.25 network, or a local area network.

Code the PU statement like this:

Name	Definition Statement	Operands
name PU	ADDR = station address ⁴ {,IDBLK = identification block ³ , IDNUM = identification number ³ [,CPNAME = cp name ³ (V3R2)]} [,ANS = CONTINUE CONT STOP] ⁴ (V3R1.2 and later) [,BATCH = YES NO] ¹ (pre-V3R2) ⁴ [,DATMODE = HALF FULL] (V3R2) [,DISCNT = (YES NO)[,F NF]) [,DLOGMOD = default logmode entry name] ¹ [,ENCR = REQD SEL OPT NONE] ¹ mvs [,FEATUR2 = LOWERCSE DUALCSE] ¹ [,IRETRY = YES NO] ⁴ [,ISTATUS = ACTIVE INACTIVE] ² [,LANACK = ([t2 0] [,n3 0])] VSE VM 9370 (V3R1.2 and later) [,LANCON = ([ct1] [,cn2])] VSE VM 9370 (V3R1.2 and later) [,LANINACT = ti 4.8] VSE VM 9370 (V3R1.2 and later) [,LANRESP = ([t1] [,n2])] VSE VM 9370 (V3R1.2 and later) [,LANSDDWDW = ([k 2] [,nw 1])] VSE VM 9370 (V3R1.2 and later) [,LANSW = YES NO] VSE VM 9370 (V3R1.2 and later) [,LOGAPPL = controlling primary LU] ¹ [,LOGTAB = interpret table name] ¹ [,MACADDR = macaddr] VSE VM 9370(V3R1.2 and later) [,MAXDATA = size 261 265] [,MAXOUT = n 1] ⁴ [,MAXPATH = n 0] [,MODETAB = logon mode table name] ¹ [,NETID = name] ⁴ (V3R1.2 and later) [,PACING = n 0 1] ¹ [,PASSLIM = n 1] ⁴ [,PUTYPE = n 2 4 5] [,SAPADDR = n 4] VSE VM 9370 (V3R1.2 and later) [,SECTNET = YES NO] ⁴ [,SPAN = spanname] [,SSCPFM = FSS USSSCS USSNTO USS3780 USS3270 USS3275] ¹ [,SUBAREA = n] ⁴ (V3R1.2 and later) [,TERM = terminal type] ¹ [,TGN = n 1 ANY] ⁴ (V3R1.2 and later) [,USSTAB = USS definition table name] ¹ [,VPACING = n 0 2] ¹	

Notes:

1. You can code these operands in the PU or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. See “The LU (Switched) Definition Statement” on page 211 for a description of these operands.
2. You can code this operand in the PU or LU statement to take advantage of the sift-down effect. It is meaningful for both physical units and logical units. Refer either to this section or “The LU (Switched) Definition Statement” on page 211 for a description of this operand.
3. Either CPNAME (V3R2), or both IDBLK and IDNUM are required. You may code all three if you wish. See the description of these parameters in the following discussion for more detail.
4. You can code this operand on the PU statement, but it will have no meaning in the 9370/LAN environment.

name

is the minor node name of the physical unit represented by this statement. This operand is required.

ADDR = station address

is the 8-bit SDLC station address for the physical unit. This address is required for peripheral physical units attached through SDLC lines and X.25 networks. You can get this address from the person who planned the device's installation. Code the address in hexadecimal and do not enclose it in quotation marks or apostrophes.

This operand is ignored for switched subarea connections.

ANS = CONTINUE|CONT|STOP

determines if the physical unit continues to operate or if it stops when the NCP enters automatic network shutdown.

MVS/XA You must code ANS=CONTINUE if the terminal is to participate in XRF sessions.

ANS=CONTINUE continues LU-LU sessions. The operand may be abbreviated to CONT.

Note: When a session is continued and takeover occurs, the dependent LU taken over must support ACTLU ERP or the session is terminated during takeover processing. An independent LU does not receive ACTLU, so this restriction does not apply.

For switched subarea connections, this operand specifies whether a switched subarea connection over lines attached to this physical unit should remain active or be dropped when the owning SSCP is lost. This is used only on a PU statement that defines a subarea physical unit that will be connected to a link station within an NCP. The default is STOP, indicating that the connection should be dropped.

Before V3R2, ANS is valid only for PUTYPE=4/5.

CPNAME = cpname (v3r2)

specifies the control point (CP) name of a type 2.1 peripheral node. It is valid only for type 2.1 nodes that have a CP name.

If CPNAME is specified, it is used to identify a peripheral node to VTAM. During establishment of a switched connection, the CP name (if any) is passed from a type 2.1 peripheral node to VTAM. If CPNAME has been coded, VTAM will use it to

Switched Major Node: PU

associate the peripheral node with its definition; otherwise, VTAM will use IDBLK and IDNUM.

Either CPNAME (V3R2), or both IDBLK and IDNUM are required. You may code all three if you wish.

CPNAME is recommended for type 2.1 peripheral nodes that support it. See appropriate product manual for CPNAME and IDNUM, IDBLK.

Note: VTAM does not support a CP-CP session with a type 2.1 peripheral node.

DATMODE = HALF|FULL (V3R2)

specifies whether the physical unit communicates in half-duplex or full-duplex data mode. The associated line must support simultaneous transmission in both directions.

DATMODE=HALF is the default.

DISCNT = ([YES|NO][,E|NF])

YES|NO

tells VTAM whether to physically disconnect the physical unit when the last logical unit terminates its session with its application program (that is, when there are no more LU-LU sessions).

For a physical unit on a switched link, disconnection means that the dial connection is broken (in effect, the telephone is hung up, thus saving telephone charges) and the SSCP-PU session is terminated. Disconnection on a switched link, as contrasted with a leased link, does not involve deactivating the physical unit or its logical units. (That is, sessions can be requested with those logical units; such a request causes the physical connection to be re-established.)

YES

For peripheral physical units (PUTYPE = 1/2), DISCNT=YES tells VTAM to automatically disconnect the physical unit as soon as the last logical unit terminates its session with its application program. If any logical units request their own session termination, VTAM ignores the part of their request that determines whether the physical unit is to be disconnected (that is, the HOLD part of a character-coded logoff request or the LAST-NOLAST part of a field-formatted Terminate Self request is ignored). VTAM also rejects any attempt made by the physical unit to request its own disconnection (using the Request Disconnect request).

VSE VM For subarea physical units (PUTYPE = 4/5), DISCNT=YES allows automatic disconnection of switched subarea connections. For a VTAM with a directly attached switched subarea connection (such as an IBM 9370 with a telecommunications subsystem, or an IBM 4361 with a communication adapter), the following conditions must be met before automatic disconnect processing can take place:

1. DISCNT=YES must be coded on the switched PU definition statement for the VTAM.
2. The switched subarea connection must be made using a channel-attached SDLC line.
3. All of the LU-LU sessions using the connection, and ending in this VTAM, must terminate. (The VTAM must be one end of the LU-LU session.)

4. No new LU-LU sessions are activated across the connection (from or to this VTAM) within the period specified in the RACSSDTO zappable constant. (RACSSDTO defaults to 30 seconds. See *VTAM Customization* for more information on RACSSDTO.)

Notes:

1. Automatic disconnection is supported only for a switched subarea connection to a VTAM made using a channel-attached SDLC line.
2. Automatic disconnection is **not** supported for a switched subarea connection to an NCP. However, if the other end of the switched line is directly connected to a VTAM, automatic disconnection may be specified in the PU statement in the switched major node of that VTAM.
3. Do not specify DISCNT=YES for a VTAM that acts as an intermediate routing node. If you do, sessions that use the connection but do not terminate in the VTAM may terminate prematurely.
4. Automatic disconnect processing breaks the SSCP-SSCP session that is using this switched subarea connection.

VTAM can automatically disconnect a switched subarea connection regardless of whether it was the original caller or not. In addition, if you code DISCNT=YES for the VTAMs at both ends of the connection, both VTAMs can automatically disconnect at the same time.

NO

indicates that VTAM is to disconnect the physical unit when one of the following conditions is met:

- When VTAM receives a normal Request Disconnect request from the physical unit and all LU-LU sessions have been terminated. Other existing sessions are allowed to end normally.
- When VTAM receives an immediate Request Disconnect request from the physical unit. VTAM immediately terminates any existing LU-LU sessions associated with that physical unit. This request overrides any previous normal Request Disconnect request from the physical unit.
- When all LU-LU sessions have been terminated as a result of a character-coded logoff for which HOLD=NO was specified (or inserted using a USS definition table), a Terminate Self request for which LAST was specified, or a VARY INACT command. If any LU-LU session was terminated by any other means (such as by an application program CLSDST), the physical unit is not disconnected.
- When VTAM receives a VARY HANGUP command for a subarea physical unit (PUTYPE=4/5).

EINF

tells VTAM whether to indicate “final-use” status in the DACTPU request unit when it deactivates a physical unit as a result of DISCNT=YES. This operand does not apply when DISCNT=NO, nor does it have any effect on the VARY INACT command. If you code F or take the default, “final-use” status is indicated. If you code NF, “not-final-use” status is indicated. Each device has its own requirements regarding “final-use” status. To determine whether to code F or NF for a given device, consult the appropriate installation publication for the device.

IDBLK = identification block

is a 3-digit hexadecimal number that denotes the device type. Valid values are X'001' – X'FFE'.

Do not enclose the number in quotation marks or apostrophes. You can get the number from the component description manual for the device or from the person who planned the device's installation. Component description manuals are listed in *Network Program Products Bibliography and Master Index*.

The block number occupies bits 16 – 27 of the 48-bit station ID constructed by VTAM for switched network operation. (See the IDNUM operand below for a description of the station ID.)

Either CPNAME (V3R2), or both IDBLK and IDNUM are required. You may code all three if you wish. You must code IDBLK and IDNUM for any switched peripheral node which is not a type 2.1 peripheral node.

CPNAME is recommended for type 2.1 peripheral nodes that support it. See the appropriate product manual for CPNAME and IDNUM, IDBLK.

IDBLK is required for type 1 and 2 physical units, but it should not be coded for switched subarea connections (type 4 and 5 physical units).

IDNUM = identification number

is a 5-digit hexadecimal number that identifies the specific device (if PUTYPE = 1/2) or the specific connection (if PUTYPE = 4/5).

For peripheral physical units (PUTYPE = 1/2), the device's serial number is frequently used for this purpose. You can get this number from the component description manual for the device, or from the person who planned the device's installation. Component description manuals are listed in *Network Program Products Bibliography and Master Index*.

See *Network Program Products Planning* for special NTO considerations when defining a virtual physical unit.

Either CPNAME (V3R2), or both IDBLK and IDNUM are required. You may code all three if you wish. You must code IDBLK and IDNUM for any switched peripheral node that is not a type 2.1 peripheral node.

CPNAME is recommended for type 2.1 peripheral nodes that support it. See appropriate product manual for CPNAME and IDNUM, IDBLK.

For peripheral physical units, VTAM uses IDBLK and IDNUM to build a 48-bit station ID that is used in XID exchange during the dial procedure. This station ID must be unique for each station within the network (not just within the major node).

The station ID is structured as follows:

Bits	Meaning
0 – 3	Reserved
4 – 7	PUTYPE
8 – 15	X'00'
16 – 27	IDBLK
28 – 47	IDNUM.

For subarea physical units (PUTYPE = 4/5), VTAM uses the IDNUM value to correlate the PU definitions between the two SSCPs that own each end of the switched line. This IDNUM value must be unique for all PU definitions within this SSCP that contain the same subarea number and NETID.

Note: The *same* IDNUM must be specified on the PU definitions in the two SSCPs that own each end of the switched line.

The node identifier field of an XID contains IDNUM along with a value of X'FFF' as the IDBLK.

For subarea physical units, VTAM uses the subarea number specified on SUBAREA and the IDNUM value to build a station ID that is used in some operator messages. That station ID must be unique for each station within the network (not just within the major node).

The station ID is structured as follows:

Bits	Meaning
0–15	Subarea number
16–27	X'FFF'
28–47	IDNUM.

See *Network Program Products Planning* for special NTO considerations for defining a virtual physical unit.

IRETRY = YES|NO

determines whether the boundary NCP (the NCP to which the switched PU becomes connected) retries a polling operation immediately for the device if an idle detect timeout follows a polling operation. For more information on this operand, see *NCP Resource Definition Reference*.

ISTATUS = ACTIVE|INACTIVE

determines whether the physical unit is to be activated after the first activation of the switched major node. It provides a sifting value for the LU statement that follows the PU statement.

When ISTATUS=ACTIVE is specified or assumed by default, the physical unit is activated as part of the first activation of the switched major node that contains the physical unit.

When ISTATUS=INACTIVE is specified, the physical unit is left inactive after the first activation of the inactive major node that contains the physical unit. Subsequent activations of an already active major node activates all physical units not previously active (including those for which ISTATUS=INACTIVE was specified).

Note: The operator can override this value using the SCOPE operand on the VARY ACT command when activating the major node.

VSE VM 9370 LANACK = ([t2|0] [,n3|0])

specifies the acknowledgement delay timer (t2) and number (n3) of information-LPDUS (I-LPDUS) received prior to sending an acknowledgement. This is a new operand of the switched PU statement. If either the timer expires or the count is reached, then an acknowledgement is sent.

The timer value is expressed in seconds or tenths of seconds. The valid range is 0–25.5 seconds. A value of 0, however, means that the timer is disabled.

The valid range for n3 is an integer in the range 0–127.

If either the timer or the counter is specified as 0, then the other must be specified as 0.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

VSE VM 9370 LANCON = ([ct1] [,cn2])

specifies the timer (ct1) and the retry count (cn2) for the connection LPDUS. This is a new operand of the switched PU statement. The timer specifies the time period to elapse before a retry is attempted during connection or disconnection

of a link station. The retry count specifies the number of times to retry a transmission during connection or disconnection of a link station. When the number of retries (*cn2*) has been reached and the timer (*ct1*) has elapsed for each retry, the link station is considered to be in an inoperative condition.

The timer value is expressed in seconds or tenths of seconds. The valid range for the timer is 0–25.4 seconds. If a value of 0 is specified, then the Token-Ring Subsystem uses its default timer value. Consult the appropriate documentation for your subsystem to determine the default timer value.

The valid range for the retry count is an integer in the range 0–254. A value of 0 means no retry will be attempted.

The default values for the timer and the retry count are the values that are specified on the LANCON operand of the PORT statement. The only way to achieve these defaults is not to specify the values for the LANCON operand.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

VSE VM 9370 LANINACT = ti|4.8

specifies the timer inactivity (*ti*). This is a new operand of the switched PU statement. This timer specifies the time period used to determine an inactive condition on a link station.

The timer value is expressed in seconds or tenths of seconds. The valid range is 0–25.5 seconds. If no value is specified for the timer, the default of 4.8 is used. If 0 is specified, then the timer is disabled.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

VSE VM 9370 LANRESP = ([t1] [,n2])

specifies the timer (*t1*) and retry count (*n2*) for a station in connected state. This is a new operand of the switched PU statement. The timer specifies the time period to elapse before a retry is attempted when a station is connected. The retry count specifies the number of times to retry a transmission while a station is connected. When the number of retries (*n2*) has been reached, and the timer (*t1*) has elapsed for each retry, the link station is considered to be in an inoperative condition.

The timer value is expressed in seconds or tenths of seconds. The valid range is 0–25.4 seconds. If a value of 0 is specified, then the Token-Ring Subsystem uses its default timer value. Consult the appropriate documentation for your subsystem to determine the default timer value.

The valid range for the retry count is an integer in the range 0–254. A value of 0 means no retry will be attempted.

The default values for the timer and the retry count are the values that are specified on the LANCON operand of the PORT statement. The only way to achieve these defaults is to not specify the values for the LANRESP operand.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

VSE VM 9370 LANSDDW = ([k|2] [,nw|1])

specifies the send window (*k*) and window step (*nw*). This is a new operand of the switched PU statement. The send window specifies the maximum number of sequentially numbered I-LPDUS that the link station may have outstanding at any time. The window step specifies the number of sequentially numbered I-LPDUS that a link station must receive before increasing the local window.

The valid range for the send window is an integer in the range 1 – 127.

The valid range for the window step is an integer between 0 and the value of *k*. A value of 0 for the window step (*nw*) means that the send window (*k*) is static, and dynamic windowing is disabled.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

VSE VM 9370 LANSW = YES|NO

specifies whether the physical unit can be used as a station on a LAN attached directly to a 9370/LAN. A value of YES specifies that the physical unit can be used as a station on the ring. A value of NO specifies that the physical unit cannot be used as a station on the ring. This is a new operand of the switched PU statement.

If the operand is not specified, then a value must be coded for one of the following operands for the physical unit to be used as a station on the ring:

LANACK
LANCON
LANINACT
LANRESP
LANSDDW
MACADDR
SAPADDR.

The minimum coding required for a dial-out physical unit is to code the MACADDR operand with its value. The minimum coding required for a dial-in physical unit is the LANSW operand with a value of YES.

If a physical unit can be used on a ring that is directly attached to a 9370/LAN, then additional storage in the definition of the physical unit is allocated to contain the LAN definition values and their defaults. This additional storage is 16 bytes per LAN-capable physical unit.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

VSE VM 9370 MACADDR = macaddr

specifies the 12-digit hexadecimal medium access control (MAC) address for the station on the ring that this PU statement defines. This is a new operand of the switched PU statement.

The MAC address may also be specified as an 8-digit hexadecimal number. VTAM prefixes the 8-digit number with 4000 to form the 12-digit address.

A value of 000000000000 is not allowed for the MACADDR operand on the PU statement.

This operand is required if the physical unit is used as a dial-out physical unit.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

Note: The 12-digit value of MACADDR is equivalent to the last twelve digits of the DIALNO operand of the PATH statement in an NCP/Token-Ring interconnection (NTRI) definition.

MAXDATA = size|261|265

is the maximum amount of data in bytes, including the transmission header (TH) and request/response header (RH), that the physical unit can receive in one segment of a path information unit (PIU). *size* is a decimal integer. The maximum value is 65535 bytes. For physical units connected through an NCP, see *NCP Resource Definition Reference* for more information. If you do not

Switched Major Node: PU

code MAXDATA, the value of 261 bytes is used for a PU type 1 and 265 for a PU type 2. A MAXDATA value must be specified for a type 4 or 5 physical unit; there is no default for these physical units. MAXDATA is ignored for type 2.1 nodes attached through an NCP with peripheral node type 2.1 support. The type 2.1 node supplies the actual value used when the connection is established.

Note: In a local area network, the value for the MAXDATA operand on the PU statement must be less than or equal to the value for the MAXDATA operand on the PORT statement for the LAN major node to which the switched physical unit is connected.

MAXOUT = n|1

is the maximum number of path information units (PIUs) that are sent to the physical unit before requesting a response from it. *n* is a decimal integer 1–7.

For performance reasons it is recommended that you code MAXOUT=7 if the physical unit represented by this statement can handle more than one PIU before sending out a link-level response (consult publications for the specific type of SDLC station).

MAXPATH = n|0

is the number of dial-out paths to the physical unit. *n* is a decimal integer 0–256. Zero means that only dial-in paths are available.

Refer to the switched PATH definition statement for a description of defining a dial-out path to a physical unit.

Note: For an x.25 network, the specification should either be the number of x.25 ports or the number of groups with DIAL=OUT or DIAL=INOUT, depending on your configuration.

NETID = name

identifies the network in which this subarea physical unit resides. This operand is used only in gateway SSCPs and is required for a connection to another network.

name specifies a 1–8 character name that identifies the network.

If no value is specified, and if this VTAM is a gateway SSCP or nongateway SSCP (V3R2), then the network specified as NETID in the VTAM start options is used. For pre-V3R2 this operand is not allowed if VTAM is started without NETID. For V3R2, the NETID name must match the NETID in the VTAM start options if GWSSCP=NO is specified in the VTAM start options.

This is a new operand for switched subarea connections.

PASSLIM = n|1

determines, for switched physical units connected through an NCP only, the maximum number of contiguous path information units (PIUs) that the NCP sends to the physical unit at once. *n* is a decimal integer in the range 1 to MAXOUT.

PUTYPE = n|2|4|5

is the physical unit type. The physical unit type depends on the type of cluster controller (such as 3767 or 3791). To determine the physical unit type for a given device, see the component description manual for that device. For a type 2.1 PUTYPE=2.

For switched subarea connections, you must code PUTYPE=4 or PUTYPE=5. PUTYPE=4 or PUTYPE=5 is valid only for V3R1.2 and later. PUTYPE=4 defines the physical unit to be an NCP. PUTYPE=5 defines the physical unit to be a VTAM.

The physical unit type for a LAN switched station must be 2, which is the default.

The value of PUTYPE occupies bits 4–7 of the 48-bit station ID constructed by VTAM for switched network operation. See the IDNUM operand above for a description of the station ID.

VSE VM 9370 SAPADDR = n|4

specifies the service access point (SAP) address of the physical unit that is on the ring. This is a new operand of the switched PU statement.

The valid range for *n* is 4–252. The value of *n* must be a multiple of 4.

This operand applies only if the physical unit can be attached directly to a 9370/LAN.

Note: The hexadecimal value of SAPADDR is equivalent to the third and fourth digits of the DIALNO operand of the PATH statement in an NCP/Token-Ring interconnection (NTRI) definition.

SECNET = YES|NO

means that this physical unit is associated with a secondary network containing resources whose connectivity is not defined to VTAM. When SECNET=YES, data that is received by VTAM from this physical unit is flagged as requiring special problem determination considerations when routed to a communication management application.

Code this operand only if you have 3710s in your network.

SPAN = spanname

code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SUBAREA = n

specifies the subarea address assigned to the physical unit (NCP or VTAM) represented by this PU statement.

n is an integer in the range 1–255. (Or from 1 through the value of the RACSASUP field of ISTRACON, if you have modified that field. See *VTAM Customization* for descriptions of RACSASUP and ISTRACON.)

The value of *n* must be the same as the subarea address defined for this physical unit in the other domains of the network.

VTAM uses the subarea value to verify that the node on the other end of the switched subarea connection is the one that was expected. This is done by comparing the subarea number in the partner's XID with the defined subarea number.

This operand is valid only when PUTYPE=4 or PUTYPE=5 is specified.

This is a new operand for switched subarea connections.

TGN = n|1|ANY

specifies the transmission group (TG) number of the switched subarea connection associated with this physical unit. The TG number is used during Contact processing between two subareas over a switched subarea connection. This operand is valid only when PUTYPE=4 or PUTYPE=5 is specified.

n is a specific transmission group number in the range 1–255. The default is 1.

TGN=ANY means that the TG number is assigned during Contact processing, according to the number specified by the switched major node in the SSCP for the NCP associated with this physical unit.

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Note: If you code TGN=ANY in a PU statement, then, in the PU statement in the other SSCP's switched major node, you must **not** code TGN=ANY. You must code a valid (nonzero) TG number, or you must allow it to default to 1.

To establish two-way communication between adjacent NCPs, the TG number for a particular switched subarea connection must be the same at both ends of the connection. That is, if you code specific numeric values for the TGNS at both ends of the connection, the values must be the same. To simplify coding, you can code TGN=ANY at one end of the connection, but not at both ends.

In the NCP generation deck, the value of the TRANSFER operands on the LINE statement must be identical for all the links within the same transmission group. If the values are not identical, you will have link activation problems.

For VTAM-VTAM or VTAM-NCP connections, you must code TGN=1, or allow it to default to 1. However, this is not verified when the switched major node is activated. When the actual connection is made, VTAM uses a TG number of 1, regardless of the value specified in the TGN operand.

The Switched PATH Definition Statement

The PATH definition statement defines a dial-out path to a PU in a switched major node. Note that certain operands apply only to x.21 switched protocol. You can code as many PATH statements as you need, to a maximum of 256, for each physical unit. The PATH statement must immediately follow the PU statement that defines the associated physical unit. VTAM searches the PATH statements for an available path in the order given in the configuration deck.

Code the PATH statement like this:

Name	Definition Statement	Operands
[name]	PATH	{DIALNO = telephone number LINENM = linename} ² [,GID = n] [,GRPNM = groupname] [,PID = n] [,REDIAL = n 3] ² [,SHOLD = YES] vSE ¹ [,USE = YES NO]

Notes:

1. For vSE x.21 short-hold mode/multiple port sharing feature.
2. You can code this operand on the PATH statement, but it will have no meaning in the 9370/LAN environment.

name

name is optional.

DIALNO = telephone number

is the telephone number (in EBCDIC) used to initiate a connection with a physical unit over a switched link. DIALNO must be specified for switched lines that can call out to a remote physical unit (that is, for links specified with CALL = OUT or CALL = INOUT on the LINE statement under a packet major node).

DIALNO is required if this PATH statement is for a type 4 or 5 physical unit.

DIALNO is mutually exclusive with the LINENM operand for any single switched path statement. If SHOLD = YES, however, DIALNO is **required** and LINENM must not be coded.

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DIALNO consists of a combination of digits and special characters. If an auto-call unit is installed, the special characters consist of separator characters, dialing pause characters, and end-of-number characters, as follows:

- The separator character causes the auto-call unit to delay sending the next dial digit until it receives a secondary dial tone. For separator characters, use underscores ("_" ; X'6D').
- If the auto-dial unit is not equipped to use separator characters, a dialing-pause character can be used to allow time to receive a secondary dial tone. A dialing-pause character pauses for a predetermined interval before sending the next digit. You can insert as many vertical bars ("|" ; X'FA') as you need to denote dialing pauses.

Switched Major Node: PATH

- Some modems require end-of-number characters. For end-of-number characters, use asterisks ("*"; X'5C'), percent signs ("%"; X'6C'), or at-signs ("@"; X'7C'). For example, you could code `DIALNO=8_5799*`, where "_" is the separator character and "*" is the end-of-number character.
- The maximum length of the operand is 32 characters including vertical bars, the separator character, and the end-of-number character.

For example, you could code `DIALNO=8_5799*`, where "_" is the separator character and "*" is the end-of-number character.

For more information on this operand, refer to *NCP Resource Definition Reference*.

X.21 Public Data Networks

For *auto call (address call)*, x.21 switched lines always require a unique end-of-number character, which must follow the dial digits. Do not code the required end-of-number character after the telephone number on the `DIALNO` operand because VTAM supplies it.

For **x.21 lines**, the *abbreviated address call* facility lets you use a shorter number instead of the full telephone number. Coding an abbreviated number is like coding a full number except that a period (X'4B') must **precede** the abbreviated number.

For example, suppose the common carrier facility defined the number 27 as the abbreviated number for the telephone number 555-1235. Instead of coding

```
P1 PATH DIALNO=5551235
```

which is the full dial address for path P1, you would code

```
P1 PATH DIALNO=.27
```

which is the abbreviated dial address.

For x.21 lines, the *closed user group* facility lets you limit the number of physical units that can call or be called on a particular x.21 line. Once you define the line to a switched physical unit as a member of a closed user group, that physical unit can call and be called only by other members of the group. For information on format requirements for closed user group numbers, contact your common carrier facility.

For more information on x.21 switched line features, see *General Information: X.21 Interface Features*.

NCP/Token-Ring Interconnection

Use the following format when coding `DIALNO` for a terminal that is called by a host:

```
DIALNO=aabb4000ccccccc
```

where:

- aa** is the token-ring interface coupler (TIC) number of the communication controller (in the range 00–99).
- bb** is the system-access-point address of the terminal (a multiple of 4).
- ccccccc** is the last 4 bytes of the terminal's ring-station address (the first digit must be in the range 0–7).

aa, *bb*, and *ccccccc* all are decimal numbers.

x.25 Packet-Switched Data Networks

DIALNO consists of:

- The *called address*, which is the address of the remote DTE. The called address of the remote physical unit must be at the beginning of the DIALNO specification and can be from 1 – 15 characters. The called address portion of DIALNO is required. The address length is network-specific, it depends on the requirements of each packet-switched data network. Consult your network subscription or consult your network common carrier.
- *Optional user facilities characters* that indicate certain optional user facilities. They are appended after the called address in any order.
 - RPOA identifier — If the remote physical unit is in a different packet-switched data network and the call requires a recognized private operating agency (RPOA) include the RPOA identifier into the DIALNO. The letter 'P' precedes the RPOA identifier.
 - CUG identifier — If the remote physical unit is a member of more than one closed user group, code the closed user group identifier to indicate which user group applies. The letter 'C' precedes the closed user group identifier.
 - Reverse charging identifier — If the remote physical unit will be charged for the call (reverse charging) include the number one ('1') into the DIALNO. The letter 'R' precedes the '1'. With this identifier, you can override what is specified on the PORT definition statement.

The entire DIALNO specification including separator characters ('P', 'C', or 'R') can be up to 25 characters in length. Figure 38 shows examples of DIALNO specifications.

Example	Explanation
DIALNO = 457031203	Address of a called physical unit.
DIALNO = 457031203P0137	Address of a called physical unit with RPOA identifier of 0137.
DIALNO = 457031203C31	Address of a called physical unit with CUG index of 31.
DIALNO = 457031203R1	Address of a called physical unit with reverse charging indicated.
DIALNO = 457031203C31R1	Address of a called physical unit with CUG index of 31 and reverse charging indicated.

Figure 38. Examples of DIALNO Specifications for the PATH Definition Statement

LINENM = linename vsE

names a line for the direct call function. This line must be part of an x.21 line group and must be defined as a direct call line by the common carrier facility for the link station whose dial-out path is being defined.

LINENM is mutually exclusive with the DIALNO operand for any single switched path statement. If SHOLD=YES, however, DIALNO is **required** and LINENM must not be coded.

Switched Major Node: PATH

It is recommended, but not required, that the PATH statement for a direct call line be the first statement following the switched PU statement. This ensures that VTAM attempts to call the switched physical unit using the direct call line first.

Note: The direct call function is not available for switched subarea connections.

GID = n

identifies a group of paths across all PUs in the switched major node. *n* is a decimal integer 0–255.

Group identifiers can be assigned to let the VTAM operator regulate the use of switched network services. For example, if GID=6 is assigned to all paths in a switched major node that use direct distance dialing, the VTAM operator can make all of the paths usable or not usable with a single command.

GRPNM = groupname

is the symbolic name of a GROUP statement in an NCP major node that defines a group of SDLC switched links. The line group must have all the characteristics necessary to process the telephone number and must be compatible with the type of physical unit.

GRPNM is required if SHOLD=YES.

PID = n

is an identifier for the path being defined. This identifier is unique for a given physical unit. The operator uses this identifier to change the status of the path. *n* is a decimal integer 0–255.

REDIAL = n|3

is the number of times dialing is to be retried before returning a dialing error to VTAM. *n* is a decimal integer. The minimum value for *n* is 0, which means that dialing is not to be retried. The maximum value for *n* is 254. For x.25 communication, specify *n* as a decimal integer 0.

SHOLD = YES vse

tells VTAM that this path is an x.21 short hold mode/multiple port sharing (SHM/MPS) path. (x.21 short hold mode/multiple port sharing is a feature available with VTAM V3R1 and V3R2.)

VTAM uses the values of *free* and *npoll* coded for the SHOLD operand on the corresponding GROUP statement for the channel-attachment major node. This operand is described on page 112.

If you code SHOLD=YES, you must also code DIALNO and GRPNM on this PATH statement.

USE = YES|NO

tells VTAM whether to consider the path initially usable or not usable. This attribute of the path can be modified by the VTAM operator. The effect of USE=YES and USE=NO for a path is similar to the effect of ISTATUS=ACTIVE and ISTATUS=INACTIVE for a minor node.

The LU (Switched) Definition Statement

Code an LU definition statement for each logical unit associated with a type 1 or 2 physical unit within a switched major node. The LU statement must follow the PU statement that defines the physical unit with which the logical unit is associated.

The MODIFY TABLE operator command lets you dynamically replace USS (USSTAB), logon mode (MODETAB), and interpret (LOGTAB) tables (V3R2 only). See *VTAM Operation*. If you want to use the MODIFY TABLE command against a given USS or interpret table, you must reassemble that table using the VTAM V3R2 macroinstruction definition libraries.

Code the LU statement like this:

Name	Definition Statement	Operands
name	LU	LOCADDR = 0 n [,BATCH = YES NO] ¹³ [,DLOGMOD = default logmode mode table entry] [,ENCR = REQD SEL OPT NONE] ¹³ mvs [,FEATUR2 = LOWERCSE DUALCSE] ¹³ [,ISTATUS = ACTIVE INACTIVE] ² [,LOGAPPL = controlling primary LU] ¹ [,LOGTAB = interpret table name] ¹ [,MODETAB = logon mode table name] ¹ [,PACING = n 0 1] ¹ [,RESSCB = 0 n] (V3R2) [,SPAN = spanname] [,SSCPFM = FSS USSSCS USSNTO USS3780 USS3270 USS3275] ¹ [,TERM = terminal type] ¹³ [,USSTAB = USS definition table name] ¹ [,VPACING = n 0 2] ¹

Notes:

1. You can code these operands in the PU or LU statement to take advantage of the sift-down effect, although they are meaningful only for logical units. Refer to this section for a description of these operands.
2. You can code this operand in the PU or LU statement to take advantage of the sift-down effect. It is meaningful for both physical units and logical units. Refer to either this section or "The PU (Switched) Definition Statement" on page 196 for a description of this operand.
3. You can code this operand on the LU statement, but it will have no meaning in the 9370/LAN environment.

name

is the minor node name of the logical unit represented by this statement. This operand is required.

LOCADDR = 0|n

is the logical unit's local address at the physical unit.

Switched Major Node: LU

0

is required for independent logical units in a type 2.1 node. An independent logical unit supports multiple (including parallel) sessions and can act as a primary logical unit.

n

is required for dependent logical units. *n* is a decimal integer.

The range of valid local addresses depends on the PUTYPE of the physical unit with which the dependent logical unit is associated. PUTYPE=1 allows local addresses in the range 0–63; PUTYPE=2 allows local addresses in the range 0–255. To determine the PUTYPE and the limits on local addresses for a particular physical unit, see the component description manual for the device.

An LU statement is not required for every possible local address, and LOCADDR values need not be consecutive. Unused local addresses smaller than the largest local address at a station are not assigned network resources.

This operand is required.

Note: The value of LOCADDR depends upon the requirements of the device being defined. Consult the appropriate component description manual for these restrictions; for example, logical units associated with a 3279 or 3276 control unit must have a LOCADDR in the range 2–33.

BATCH = YES|NO

is the processing priority that the NCP uses for the logical unit. BATCH=NO means a high priority (suitable for interactive application programs); BATCH=YES means a low priority.

If the BATCH operand is coded in VTAM V3R2, and the NCP is V4R3 level, the operand is ignored. If BATCH operand is coded VTAM V3R2, and the NCP is pre-V4R3 level, error messages are issued.

See *NCP Resource Definition Reference* for more information about this operand.

DLOGMOD = default logon mode table entry name

is the name of the logon mode table entry used by default if one is not otherwise provided. If this operand is not coded and the name of a logon mode table entry is not otherwise provided, the first entry in the applicable table (given on the MODETAB operand or defaulted) is used by default. If MODETAB is specified the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM, the IBM-supplied logmode table.

ENCR = REQD|SEL|OPT|NONE mvs

tells whether this logical unit has any special requirements for enciphering and deciphering messages.

REQD

means that VTAM must encipher all messages to and from this logical unit. If ENCR=REQD is coded, no sessions can be established with this LU unless the host with which it is associated is able to handle cryptographic sessions.

SEL

has no meaning for LUS. If ENCR=SEL is entered, ENCR=OPT is used instead.

OPT

means that this logical unit is capable of engaging in cryptographic sessions, but allows the application program to determine whether to use cryptography.

NONE

means that this logical unit cannot engage in cryptographic sessions.

FEATUR2 = LOWERCSE|DUALCSE

contains certain device information for virtual LUS that are supported by NTO.

LOWERCSE|DUALCSE

tells VTAM how to send alphabetic characters coded with the TEXT operand on a USSMSG macroinstruction to a non-SNA terminal over the SSCP-LU session. Nonalphabetic characters, as well as all characters coded using the BUFFER operand on a USSMSG macroinstruction, are not affected by this operand.

LOWERCSE

means that alphabetic characters are sent to the terminal over the SSCP-LU session in lowercase.

DUALCSE

means that VTAM sends all characters as they are coded in the USSMSG macroinstruction. If you do not code either value, DUALCSE is assumed.

ISTATUS = ACTIVE|INACTIVE

determines whether this logical unit is to be automatically activated when the physical unit is activated.

When ISTATUS=ACTIVE is coded or assumed by default, this logical unit is activated automatically when the physical unit to which it is attached is first activated. If ISTATUS=INACTIVE is coded, this logical unit is left inactive after the first activation of its major node. Later activations of an already active major node activate all logical units not previously active (including the ones for which you coded ISTATUS=INACTIVE).

Note that the operator can override this value by using the SCOPE operand on the VARY ACT command when activating the major node.

LOGAPPL = controlling primary LU

identifies the name of the primary LU as known in the network of the secondary LU onto which this SLU is to be automatically logged when this SLU is activated. The name specified may also be a USERVAR which will be resolved into its current value before being used to establish or redrive the session with the controlling primary LU. The LOGAPPL operand is a convenient way of establishing sessions.

If you do not code LOGAPPL, logons are initiated via the USS facilities by the terminal operator, a request from an independent LU, an application program, a VARY LOGON issued in behalf of this LU, or the domain operator.

For independent LUS (v3R2) the LOGAPPL operand will establish a session with the primary LU designated in the LOGAPPL operand if a session does not currently exist with this LU. The session is established regardless of whether sessions with other LUS exist. PUTYPE=4 or PUTYPE=5 is valid only for v3R1.2 and later. The LOGAPPL operand cannot be an independent LU since an independent LU cannot be the destination LU (DLU) for an autologon session.

Starting with VTAM v3R1.1, this automatic logon definition can be cancelled at any time with the VARY NOLOGON command. However, upon inactivation and

Switched Major Node: LU

reactivation of the major node, the controlling relationship would again take effect.

Note: You should be aware that when you VARY LOGON to TSO, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I is issued repeatedly with sense 0821 indicated. To stop this, you must break the auto logon relationship.

Note: You should not specify the NetView program as the application program on the LOGAPPL operand as results are unpredictable in recovery scenarios.

LOGTAB = interpret table name

is the name of an interpret table to be used by VTAM when processing logon requests that come from the logical unit. The interpret table is used to interpret the name received from an initiation request. See *VTAM Customization* for a description of how an interpret table is defined. This parameter is not used for an independent LU.

MODETAB = logon mode table name

is the name of a logon mode table to be used to correlate each logon mode name with a set of session parameters for the logical unit. The name you code for the MODETAB operand must be the name of a logon mode table created as described in *VTAM Customization*.

If you do not name a logon mode table for the logical unit using the MODETAB operand on either the PU or the LU statement, an IBM-supplied logon mode table (ISTINCLM) is used. The user can replace or modify the IBM-supplied logon mode table. The user written table must be assembled, link-edited, and placed in VTAMLIB.

PACING = n|0|1

determines how pacing is handled between the logical unit and the boundary node to which it is connected. (In contrast, VPACING involves pacing between VTAM and the boundary node.) For more information on pacing, see *VTAM Customization*.

n

is the number of normal-flow RUS that the boundary node sends to the logical unit before waiting for a pacing response.

n is a decimal integer 1 – 63. For logical units connected through an NCP, refer to *NCP Resource Definition Reference* for information on how to select the proper value.

0

means that no pacing is performed for sessions with the logical unit or that the largest possible pacing is used if the session is adaptively paced.

If you omit the pacing operand, the default is PACING = 1.

RESSCB = 0|n (v3R2)

is the number of session control blocks reserved by the NCP for the logical unit.

n is an integer 0 – 65535. The default is 0 (no reserved session control blocks).

The NCP has additional restrictions. See *NCP Resource Definition Reference*.

SPAN = spanname

code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SSCPFM = FSS|USSSCS|USSNTO|USS3780|USS3270|USS3275

determines whether the logical unit can support field-formatted (FSS) RUS, or character-coded (USSSCS) RUS over its SSCP-LU session. USSNTO means that this logical unit is supported by the NTO licensed program in the boundary node, and that character-coded RUS over its SSCP-LU sessions are supported. FSS is the default.

TERM = terminal type

identifies, for a virtual logical unit supported through NTO, the device data stream compatible characteristics. An application program can find these characteristics by executing an INQUIRE DEVCHAR macroinstruction that names this virtual LU. The information is placed in the DEVAUXTP field of the DEVCHAR DSECT. (This 8-byte storage area is provided by the application program.) For more information on the DEVCHAR DSECT, see *VTAM Programming*.

USSTAB = USS definition table name

is the name of a USS definition table used for the logical unit. USS definition tables are described in *VTAM Customization*. If this operand is omitted, the ISTINCDT table is used for the logical unit when character-coded requests are received.

This operand is valid only for dependent LUS. Independent LUS cannot engage in SSCP-LU sessions.

VPACING = n|0|2

determines how VTAM paces the flow of data from VTAM to the boundary node to which the logical unit is connected. For more information on pacing, see *VTAM Customization*.

n

is the number of normal-flow RUS that VTAM sends for a given LU-LU session before waiting for a pacing response. No more requests can be sent to the boundary node until it replies with a pacing response to VTAM to show that it is ready to receive more RUS.

n is a decimal integer 1–63, and greater than the value of *n* used with the corresponding PACING operand.

0

means that no pacing is performed for sessions with the logical unit, or that the largest possible pacing is used if the session is adaptively paced.

If the VPACING operand is omitted, VPACING=2 is assumed in a switched major node.

If adaptive pacing is used between VTAM and the boundary node, the parameter is ignored.

Defining Network Control Program (NCP) Major Nodes

An NCP major node is defined by filing NCP definition statements in the appropriate VTAM definition library. The name under which the major node is filed must match the NCP load module name in the NEWNAME operand of the BUILD definition statement.

Additional information required by VTAM to communicate with the NCP and its attached devices is provided to VTAM by coding VTAM-only definition statements and VTAM-only operands in NCP definition statements. The VTAM-only definition statements and operands must appear in the NCP generation definition statements that define this NCP to VTAM, even though they provide no information to the NCP.

For pre-V3R2, if multiple copies of the NCP definition statements with different VTAM operand values are required by an installation at a single host, the sets can be filed under temporary names. Before activating one of the sets as a VTAM major node, the member must be renamed to match the load module ID in the BUILD definition statement.

For VTAM V3R2, if multiple copies of the NCP definition statements with different VTAM operand values are required by the installation at a single host, the sets can be filed under different load module names (the load module name is the name specified as NEWNAME) and the same PUNAME (PUNAME=*puname* is specified in the NCP BUILD macroinstruction). The NCP can then be activated specifying ID=*puname* and LOADMOD=*newname*. If ID=*puname* was specified in the VARY ACT command, a DISPLAY command for the NCP is issued specifying ID=*puname*.

The following list shows NCP definition statements used by VTAM in a correct coding sequence for NCP generation, along with an indication of whether they apply to VTAM, VTAM and NCP, or NCP with VTAM requirements.

PCCU	VTAM only
HOST	VTAM only if NCP V4R3
BUILD	Both VTAM and NCP
SYSCNTRL	Both VTAM and NCP
LUDRPOOL	NCP only, with VTAM requirements
PUDRPOOL	NCP only, with VTAM requirements
GROUP	Both VTAM and NCP
LINE	Both VTAM and NCP
CLUSTER	Both VTAM and NCP
TERMINAL	Both VTAM and NCP
GROUP	Both VTAM and NCP
LINE	Both VTAM and NCP
PU	Both VTAM and NCP
LU	Both VTAM and NCP
NETWORK	Both VTAM and NCP
GWNAU	NCP only, with VTAM requirements
GENEND	Both, no VTAM requirements.

The PCCU definition statement is for VTAM only and is described in “The PCCU Definition Statement” on page 217. The NETWORK and GWNAU statements are defined only for a gateway NCP.

If a definition statement is marked “Both VTAM and NCP,” it means that VTAM processes this statement. If there are any VTAM-only operands or restrictions on the

statement, you will find a description in this book; but the description of the whole definition statement is in *NCP Resource Definition Reference*.

If a definition statement is marked “Both, no VTAM requirements,” it means that both VTAM and the NCP use this statement, but it has no special VTAM requirements, and should be coded as described in *NCP Resource Definition Reference*.

If a definition statement is marked “NCP only, with VTAM requirements,” you will find its description in *NCP Resource Definition Reference*. Also refer to this book for special VTAM requirements.

Coding VTAM-Only Definition Statements and Operands

VTAM information contained in an NCP major node can occur in:

- The PCCU definition statement
- The HOST definition statement if NCP V4R3
- NCP definition statements for the NCP itself
- NCP definition statements for resources controlled by the NCP.

The PCCU Definition Statement

The programmed communication control unit (PCCU) definition statement identifies the communication controller where the NCP is loaded. It is required in VTAM systems, and defines the VTAM functions that are provided for this NCP. Code at least one PCCU statement for each NCP.

If more than one VTAM host will activate the NCP, you can code a PCCU statement for each host. Each PCCU statement describes the functions performed by the host it is associated with. For example, if you want to assign a second host to back up a communication management configuration (CMC) host, code a PCCU statement for the backup host. The statement is not used until a failure occurs, at which time the backup host activates the NCP. (For general information about backing up a CMC host, see “Defining Channel-Attached NCP Support” on page 88.)

The SUBAREA operand, described on page 224, associates the communication controller with a VTAM host when the NCP is activated. If each host provides the same function for the NCP, only one PCCU statement is necessary, but the operator may need to override unique attachment requirements.

Assigning Resources to More than One Host

Every resource attached to the NCP is owned by a VTAM host. The values you code for each NCP major node determine which host owns which resources. The value of the OWNER operand on the PCCU statement is matched with the OWNER operands on the GROUP and LINE statements in the NCP.

More than one host can share ownership of a line or a PU type 4 link station. You specify this in the NCP by coding the appropriate names as values of the OWNER operand on the GROUP or LINE statements. However, only one host can own a PU type 1 or PU type 2 and its associated logical units. In this situation, the first host to activate the physical unit becomes its owner. Then, other hosts cannot activate this physical unit unless ownership is relinquished.

Use the BACKUP operand on the PCCU statement to allow a backup host to take over NCP resources when there is a failure in the host that owns them. Code BACKUP=YES to identify all resources that this host can take over in case of a

failure. When a failure occurs, an operator can issue a VTAM VARY ACQ command to acquire these resources without disrupting sessions.

The BACKUP and OWNER operands are described on pages 219 and 224, respectively. For information about the possible requirements for this function, see *Network Program Products Planning*.

Format of the PCCU Statement

PCCU definition statements must be at the beginning of the NCP generation deck.

The format of the PCCU definition statement is:

Name	Definition Statement	Operands
[name]	PCCU	NCPLUB = lubname VSE [,AUTODMP = YES NO] [,AUTOIPL = YES NO] [,AUTOSYN = YES NO] [,BACKUP = YES NO] [,CDUMPDS = dumpname] [,CHANCON = COND UNCOND] ¹ [,CONFIGDS = name] [,CONFIGPW = password] [,CUADDR = channel device address] ¹ [,DUMPDS = dumpname] [,DUMPLD = YES NO] [,DUMPSTA = link station name] [,GWCTL = ONLY SHR] ² [,INITEST = YES NO] [,LOADSTA = link station name] [,MAXDATA = size 65535] ¹ [,MDUMPDS = dumpname] [,NEWPATH = name (name1,...,name3)] (V3R2) [,NETID = host network ID] ² [,OWNER = ownername] [,RNAME = link station name (name,...,name)] [,SUBAREA = n] [,VFYLM = YES NO]

Notes:

1. This operand is not used for data hosts defined in a channel-attachment major node. See descriptions in "Defining Channel-Attachment Major Nodes" on page 81 for replacement operands.
2. SNA network interconnection only.

name

a name is optional.

NCPLUB = lubname VSE

is the symbolic name of the NCP load file that contains the NCP phase. The symbolic device name appears on the EXTENT statement for the NCP phase. See the sample procedure for starting VTAM in Figure 21 on page 54.

For more information, see "NCP Load File" on page 52.

AUTODMP = YES|NO

determines whether a dump of communication controller storage is automatically taken after an unrecoverable failure in the NCP or the communication controller. When AUTODMP=YES, the dump is automatically taken.

When AUTODMP=NO, the VTAM operator is asked whether a dump should be taken. After the dump, VTAM interprets the AUTOIPL setting to determine if it should load another copy of the same NCP and restart it.

If the operator specifies DUMpload=YES in the VARY ACT command, an attempt is made to dump and load the NCP by the communication controller. If the dump and load by the communication controller is successful, the AUTODMP and AUTOIPL operands are ignored.

The AUTODMP operand is valid only if you code a DUMPDS operand in this PCCU definition statement. Otherwise, no NCP dump can be taken. (DUMPDS is described on page 221.)

In an NCP for a communication controller that is attached by multiple channels, only one PCCU statement should have AUTODMP=YES.

AUTOIPL = YES|NO

determines whether VTAM loads another copy of the NCP and restarts it after either:

- An unrecoverable failure occurs in the NCP or the communication controller, or
- A dump is taken of the controller.

When AUTOIPL=NO, the VTAM operator is asked whether VTAM should load another copy of the same NCP and restart it.

If the operator specifies DUMpload=YES in the VARY ACT command, VTAM attempts to dump and load the NCP from the communication controller. If the dump and load by the communication controller is successful, the AUTODMP and AUTOIPL operands are ignored.

In an NCP for a communication controller that is attached by multiple channels, only one PCCU statement should have AUTOIPL=YES.

AUTOSYN = YES|NO

causes the NCP, when activated, to tell VTAM the name of the NCP loaded in the communication controller. It applies only if the VTAM operator requests (or defaults) LOAD=U on the VARY ACT command for an NCP.

When the name matches VTAM's major node name for the NCP it is activating:

- If AUTOSYN=YES, VTAM automatically begins to work with the NCP.
- If AUTOSYN=NO, the operator is asked whether this NCP should be used or the communication controller should be refreshed with a new copy.

When the name does not match VTAM's major node name, the value of VFYLM determines whether the controller is automatically reloaded. (VFYLM is described on page 225.)

BACKUP = YES|NO

determines whether this NCP's resources can be taken over by a backup host in the event their owning host fails.

If BACKUP=YES, resources are held in reserve unless they are owned by the host VTAM to which this NCP is defined. (Such resources have the same OWNER

name as the one on this PCCU statement.) The host VTAM cannot use the resources until a VTAM VARY ACQ command is issued for this NCP.

BACKUP may be used for all NCP's. However, if you do not also code the OWNER operand, it is ignored. (OWNER is described on page 224.)

CDUMPDS = dumpname

is one of three operands (DUMPDS, CDUMPDS, and MDUMPDS) that name dump files for this communication controller. CDUMPDS applies only to 3720 and 3725 Communication Controllers.

For more information, see the description of the DUMPDS operand on page 221.

CHANCON = COND|UNCOND

determines whether VTAM sends a conditional or an unconditional channel Contact request to the NCP when the host wishes to activate the NCP over a channel.

If you do not code CHANCON, or if CHANCON=COND, the Contact request is **conditional**: the NCP can reject it if the host's subarea number is already in use by another host (attached to another one of the NCPs channels).

If CHANCON=UNCOND, the Contact request is **unconditional**: the NCP must accept it. If another host is using the same subarea number, the NCP breaks contact with that host.

If you plan to define the channel to the NCP in a channel-attachment major node, this operand is replaced by the CHANCON operand on the LINE statement for the channel-attachment major node. See "The LINE Definition Statement" on page 93 for more information.

CONFGDS = name

is the 1 – 8 character data definition name of the configuration restart data set to be used for this major node. Include a DD statement with this data definition name in the VTAM start procedure.

Refer to *Network Program Products Planning* for a description of configuration restart.

VM This operand is ignored.

CONFGPW = password

is the 1 – 7 character password that VTAM uses to gain access to the configuration restart data set. If you do not code CONFGPW, but VSAM requires it, VSAM asks the operator for the correct password when VTAM tries to open the data set.

VM This operand is ignored.

CUADDR = channel device address

is the 3-digit channel unit address, in hexadecimal, of the channel attachment for the communication controller in which the NCP runs.

If you omit CUADDR and the VTAM operator wants to activate the communication controller over a channel, the operator should provide an address in the U operand when issuing the VTAM VARY ACT command.

If no channel device address or link station contact points are coded (with the CUADDR and RNAME operands of PCCU) and none are provided on the VARY ACT command, a link station adjacent to the communication controller must already be active and defined to the host before the operator can activate the controller.

If you plan to define the channel to the NCP in a channel-attachment major node, this operand is replaced by the ADDRESS operand on the LINE statement for the channel-attachment major node. See “The LINE Definition Statement” on page 93 for more information.

DUMPDS = dumpname

is one of three operands (DUMPDS, CDUMPDS, and MDUMPDS) that name dump files for this communication controller. CDUMPDS and MDUMPDS apply only to 3720 and 3725 Communication Controllers. DUMPDS applies to any communication controller.

- DUMPDS names the file that contains a storage dump of a communication controller. For a 3720 or 3725, this file also contains communication scanner processor (CSP) dumps and maintenance and operator subsystem (MOSS) dumps if you have not set up another file for that purpose.
- For a 3720 or 3725, CDUMPDS names the file that contains CSP dumps.
- For a 3720 or 3725, MDUMPDS names the file that contains MOSS dumps.

MVS VSE dumpname must be on a DD or DLBL statement in the cataloged procedure for starting VTAM. This statement defines the data set or file that is to contain the data from a storage dump of a communication controller.

You must code DUMPDS if:

- AUTODMP=YES on this PCCU definition statement
- AUTODMP=NO on this PCCU definition statement and the VTAM operator answers YES to the resulting prompt for a dump, or
- The VTAM operator issues the MODIFY DUMP command without the DUMPDS operand.

To format and print the data in a dump file, use the NCP independent dump utility program as described in *NCP Diagnosis Guide*.

To display an NCP dump file, use the DISPLAY NCPSTOR operator command as described in *VTAM Operation*.

Ordinarily the data in a dump file is overlaid by the next dump. To avoid this, you can have a separate dump file for each communication controller in the VTAM system, or you can allocate one dump file for dumping channel-attached communication controllers and another for dumping link-attached communication controllers. Another way to preserve the data in an existing dump file is to use the DUMPDS operand on the MODIFY DUMP command to direct data to another file.

DUMPLD = YES|NO

specifies the default for the DUMpload parameter in the VARY ACT command. The DUMpload parameter in the VARY ACT command indicates whether an NCP that has abended should be automatically dumped to the 3720 or 3745 communication controller disk, and then reloaded from that disk.

The value specified for DUMPLD is used as the default for DUMpload only if the following is true of the VARY ACT command:

- The NCP specified in the ID parameter is being loaded and activated
- SAVEMOD=YES is specified.

If in the VARY ACT command HOST is the specified or default value for LOADFROM and NO is the specified or default value for SAVEMOD, YES cannot be specified for DUMPLD.

See *VTAM Operation* for additional information.

DUMPSTA = link station name

is an adjacent link station, channel- or link-attached, that is used to perform dump operations. If you do not use DUMPSTA on either the PCCU definition statement or the VTAM VARY ACT command, VTAM chooses a default link station whenever a dump is necessary.

Notes:

1. VTAM chooses default link stations that are adjacent to the NCP and ready for the dump operation. Preference is given to channel link stations.
2. VTAM gives names to channel link stations by taking the channel device address of the communication controller and adding "-S." For example, the channel device address 0C2 has the link station name of 0C2-S. You may designate the same link station for both dumping and loading.
3. If you defined a channel-attachment major node whose major node and its link and link station minor nodes are active when this NCP is activated, you must use the channel link station name (defined by the PU definition statement in the channel-attachment major node) for the DUMPSTA, LOADSTA, and RNAME operands of PCCU. You can also use the CUADDR operand instead of RNAME and use the automatically-defined link station name (such as 0C2-S; see item 2) for DUMPSTA or LOADSTA or both.

For the DUMPSTA, LOADSTA, and RNAME operands, you should use the channel link station name defined in the channel-attachment major node, provided (1) you have defined the channel unit address in the channel-attachment major node and (2) that major node is active. This is not required, but is recommended.

For more information on link stations and use of the VTAM VARY ACT command, see *VTAM Operation*.

GWCTL = ONLY|SHR (Interconnection only)

For information on coding the GWCTL operand, see "The PCCU Definition Statement" on page 356.

INITEST = YES|NO

tells VTAM whether to load the initial test routine: a diagnostic routine for a channel-attached communication controller. This routine checks the communication controller for any machine malfunctions before VTAM loads the NCP into it.

INITEST applies only to channel-attached IBM 3705 communication controllers. If you code INITEST=YES for an NCP that controls a link-attached IBM 3705 communication controller, VTAM ignores it. If INITEST=YES is coded for any communication controller other than an IBM 3705, the load will fail.

LOADSTA = link station name

is an adjacent link station (channel- or link-attached) that is used to load the NCP. Note that if you do not code LOADSTA on the PCCU definition statement or specify it in the VTAM VARY ACT command, VTAM chooses a default link station whenever it needs one. (See the notes following the description of DUMPSTA on page 222.)

MAXDATA = size|65535

is the maximum amount of data in bytes, including the transmission header (TH) and the request/response header (RH), that the NCP can receive in one segment of a PIU.

MAXDATA should, if possible, be equal to the size of the largest PIU the network will handle. There are restrictions, however. Use these criteria for choosing the value of MAXDATA:

- MAXDATA is related to the BFRS and TRANSFR operands of the BUILD definition statement. MAXDATA should equal the product of BFRS and TRANSFR, minus $18 \times (BFRS \times TRANSFR - 18)$.
- MAXDATA should not exceed the size of VTAM's MVS VM IOBUF buffer pool or VSE VFBUF buffer pool.
- MAXDATA should not exceed the product of the MAXBFRU and UNITSZ values for the NCP.
- If a MODIFY LOAD command will be issued for a local or remote NCP, the size of MAXDATA must be at least 2048 plus the size of the TH and the RH.
- Although MAXDATA applies only to the PCCU statement for a channel-attached NCP, its value should not exceed the capacities of any link-attached NCPS or of any cross-domain NCPS. An SNA path error can occur if MAXDATA exceeds the capacity of any NCP along the route taken by a message.

The default is the maximum size of 65535 bytes.

If you plan to define the channel to the NCP in a channel-attachment major node, this operand is replaced by the MAXDATA operand on the PU statement for the channel-attachment major node. See "The PU Definition Statement" on page 95 for more information.

MDUMPDS = dumpname

is one of three operands (DUMPDS, CDUMPDS, and MDUMPDS) that name dump files for this communication controller. MDUMPDS applies only to 3720 and 3725 Communication Controllers.

For more information, see the description of the DUMPDS operand on page 221.

NEWPATH = name|(name1,...,name3) (V3R2)

specifies the dynamic path update member names in the VTAM definition library. When the NCP is successfully activated, VTAM processes and sends path table update specifications to the NCP.

Up to three member names can be specified: if more than three member names are specified in the PCCU statement, only the first three are used.

VTAM sends the path table update specifications via the SSCP-PU session before any links, other than the link for the SSCP-PU session, are activated. If you attempt to change or delete the explicit route used for the SSCP-PU session, the NCP rejects the request (since the explicit route is currently operative), and VTAM displays a warning message.

Any NEWPATH operand specification in the PCCU statement is nullified if the NEWPATH operand is specified in the VARY ACT command for the NCP. See *VTAM Operation* for more information.

When a dynamic path update member is processed as a result of a NEWPATH operand in the PCCU statement, path update specification sets for other sub-areas, if any, are not applied.

This operand is for V3R2 only.

NETID = host network ID (interconnection only)

is the 1 – 8 character name of the network of the host represented by this PCCU definition statement.

VTAM uses this name in combination with the SUBAREA operand to determine which PCCU definition statement it should process in the NCP major node. Refer to “The PCCU Definition Statement” on page 356 for details.

For VTAM V3R2, do not code this operand if VTAM is started with GWSSCP=NO.

Prior to VTAM V3R2, do not code this operand unless VTAM is started with NETID specified.

OWNER = ownername

associates a host VTAM with the resources it controls. This operand is used to divide the resources among the hosts that are in session with an NCP. If you code OWNER, physical units (for SNA devices) and lines (for non-SNA devices) can be activated only by the host named in *ownername*. If you do not code OWNER, the resources can be activated by any host, and they are then owned by that host. Accordingly, other hosts cannot activate them.

This operand is closely related to the BACKUP operand described on page 219.

RNAME = link station name|(name,name,...,name)

must match the label on the PU definition statement that describes this NCP in an adjacent communication controller or host. (The PU statement identifies, to the other NCP or host, the link that connects it to this communication controller.) There can be up to 13 SDLC or channel link station names; each one represents a contact point that a host can use to reach this communication controller.

If you do not supply RNAME when defining a link-attached communication controller, the VTAM operator should supply it as an operand on the VARY ACT command.

When the VTAM operator issues VARY ACT to activate this communication controller, if no link-station or channel-device address contact points are supplied (either with the RNAME and CUADDR operands or the VARY ACT command), a link station adjacent to the communication controller must already be active.

Note: For information on how to code RNAME when the NCP is defined in a channel-attachment major node, see the notes following the description of DUMPSTA on page 222.

SUBAREA = n

is the subarea number of the host to which this PCCU definition statement applies. It can be in the range 1 – 255, and it should match the value assigned to the HOSTSA start option when VTAM is started.

VTAM uses this value to determine which PCCU definition statement it should process in the NCP major node. VTAM examines each PCCU statement until it finds a SUBAREA value that matches its own subarea number. It then uses the associated OWNER name to locate the resources (defined later in the NCP) that it controls.

If you omit SUBAREA, this PCCU definition statement applies to all hosts that activate this major node and do not find a PCCU statement with a matching SUBAREA value. (In interconnected networks, VTAM also uses the NETID operand to determine which PCCU statement it should process.) Refer to “The PCCU Definition Statement” on page 356 for details.

VFYLM = YES|NO

causes the NCP, when activated, to tell VTAM the name and subarea number of the NCP loaded in the communication controller. It applies only if the VTAM operator requests (or defaults) LOAD=U on the VARY ACT command for an NCP.

When the name and number do not match VTAM's major node name and subarea number for the NCP it is activating:

- If VFYLM=YES, VTAM asks the operator whether it should reload the communication controller with the requested NCP or stop the activation process.
- If VFYLM=NO, VTAM reloads the communication controller with the requested NCP.

When the name matches VTAM's major node name, the value of AUTOSYN applies. (AUTOSYN is described on page 219.)

NCP Definition Statements for the NCP

The definition statements oriented toward the definition of the NCP load module, and containing VTAM-related information in an NCP major node are the BUILD, SYSCNTRL, HOST, and NETWORK definition statements.

The BUILD Definition Statement

BUILD contains information about how the NCP is generated, such as controller storage size, subarea address of the NCP, and characteristics of channel adapters.

For information on defining the BUILD definition statement in a system with SNA network interconnection, see "The BUILD Definition Statement" on page 357.

VTAM places restrictions on these operands of the BUILD definition statement:

COSTAB = class-of-service table name (interconnection only)

is a class-of-service table for the network identified by NETID.

Note: If this operand is omitted, the default COS table is ISTSDCOS.

The MODIFY TABLE operator command lets you dynamically replace class-of-service tables (V3R2 only). See *VTAM Operation* for more details.

LOADLIB = ddname MVS VM

is the data set or file in which the NCP resides. This parameter is required.

MVS Name the data set on a DD statement in the VTAM start procedure.

VM Issue a FILEDEF command for *ddname* before you load the NCP.

MAXSUBA = n

for communicating with NCPs that do not support extended network addressing (ENA) and pre-ENA SSCPS.

MAXSUBA should be 3 or greater. If coded, it must agree with the value of the MAXSUBA start option and be in the same range for all nodes in the same network.

If you do not code MAXSUBA, then a pre-ENA VTAM cannot function as a gateway SSCP together with this gateway NCP. See "The MAXSUBA Start Option (Pre-ENA)" on page 305 for more information.

This parameter is required if **any** host or NCP in the network does not support ENA.

NETID = host network ID

is the network name of the host coded on the start option.

This parameter is required for NCP V4R3.

NEWNAME = symbol

for all NCPs Version 1 Release 3 and later, must be a unique network-wide NCP name. This name is used to specify the load module name. This name must match the member name for the NCP source deck in both VTAMLST and the LOADLIB specified.

For VTAM V3R2, if NEWNAME is coded, and LOADMOD is coded on VARY ACT command, they must match. Refer to *VTAM Operation* for information on LOADMOD.

PUNAME = puname

specifies the PU name that is to be associated with the NCP once activation is complete. The value coded here will be verified against the value coded on the ID parameter for the VARY ACT issued to activate the NCP. (It must match the name code on ID in VARY ACT command.) Once the NCP is active, this PU name is the name used to identify the NCP (not the load module name specified with NEWNAME). Prior to VTAM V3R2, the value coded on the ID parameter of the VARY ACT command had to match the load module name. In V3R2 that restriction no longer exists.

The SYSCNTRL Definition Statement

SYSCNTRL identifies the dynamic control facilities included in the NCP. These facilities allow the NCP to execute requests from VTAM to change certain NCP parameters or to determine the status of resources such as lines and stations.

VTAM always needs these OPTION parameters for BSC 3270s:

MODE	Set destination mode (BSC)
RIMM	Reset immediate (BSC).

VTAM needs these OPTION parameters for the listed operator control functions:

NAKLIM	Change line negative polling response limit (NEGPOLL)
SESSION	Change session limit (MODIFY SESSION)
SSPAUSE	Change service-seeking pause (MODIFY POLL)
STORDSP	Display NCP storage (DISPLAY NCPSTOR).

The HOST Definition Statement

HOST contains characteristics of VTAM. Knowledge of these characteristics is needed to conduct channel operations for communication with VTAM.

A channel-attached NCP requires one HOST definition statement for each host that activates the NCP. No HOST definition statement should be defined for a link-attached NCP. For more information, see "Defining Channel-Attached NCP Support" on page 88.

See "The HOST Definition Statement" on page 359 for information on the HOST definition statement in an interconnected network.

The following HOST operands have special VTAM considerations:

SUBAREA = 1|subarea|(subarea1,subarea2,subarea3,...)

specifies the subarea address of the access method or access methods that the 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.

subarea can be 1 – 255. The default value is 1.

NETID = host network ID (interconnection only)

a 1 – 8 character name that identifies the network containing the corresponding host node.

NCP Definition Statements for the NCP

For details on the NETID operand, see “The HOST Definition Statement” on page 359.

INBFRS = nn

defines the number of buffers to be allocated by an NCP for the purpose of receiving data from a host.

MAXBFRU = nn

defines the number of buffers to be allocated by the host for the purpose of receiving data from an NCP.

If you are defining the channel to the NCP in a channel-attachment major node, VTAM may ignore this operand when the NCP is activated by a CMC host. See “Considerations for Defining a Host-to-NCP Channel” on page 88 for more information.

The buffers defined by MAXBFRU and INBFRS are read from the HOST definition statement and sent to the NCP in the XID format.

The start option buffer pool definitions for **MVS VM IOBUF** or **VSE LFBUF** determine the size of the host buffers to be used for receiving data from an NCP. The size of these buffers is sent to the NCP in the XID format.

For more information on the use of these options, see *VTAM Customization*.

The LUDRPOOL and PUDRPOOL Definition Statements

VTAM support for switched terminals, dynamic reconfiguration and primary addresses for independent LUS require that these statements be coded at NCP generation. Support for these functions causes the host to issue Request Network Address Assignment (RNAA) RUS requesting the NCP to assign a PU or LU address to a resource specified by the host. The addresses come from the address pools generated as a result of the LUDRPOOL or PUDRPOOL definition statements. For more information on LUDRPOOL and PUDRPOOL, see *NCP Resource Definition Reference* and *NCP Resource Definition Guide*.

The NETWORK Definition Statement (Interconnection only)

You can include more than one NETWORK definition statement in the NCP major node to identify each network, other than the native network (which is defined by the NETID operand on the BUILD definition statement) attached to a gateway NCP.

For more information on the NETWORK definition statement, see “The NETWORK Definition Statement” on page 361.

The GWNAU Definition Statement (Interconnection only)

The GWNAU definition statement is an NCP-only definition statement. VTAM does not use the definition statement when processing the NCP generation definitions.

The GWNAU definition statement defines representations of cross-network logical units and SSCPs within the gateway NCP. In some configurations, VTAM’s ability to activate SSCP-SSCP sessions depends on proper use of the GWNAU definition statement. These dependencies are discussed in “The GWNAU Definition Statement” on page 361.

NCP Definition Statements for Resources Controlled by the NCP

The NCP generation-definition statements that define lines, PU type 4 link stations, and peripheral devices to VTAM are the GROUP, LINE, PU, LU, CLUSTER, and TERMINAL definition statements. Figure 39 on page 230 summarizes the common, VTAM-only, and VTAM-restricted operands for these definition statements. It does not show the conditions (for example, type of line control or type of terminal) under which an operand can be used. For this and other information, consult the individual description of each VTAM-only operand that follows. The information in this book about the VTAM-only operands and restrictions should be used in conjunction with the NCP coding requirements described in *NCP Resource Definition Reference*.

Use Figure 39 on page 230 to determine what procedure is required to change definition statements and operands for an existing NCP. If VTAM-only operands are changed or replaced, no new NCP generation is required. If any NCP definition statement or operand is changed or replaced, a partial or complete NCP generation is required.

After changing a VTAM-only or VTAM-restricted operand in an NCP definition statement, a copy of the updated NCP definition statements must also be filed as a VTAM major node.

Although not all the information is coded in the NCP definition statement, you should code all the NCP definition statements with the possible needs of both VTAM and the NCP in mind.

NCP Definition Statements for NCP Resources

Operand	GROUP	LINE	PU	LU	CLUSTER	TERMINAL
ANS	R	R	R			
ANSWER	V	V				
AUTODL	R	R				
AUTO		P				
ADDR			P			P
ADDRESS		P				
BATCH (pre-NCP V4R3)	P	P	P	P		
BHSET	R	R			R	R
BNNSUP	P	P	P			
CALL	R	R				
CONV	P	P				P
CUTYPE	P	P			P	
CHANLNK	P					
DATMODE (V3R2)	R	R	R			
DIAL	R					
DISCNT	V	V	V		V	
DLOGMOD	V	V	V	V	V	V
DIRECTN	P	P				P
ENCR	V	V	V	V		
FEATUR2	V	V	N	N	V	V
GPOLL					R	
IRETRY	P	P	P			
ISTATUS	V	V	V	V	V	V
LINEADD	P					
LINEAUT	P					
LOCADDR				R		
LOGAPPL	V	V	V	V	V	V
LOGTAB	V	V	V	V	V	V
LNCTL	R					
LPDA			R			
MAXDATA	P	P	P			

Figure 39 (Part 1 of 2). NCP Generation Operands Used by VTAM

Operand	GROUP	LINE	PU	LU	CLUSTER	TERMINAL
MAXLU (pre-V3R2)	P	P	P			
MODETAB	V	V	V	V	V	V
MAXOUT	P	P	P			
NPARSC	P					
OWNER	V	V				
PACING	R	R	R	R		
PASSLIM	P	P	P		P	
PAUSE	P	P				
POLIMIT	R	R				
POLLED	P	P				
PU	V	V				
PUTYPE	R	R	R			
RESSCB (V3R2)				R		
SECNET		V	V			
SESSION	P	P				
SSCPFM	V	V	V	V	V	V
TERM	R	R	N	N	R	R
TYPE	P	P				
USE	R	R				
USSTAB	V	V	V	V	V	V
VIRTUAL	P					
VPACING	V	V	V	V	V	
XID (V3R2)	R	R	R			
X21SW	R					

Figure 39 (Part 2 of 2). NCP Generation Operands Used by VTAM

Legend for Figure 39:

- V** VTAM-only operand, described in this book.
- N** VTAM-only operand, described in this book. Refer to *Network Terminal Option Installation* for more information.
- R** Not a VTAM-only operand; described in *NCP Resource Definition Reference*. VTAM restrictions are described in “Description of VTAM-Only Operands and Restrictions” on page 232.
- P** Not a VTAM-only operand, described in *NCP Resource Definition Reference*.

Description of VTAM-Only Operands and Restrictions

ANS = CONTINUE|STOP

determines whether the physical unit continues to operate or stops if the NCP enters automatic network shutdown.

MVS/XA You must code ANS=CONTINUE if the terminal participates in XRF sessions.

ANS=CONTINUE continues LU-LU sessions. The operand may be abbreviated to CONT.

Note: When a session is continued and takeover occurs, the LU taken over must support ACTLU ERP if it is a dependent LU or the session terminates during takeover processing.

ANSWER = ON|OFF

is valid only for type 1 and 2 physical units, and only if the SDLC line has dial-in capability. If ANSWER=ON, type 1 and 2 physical units can dial in to the NCP when the line is active. If ANSWER=OFF, the physical unit cannot dial in to the NCP, regardless of the active-inactive status of the line. The VTAM VARY ANS operator command can change the answer mode.

AUTO = address

is the presence of an automatic calling unit (autocall unit) for this line. The address of the autocall unit is the same as the address of the line.

This operand is required if the line is a switched subarea connection and CALL=OUT or CALL=INOUT was specified.

AUTODL = YES|NO

AUTODL=NO limits an X.21 line to direct-call-only status. As a result, when VTAM searches a line group for an available line, it cannot select a direct-call-only line for an auto call operation.

Note: You must code AUTODL=YES for switched subarea connections using X.21 lines.

BHSET

Block handler sets cannot be dynamically selected for BSC 3270s defined to VTAM. The BHSET operand is permitted for use by other possible owners of the terminal provided that the dynamic BHSET selection option (BHSASSC) is selected on the SYSCNTRL definition statement.

CALL = IN|OUT|INOUT

The CALL operand determines whether terminals, the host processor, or both are able to set up switched connections over the line to which this operand applies.

If the line is used only for terminal-initiated connections, you must specify (or default) CALL=IN on the LINE statement for the line.

If the line is used for connections initiated by terminals, in addition to connections initiated by VTAM, the VTAM operator, or application programs, you must code CALL=INOUT on the LINE statement for the line.

If you code CALL=OUT, or if you code CALL=INOUT without coding an AUTO operand, outgoing calls are dialed by the operator in response to a VTAM console message. For switched subarea lines with CALL=OUT or CALL=INOUT, AUTO is required.

This operand is valid only if DIAL=YES on the GROUP statement, and applies only to line operation in network control mode.

There are no VTAM restrictions on CALL=OUT.

Note: CALL=OUT is not supported by non-SNA terminals using the Network Terminal Option (NTO) licensed program.

DATMODE = HALF|FULL (v3R2)

tells the NCP whether the physical unit communicates in half-duplex or full-duplex data mode, and is dependent on the LINE being half- or full-duplex.

DIAL = YES|NO

determines whether the lines in the group require line control procedures. If DIAL=YES, the only operands you may code in the PU statements subordinate to the GROUP statement are MAXLU, PUTYPE, and SPAN.

DISCNT = [YES|NO],[E|NF]

YES|NO

tells VTAM whether to terminate its SSCP-LU and SSCP-PU sessions when the last LU-LU session (involving the logical unit associated with the physical unit) is terminated. The device remains assigned to VTAM and is still active. (That is, sessions can be requested with its LUS; such a request causes PU-SSCP and LU-SSCP sessions to be re-established. The physical unit itself may also request an SSCP-PU session.)

If you code YES, VTAM automatically terminates the SSCP-LU and SSCP-PU sessions as soon as the last LU-LU session is terminated. If any of the logical units on the physical unit request their own session termination, VTAM ignores the HOLD part of a character-coded logoff or the LAST-NOTLAST part of a field-formatted terminate self request. VTAM also rejects any attempt made by the physical unit to terminate its own SSCP session with a Request Disconnect request.

If you code NO, VTAM terminates the SSCP-LU and SSCP-PU sessions when one of the following conditions is met:

- VTAM receives a normal Request Disconnect request from the physical unit, and all the LU-LU sessions associated with that physical unit are terminated.
- VTAM receives an immediate Request Disconnect request from the physical unit. VTAM immediately terminates any existing LU-LU sessions associated with that physical unit. This request overrides any previous normal Request Disconnect request from the physical unit.
- All LU-LU sessions are terminated as a result of:
 - A character-coded logoff request with HOLD=NO,
 - A terminate self request for which LAST is specified, or
 - A VTAM VARY INACT command.

If any LU-LU session is terminated by any other means (such as by an application program CLSDST), the physical unit is not disconnected.

E|NF

tells VTAM whether to indicate “final-use” status in the DACTPU request unit when it deactivates a physical unit as a result of DISCNT=YES. This operand does not apply when DISCNT=NO, nor does it have any effect on the VTAM VARY INACT command. If you code F or take the default, “final-use” status is indicated. If you code NF, “not-final-use” status is indicated. Each device has its own requirements regarding “final-use” status. To determine

NCP Definition Statements for NCP Resources

whether to code F or NF for a given device, consult the appropriate installation publication for the device.

DLOGMOD = default logon mode table entry name

is the name of the logon mode table entry to be used by default if one is not otherwise provided. If this operand is not coded and the name of a logon mode entry is not otherwise provided, the first entry in the applicable logon mode table (given on the MODETAB operand or defaulted) is used by default. If MODETAB is specified the entry must be in either the specified table or in ISTINCLM. If you do not specify MODETAB, the entry must be in ISTINCLM.

ENCR = REQD|SEL|OPT|NONE mvs

tells whether this logical unit has any special requirements for enciphering and deciphering messages.

REQD

means that VTAM must encipher all messages to and from this logical unit. If ENCR=REQD is coded, no session can be established with this logical unit unless the host with which it is associated is able to handle cryptographic sessions.

SEL

has no meaning for LUS. If ENCR=SEL is entered, ENCR=OPT is used instead.

OPT

means that this logical unit can engage in cryptographic sessions, but allows the application program to determine whether to use cryptography.

NONE

means that this logical unit cannot engage in cryptographic sessions.

FEATUR2 = (operand,operand...)

describes the machine features for a specific link-attached non-SNA terminal. See *Network Program Products Planning* for a description of start-stop terminal planning considerations. The operands are:

LOWERCSE|DUALCSE

tells VTAM how to send alphabetic characters coded with the TEXT operand on a USSMSG macroinstruction to a non-SNA terminal over the SSCP-LU session.

Note: Non-alphabetic characters, as well as all characters coded using the BUFFER operand, are not affected by this operand.

LOWERCSE

means that alphabetic characters are sent to the terminal over the SSCP-LU session in lowercase.

DUALCSE

means that VTAM sends all characters as they are coded in the USSMSG macroinstruction. If you do not code either value, DUALCSE is assumed.

EDATS|NOEDATS

tells VTAM whether this terminal has the extended data stream feature. You cannot use this operand for terminals attached by SDLC lines.

MODEL1|MODEL2

is the specific model number (Model 1 or 2) for this 3275, 3277, 3284, or 3286 component. Code MODEL1 for those devices that have a default screen or buffer size of 480 bytes. Code MODEL2 for those devices that have a default screen or buffer size of 1920 bytes. This information is available to an application program as part of the device characteristics pertaining to

this terminal. These characteristics are obtained by using the INQUIRE macroinstruction. For more information, see *VTAM Programming*.

PRINTR|NOPRINTR

tells VTAM whether this terminal has an attached IBM 3284 Model 3 printer. This operand is valid only if the TERM=3275 operand is also coded or assumed by NCP definition statement sequencing for this statement.

GPOLL = chars

GPOLL (general polling) must be coded for BSC 3270 clusters (that is, 3271 and 3275); VTAM does not support specific polling.

ISTATUS = ACTIVE|INACTIVE

determines whether this minor node is to be initially active when the NCP major node to which it belongs is first activated, either due to a cold start of VTAM, or, after VTAM is started, by issuing the VTAM VARY ACT,COLD command for the NCP major node. For LUS, ISTATUS is also effective whenever the associated PU is activated.

This operand “sifts” to subordinate nodes as described in “Sift-Down Effect in VTAM Definition Statements” on page 64.

When coding the ISTATUS operand, consider these special cases:

- For a line with TYPE=PEP, ISTATUS does not apply and is ignored if you code it.
- For a line with USE=NCP, the line is initially active.
- For a line with USE=EP, the line is initially inactive.

Code ISTATUS=INACTIVE for all start-stop lines supported by NTO.

LINEAUT = YES

means that VTAM is to consider every LINE in a GROUP as an autocall line. If you omit this operand, but LINEADD=NONE and DIAL=YES, LINEAUT is assumed by default.

LNCTL = SDLC|BSC|SS|USER|CA

LNCTL=CA means that the definition statements following this GROUP identify intermediate routing node (IRN) and boundary node (BN) channel definitions. For more details, see *NCP Resource Definition Reference*.

If LNCTL=CA, it is strongly recommended that ISTATUS=INACTIVE be specified on the LINE statement if PUTYPE=5 is coded on the PUTYPE parameter of the PU statement.

Note: The operator can override the ISTATUS specification using the SCOPE operand on the VARY ACT command. Refer to the PUTYPE parameter on page 237 for additional explanation.

LOCADDR = 0|n

is the logical unit’s local address at the associated physical unit. *n* is a decimal integer 1 – 255.

LOCADDR=0 is required for independent logical units on a type 2.1 node.

Note: The value of LOCADDR depends upon the requirements of the device being defined. Consult the appropriate component description manual for these restrictions; for example, logical units associated with a 3279 or 3276 control unit must have a LOCADDR in the range 2 – 33.

LOGAPPL = controlling primary LU

identifies the name of the primary LU as known in the network of the secondary LU onto which this SLU is to be automatically logged when this SLU is activated. The name specified may also be a USERVAR which will be resolved into its current value before being used to establish or redrive the session with the controlling primary LU. The LOGAPPL operand is a convenient way of establishing sessions.

If you do not code LOGAPPL, logons are initiated via the USS facilities by the terminal operator, a request from an independent LU, an application program, a VARY LOGON issued in behalf of this LU, or the domain operator.

For independent LUS, (V3R2) the LOGAPPL operand will establish a session with the primary LU designated in the LOGAPPL operand if a session does not currently exist with this LU. The session is established regardless of whether sessions with other LUS exist. The LOGAPPL operand cannot be an independent LU since an independent LU cannot be the destination LU for an autologon session.

Starting with VTAM V3R1.1, this automatic logon definition can be cancelled at any time with the VARY NOLOGON command. However, upon inactivation and reactivation of the major node, the controlling relationship would again take effect.

Note: You should be aware that when you VARY LOGON to TSO, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I is issued repeatedly with sense 0821 indicated. To stop this, you must break the auto logon relationship.

Note: You should not specify the NetView program as the application program on the LOGAPPL operand as results are unpredictable in recovery scenarios.

For more information on VARY NOLOGON, and on changing a device's automatic logon definition, see *VTAM Operation*.

LOGTAB = interpret table name

is the member name of an interpret table.

An interpret table can be used to associate a logon request with the name of an application program or routine to which this logon is sent. By using an interpret table in conjunction with a USS table, a properly formatted input sequence can be supplied to the USS table. For more information on using interpret tables in conjunction with USS tables, see *VTAM Customization*.

This operand is valid only for dependent LUS.

The MODIFY TABLE operator command lets you dynamically replace an interpret (LOGTAB) table. See *VTAM Operation* for more information. If you want to use the MODIFY TABLE command against a given interpret table, you must reassemble that table using the VTAM V3R2 macroinstruction definition libraries.

LPDA = ALLOW|BLOCK

tells whether LPDA is allowed to test a physical unit. The default is ALLOW. This operand is used in dynamic reconfiguration.

MODETAB = logon mode table name

is the name of a logon mode table to be used for the logical unit. Logon mode tables are described in *VTAM Customization*. If this operand is omitted, the ISTINCLM table is used for the logical unit.

The MODIFY TABLE operator command lets you dynamically replace a logon mode table (V3R2 only). See *VTAM Operation*.

OWNER = ownername|(ownername,...)

is a name used to associate a host VTAM with the resources it controls. This operand is intended for the division of resources in a communication controller. This operand associates this resource or these resources with the PCCU definition statement having the same OWNER value. If you do not specify an OWNER operand, the resource can be owned by any host. If the OWNER operand is not specified on the PCCU statement, any OWNER operand on a GROUP or LINE statement is ignored.

If the OWNER operand does not match the OWNER operand on the PCCU statement:

1. If BACKUP=YES is specified on the PCCU statement, the resource can not be used until a VARY ACQ command is issued for the NCP.
2. If BACKUP=NO is specified, or not coded, the GROUP or LINE statement will not be processed at all.

PACING = n|0|1

determines how pacing is to be handled between the LU and the NCP to which the logical unit is connected. (In contrast, VPACING involves pacing between VTAM and the NCP.) For more information on pacing, see *VTAM Customization*.

n

is the number of normal-flow messages that the NCP sends to the logical unit before waiting for a pacing response.

n is a decimal integer 1 – 63. Refer to *NCP Resource Definition Reference* for information on how to select the proper value.

0

means that no pacing is to be performed for sessions with the logical unit or that the largest possible pacing is used if the session is adaptively paced.

If the PACING operand is omitted, PACING=1 is assumed by default.

If the logical unit is associated with a PU type 1 (PUTYPE=1), you must either code PACING=1 for the logical unit or omit the PACING operand.

This operand is not valid for statements within a group which has DIAL=YES on the GROUP statement.

POLIMIT = ([n|1][,WAIT|NOWAIT|QUEUE])

must be coded for a polled nonswitched line. It determines the action taken by the NCP if the number (*n*) of negative responses is exceeded when polling. You must code QUEUE.

PU = YES|NO

determines whether a BSC 3270 is treated as a physical unit and whether all terminals subordinate to the cluster are treated as logical units. If PU=YES, the device type must be a 3270 type. If PU=NO it is assumed that the associated terminals are supported by a line control program such as the IBM licensed program Network Terminal Option (NTO) or a similar user-written program. You cannot code this operand on the CLUSTER statement. You must code it on the GROUP or LINE statement, sifted down to the CLUSTER level.

PUTYPE = 1|2|4|5

For the special case where you code LNCTL=CA on the GROUP statement, PUTYPE=2|5 are the only valid values. The PU with PUTYPE=2 is a BN channel adapter and the PU with PUTYPE=5 is an IRN channel adapter. PUTYPE=5 is the default if LNCTL=CA is coded on the GROUP statement.

NCP Definition Statements for NCP Resources

The channel-link and its associated channel adapter appears to an SSCP as a nonswitched SDLC link.

Dynamic reconfiguration of a channel adapter is not allowed.

An “activate the channel-link” request for a channel-link in a LNCTL=CA, which has a PUTYPE=5 defined in it, is rejected with a X'080C0007' sense code.

If PUTYPE=4 is coded on GROUP and DIAL=YES and LNCTL=SDLC is coded, then this group is used for switched subarea connections.

For more details, see *NCP Resource Definition Reference*.

RESSCB = 0|n (v3R2)

is the number of session control blocks reserved by the NCP for the logical unit.

n is an integer 0 – 65535. The default is 0 (no reserved session control blocks).

The NCP has additional restrictions. See *NCP Resource Definition Reference*.

SECNET = YES|NO

identifies a physical unit attached to a nonswitched line as being associated with a secondary network containing resources whose connectivity is not defined to VTAM. When SECNET=YES, data that is received by VTAM from this physical unit is flagged as requiring special problem determination considerations when routed to a communication management application.

The default for this operand is the value set for SECNET on the LINE statement, if coded. However, if you do not code SECNET on the LINE statement, its default value on the PU statement is NO.

SSCPFM = FSS|USSSCS|USS3270|USS3275|USS3780|USSNTO

determines whether a logical unit or terminal can support character-coded messages (SSCPFM=USSSCS) in its communication with the SSCP. The default for this operand is SSCPFM=FSS. For BSC devices, the only valid values are USS3275 and USS3270; the default is USS3275.

Code SSCPFM=USS3270 for terminals attached to a controller defined as an SDLC 3271 (PUTYPE=1), or SDLC 3275 (PUTYPE=1). Code SSCPFM=USS3275 to prevent printing of the “Good Morning” message (USSMSG10) for a terminal defined as an SDLC 3275 (PU type 1) that may have an attached printer. For a list of these controllers, see *Network Program Products General Information*.

Code SSCPFM=USS3270 to allow printing of the “Good Morning” message (USSMSG10) on BSC printers. Code SSCPFM=USS3275 to prevent printing of the “Good Morning” message on BSC printers. The SSCPFM operand has no effect on BSC terminals that are not printers.

Note: Coding SSCPFM=USS3275 prevents the local copy hardware function key from working with certain BSC printers. To make sure the local copy function works, code SSCPFM=USS3270.

Code SSCPFM=FSS or SSCPFM=USSSCS for all other terminals for which the SSCPFM operand is valid. Consult the individual terminal component description manual to determine whether character-coded messages (SSCPFM=USSSCS) or formatted messages (SSCPFM=FSS) are supported for SSCP communication.

Code SSCPFM=USS3780 for non-SNA devices supported with the Network Terminal Option (NTO) licensed program that use the 3780 protocol (see *NTO Installation*). These devices use USS command facilities (LOGON and IBMTEST) and are supported only by Release 2 of NTO.

Code SSCPFM=USSNTO for all other non-SNA devices supported with NTO. These devices use the USS command facilities and are supported by all releases of NTO.

TERM = type

describes, for a virtual logical unit supported through NTO, the device data stream compatible characteristics. These characteristics are placed in an 8-byte program-supplied storage area, after an INQUIRE DEVCHAR macroinstruction is executed by an application program that specifies the virtual logical unit name. In particular, this information is in the DEVAUXTP field of the storage area that is mapped by the DEVCHAR DSECT. For more information on the DEVCHAR DSECT, see *VTAM Programming*. For specific considerations for BSC terminals, see *NCP Resource Definition Reference*.

USE = NCP|EP

USE=EP prevents the line from being activated unless a VTAM VARY ACT command is issued for it. Activating such a line with a VTAM VARY command gives the line to VTAM and NCP whether it is in use by EP or not.

USSTAB = USS definition table name

is the name of a USS definition table used for the logical unit. USS definition tables are described in *VTAM Customization*. If this operand is omitted, the ISTINCDT table is used for the logical unit when character-coded requests are received.

If USSTAB is coded on a CLUSTER or TERMINAL statement, you must also code PU=YES on the GROUP or LINE for that statement.

This operand is valid only for dependent LUS. Independent LUS cannot engage in SSCP-LU sessions.

The MODIFY TABLE operator command lets you dynamically replace USS (USSTAB) tables (v3R2 only). See *VTAM Operation* for more information. If you want to use the MODIFY TABLE command against a given USS table, you must reassemble that table using the VTAM v3R2 macroinstruction definition libraries.

VPACING = n|0|2

determines whether pacing is performed (during a session) with the logical units represented by the appropriate NCP definition statements. For more information on pacing, refer to *VTAM Customization*.

n

is the number of data requests that VTAM sends to an NCP (for an associated session) before waiting for a pacing response. No further requests can be sent to the NCP until the NCP replies with a pacing response to VTAM.

0

means that no pacing is performed or that the largest possible pacing is used if the session is adaptively paced.

If the VPACING operand is omitted, VPACING=2 is assumed.

If adaptive pacing is used between VTAM and the boundary node, the parameter is ignored.

XID = YES|NO (v3R2)

states whether a physical unit on a nonswitched SDLC line can identify itself to VTAM via XID (identification exchange). XID=YES is required for type 2.1 peripheral nodes. Some PUS on leased SDLC lines do not support XID; for these, you must code XID=NO. See the device support chart in *Network Program Product* for details on specific devices.

NCP Definition Statements for NCP Resources

X21SW = YES|NO

X21SW= YES means that all lines in a line group are x.21 switched lines. VTAM adds the required end-of-number (EON) character to the dial digits for an auto call operation or permits a direct call switched path to be used. The default is NO.

Dynamic Reconfiguration

Dynamic reconfiguration (DR) is the process of changing a network configuration without having to regenerate the NCP. Dynamic reconfiguration lets you:

- Add and delete type 1, type 2.0, and type 2.1 physical units and their associated logical units on nonswitched SDLC lines.
- Add and delete logical units on physical units under nonswitched SDLC lines.
- For V3R2, move a physical unit and its associated logical units from its current line to another line within the same NCP.
- For V3R2, change the SDLC address for a physical unit.

You cannot move a logical unit to another physical unit. However, you can delete it from its current physical unit and then add it to another physical unit.

The procedure for a dynamic reconfiguration is:

1. Include appropriate ADD, DELETE, and MOVE statements in a DR deck. For each statement, you must provide VTAM definitions for the resources you want to change. The first statement in the DR data set must be VBUILD TYPE = DR.
2. File the DR data set in the VTAM definition library.
3. Make sure that you have inactivated all resources that must be inactive (see Figure 40 on page 242).
4. Issue the VARY DRDS command to invoke dynamic reconfiguration using the named DR data set.

Note: You can also perform dynamic reconfiguration DELETES and MOVES via the MODIFY DR operator command (V3R2 only). See *VTAM Operation* for more information.

5. Issue the VARY ACT command to activate newly added resources and resources that you inactivated for the reconfiguration. To automatically activate a resource added via dynamic reconfiguration, the status of the higher-level node should be ACTIVE, and ISTATUS=ACTIVE should be specified on the newly added resource. To automatically activate a moved physical unit (V3R2 only) and its logical units that have ISTATUS=ACTIVE coded, specify ACTIVATE=YES on the PU statement following a MOVE statement.

To check the results of the dynamic reconfiguration, you can use the DISPLAY operator command for the affected resources.

Note: The NCP should be regenerated and reloaded reflecting the changes as soon as time permits.

mvs vse If the NODELST start option is in effect when you perform a dynamic reconfiguration, VTAM records the name of each DR data set in the NODELST file. When you restart VTAM after a halt or a failure, you can automatically reapply the changes in the DR data sets by specifying the name of the NODELST file on the CONFIG start option.

Note: Only VARY DRDS commands are recorded in NODELST. DR changes made via MODIFY DR are **not** automatically applied and may cause errors, since they are not used during restart.

Dynamic Reconfiguration

Note: If a physical unit is tagged to be activated during WARM start, it will not be automatically activated during WARM start if that physical unit was dynamically moved before VTAM failed. The activation of resources precedes the processing of DRDS files during WARM start. Since dynamic reconfiguration depends upon resources being inactive, the automatic activation of DR-moved resources is not performed. Automatic activation of a physical unit can still be achieved, however, by coding `ACTIVATE=YES` on the `MOVE` statement for that physical unit in the DRDS file. See *VTAM Operation* for more details on configuration restart.

The active and inactive requirements for the reconfiguration operations are shown in Figure 40.

Operation/ Resource	NCP	LINE	PU	LU
ADD PU	ACT	Either	N/A	N/A
ADD LU	ACT	Either	Either	N/A
DELETE PU	ACT	Either	INACT	INACT
DELETE LU	ACT	Either	Either	INACT
MOVE PU	ACT	Either	INACT	INACT

Figure 40. Active and Inactive Requirements for Dynamic Reconfiguration

The formats of the DR statements are shown in Figure 41. The statements must follow the rules described in “Format of Definition Statements in this Book” on page 61. Remember that the first statement in a DR deck must be `VBUILD TYPE=DR`. The completed statements must be filed in the VTAM definition library.

Note: When coding the operands for the PU and LU statements shown in Figure 41, do **not** code NCP-only parameters; otherwise a warning message will be issued.

Name	Definition Statements	Operands
[name]	VBUILD	TYPE=DR
[name]	ADD	TO= <i>linename</i>
<i>puname</i>	PU	(Code operands as normal. Refer to Figure 39 on page 230)
<i>luname</i>	LU	(Code operands as normal. Refer to Figure 39 on page 230)
[name]	ADD	TO= <i>puname</i>
<i>luname</i>	LU	(Code operands as normal. Refer to Figure 39 on page 230)

Figure 41 (Part 1 of 2). Formats for DR Statements

Name	Definition Statements	Operands
[name]	DELETE	FROM = <i>linename</i>
<i>puname</i>	PU	(No operands required.)
[name]	DELETE	FROM = <i>puname</i>
<i>luname</i>	LU	(No operands required.)
[name]	MOVE	TO = <i>linename</i> , FROM = <i>linename</i>
<i>puname</i>	PU	[,ACTIVATE = NO YES] [,ADDR = <i>char</i>]

Figure 41 (Part 2 of 2). Formats for DR Statements

name

identifies an individual DR statement for error reporting purposes. If you code the name for a DR statement and the statement fails, VTAM includes the name in the appropriate operator message. This operand is optional, but is strongly recommended.

TYPE = DR

means that this VBUILD statement defines a dynamic reconfiguration file to VTAM. This operand is required.

TO = puname/FROM = puname

identifies a physical unit to which you want to add any associated logical units or from which you want to delete any associated logical units. The physical unit must be either type 1, type 2.0, or type 2.1. This operand is required to identify the physical unit.

Note: If either physical unit is under a GROUP that specifies VIRTUAL = YES, dynamic reconfiguration is **not** allowed for the physical unit.

Remember, if you delete a physical unit, you also delete its associated logical units.

luname/puname

identifies a logical or physical unit that you want to add or delete. This operand is required to identify the logical or physical unit.

TO = linename/FROM = linename

identifies a line to which you want to add or move a physical unit or from which you want to delete or move a physical unit. This line must be defined as non-switched and may not have a PU type 4 or 5 attached. For a MOVE operation, the TO and FROM lines must be within the same NCP. The line can be active or inactive. This operand is required if you are moving, adding, or deleting a PU.

Note: If either line is under a GROUP that specifies VIRTUAL = YES, dynamic reconfiguration is **not** allowed for the line.

Remember, if you move a physical unit, you also move its associated logical units.

ACTIVATE = YES|NO

tells VTAM whether to automatically activate the physical unit and its associated logical units (that have been defined with ISTATUS = ACTIVE) after successfully moving the physical unit to the new line. The abbreviation is ACT. This operand is optional.

Dynamic Reconfiguration

ACTIVATE=NO is the default. If you use ACTIVATE=NO, you can activate the PU after the move by issuing VARY NET,ACT,ID=*puname*.

ADDR = char

specifies a new SDLC address for a physical unit being moved. The new SDLC station address replaces the PU's current station address. This operand is optional.

char is a valid 2-digit hexadecimal SDLC address. To move multiple PUs and change their addresses at the same time, make sure you specify a unique address for each PU under the LINE. The valid address range is X'01' – X'FE'.

For an ADD operation, code the PU and LU statements as you ordinarily would when defining these resources. You must code the operands in the PU and LU statements in the same format as they appear in the NCP major node.

You must explicitly code all desired operands from the GROUP, LINE, or PU to which you are adding the PU or LU. For any other NCP-only operands, VTAM ignores them and may issue a warning message.

Sifting takes place within the hierarchy of minor nodes being added dynamically. Values for operands coded in the original hierarchy above the hierarchy being added do not sift down to the added resources. Therefore, if you want the values coded in the original hierarchy, you must code them explicitly in the DR deck statements for the resources you are adding.

The most efficient way to add a physical unit and its associated logical units is to specify them on the same ADD statement. In other words, do not use separate ADD statements for the physical unit and each logical unit.

For a DELETE operation, code only the PU or LU names. You do not have to code individual PU or LU operands. Note that when you delete a PU you also delete its associated LUS. Do not code the associated LU statements.

For a MOVE operation, code only the names of the PUS you want to move. Do not code associated LUS. VTAM automatically includes the associated LUS in the move. For each PU, you can optionally specify a new station address and whether or not you want the PU and its LUS automatically activated after the move.

To change the SDLC address for a physical unit on a certain line, use the MOVE statement and specify the new address for the ADDR operand, keeping the FROM line and the TO line the same.

The MOVE operation is only for PUS (and their associated LUS) and is valid only in VTAM V3R2. To move an individual LU to another PU, use a DELETE and then a subsequent ADD. (For efficient storage management, code all DELETES before their related ADDS.)

Note: In order for an SSCP to successfully take over for another SSCP that has issued a DR MOVE, the takeover SSCP must also support DR MOVE. In other words, the takeover SSCP must be running VTAM V3R2. More importantly, the takeover SSCP must be configured **exactly the same** as the original host.

Figure 42 through Figure 44 show sample DR statements and the configuration changes they produce.

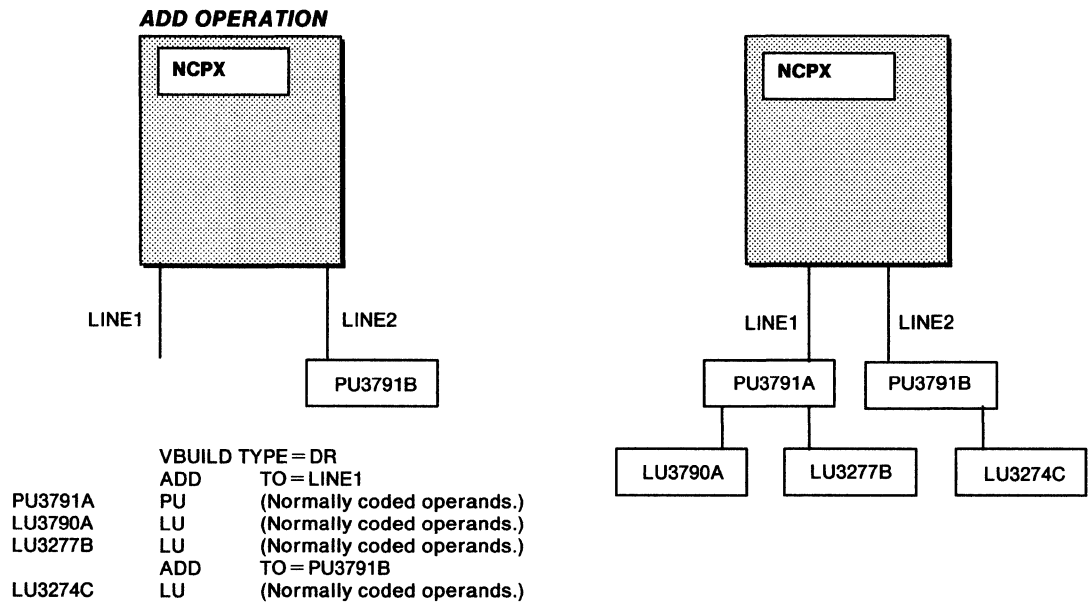


Figure 42. DR ADD Operation

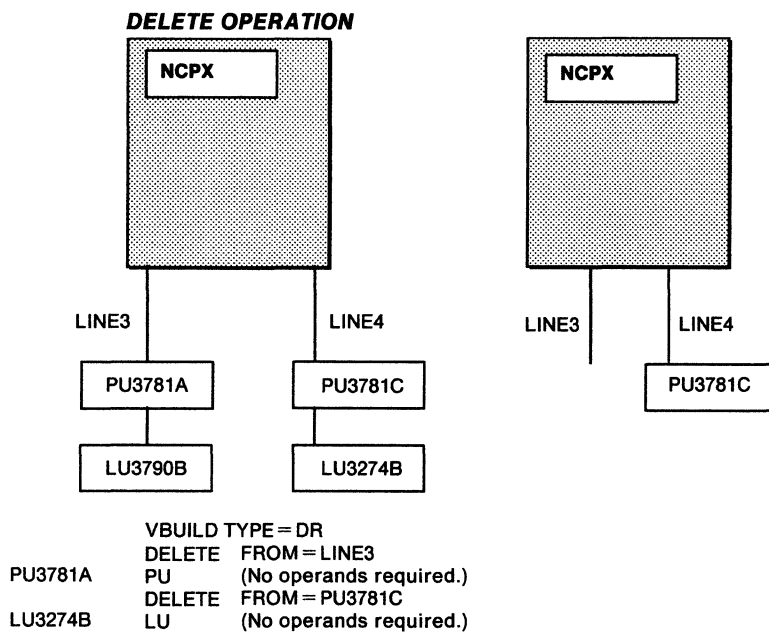


Figure 43. DR DELETE Operation

Implicit Dynamic Reconfiguration (V3R2 only)

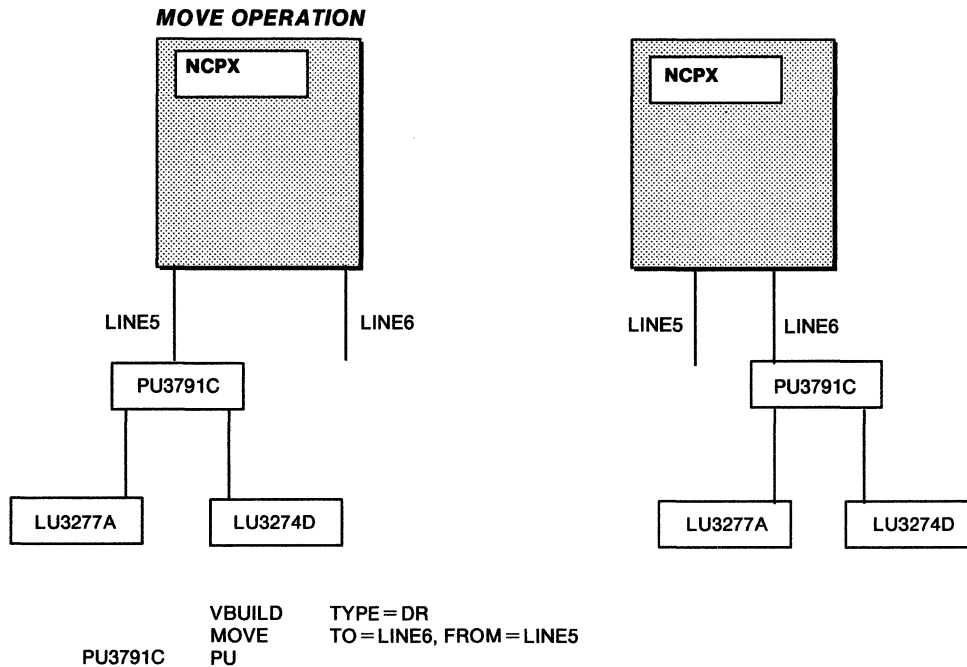


Figure 44. DR MOVE Operation (V3R2 only)

Implicit Dynamic Reconfiguration (V3R2 only)

Implicit dynamic reconfiguration is the process of adding type 1, type 2.0, and type 2.1 physical units (and associated logical units) or logical units to an existing NCP definition deck without having to regenerate the NCP. You can add new PUS (and associated LUS) to existing nonswitched SDLC lines and new LUS to existing PUS.

The procedure is:

1. Modify the existing NCP deck and include new definition statements for the PUS and LUS you want to add. Remember, you can only add PUS and LUS. You cannot delete or move them.
2. Issue VARY INACT to inactivate the NCP.
3. Issue VARY ACT to reactivate the NCP, using the updated definition deck.

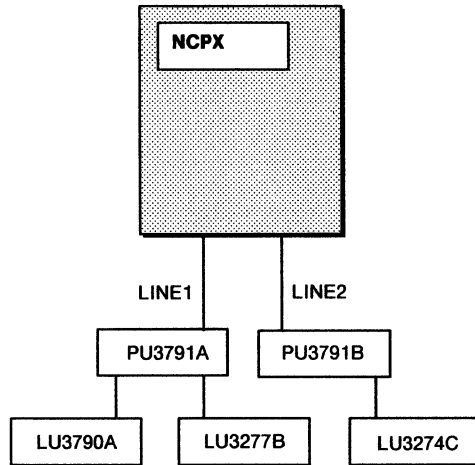
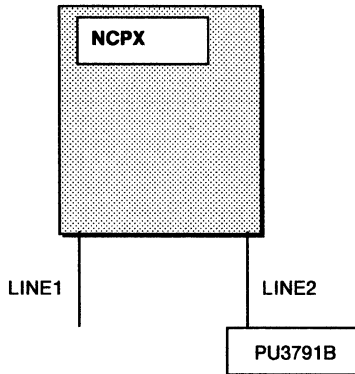
Note: The NCP should be regenerated and reloaded to reflect the changes as soon as time permits.

Figure 45 on page 247 shows how to add a PU and LUS via implicit dynamic reconfiguration.

Original NCP Definition Deck

```

LINE1    LINE (Normally coded operands.)
LINE2    LINE
PU3791B  PU
    
```



Modified NCP definition deck

```

LINE 1    LINE (Normally coded operands.)
PU3791A  PU
LU3790A  LU
LU3277B  LU
LINE2    LINE
PU3791B  PU
LU3274C  LU
    
```

Operator commands

```

VARY NET,INACT,ID=NCPX
VARY NET,ACT,ID=NCPX
    
```

Figure 45. Sample Implicit Dynamic Reconfiguration

Considerations for Multipoint Subarea Link Support

When considering dynamic reconfiguration, be aware that dynamic reconfiguration of physical units is not supported on a line that has type 4 or 5 physical units on it (including a multipoint subarea link).

Defining VTAM Routes

PATH definition statements are representations of the routes VTAM takes to communicate with other subarea nodes. One or more PATH statements are filed in the VTAM definition library. The name assigned to this path definition set is used to activate this set of paths. More than one path definition set may be filed and activated. Note that the VBUILD statement is not used.

Communication with other subarea nodes is not possible unless all the required path tables are active. Therefore, it is recommended that any required path tables be activated before any NCP or channel-attachment major nodes are activated. See *Network Program Products Planning* for an illustration of how PATH definition statements fit into the VTAM routing structure.

The VTAM PATH Definition Statement

Code the PATH statement like this:

Name	Definition Statement	Operands
[name]	PATH	DESTSA = n (n1,n2,n3,...) [,DELETER = er# (er0,er1,er2,...,er7)] (v3R2) [,ER0 = (adjsub[,tg#])] [,ER1 = (adjsub[,tg#])] : [,ER7 = (adjsub[,tg#])] [,VR0 = er#] [,VR1 = er#] : [,VR7 = er#] [,VRPWS00 = (min#,max#)] [,VRPWS01 = (min#,max#)] [,VRPWS02 = (min#,max#)] [,VRPWS10 = (min#,max#)] [,VRPWS11 = (min#,max#)] [,VRPWS12 = (min#,max#)] [,VRPWS20 = (min#,max#)] : [,VRPWS72 = (min#,max#)]

name

is the name of the PATH represented by this statement, and is not checked by VTAM for validity. Its value is to point out the particular PATH statement in case of a definition error or warning message during activation. This operand is optional, but is strongly recommended.

DESTSA = n|(n1,n2,n3,...)

n is the destination subarea number for the routes being defined to subarea nodes in your network. You may code more than one destination subarea as long as the route definition statement holds for each one.

DELETER = er#|(er0,er1,er2,...,er7) (v3R2 only)

er# is the explicit route number for the routes to be deleted. The value of *er#* can be 0–7, and up to eight explicit route numbers can be specified in one PATH statement.

VTAM deletes the specified explicit route from its routing table if the explicit route is not currently operative. Virtual route numbers mapped to the explicit route are deleted as well. If the requested explicit route is currently operative, the request is rejected, and a warning message displayed.

Specifying this operand requires extreme caution. Deleting one explicit route may make several routes unusable because several origin subareas may use the same routing table entry. The DELETER operand should be used only when there is no other method of correcting errors or resolving problems. If the explicit route must be redefined, you should use the add/replace function.

ER0 = (adjsub[,tg#]),...,ER7 = (adjsub[,tg#])

names the adjacent subarea and, optionally, the transmission group number for the associated explicit routes originating in the host and leading to the destination subarea

adjsub

is the subarea number (in decimal) of the adjacent subarea to which traffic should be sent from the host subarea for the explicit route being defined.

tg#

is an optional transmission group number for the explicit route being defined. VTAM always uses the value 1 for channel links.

VR0 = er#,...,VR7 = er#

associates the virtual route with the explicit route.

er#

is the explicit route number to which the virtual route is mapped as a decimal integer 0–7.

Note: You must code at least one of the keyword identifiers for routes (ER0,...,ER7, VR0,...,VR7).

VRPWS00 = (min#,max#),...,VRPWS72 = (min#,max#)

is the default pacing window size for a certain virtual route and transmission priority. The virtual route must be defined within this path definition.

The first number in the operand identifies the virtual route number; the second number identifies the transmission priority associated with the virtual route. For example, VRPWS02=(128,255) defines a minimum virtual route window size of 128 and a maximum window size of 255 for VR0, transmission priority 2.

The minimum window size must be greater than zero and less than or equal to the maximum window size. The maximum window size must be greater than or equal to the minimum window size and less than or equal to 255. If either value is not valid, VRPWS is ignored.

If you do not code default values, VTAM sets the minimum window size equal to the ER length and the maximum window size equal to three times the ER length. However, if the virtual route ends in a subarea that is adjacent to VTAM, the maximum window size is set to the larger of these two values:

- 15
- 255 minus $16n$, where n is the number of explicit routes (defined or operative) that originate in the host and pass through, but do not end in, the adjacent subarea.

This increases the maximum window size for a route to a channel-attached NCP that has only a few explicit routes passing through it.

VTAM Route: PATH

For additional information on virtual route window sizes, see *Network Program Products Planning*.

Dynamic Path Update (V3R2)

Dynamic path update enables the VTAM operator to add or replace NCP path definitions dynamically without regenerating and reloading the NCP if the explicit route (ER) is not currently operative. In addition, a delete function for inoperative ERS is provided for both VTAM and NCP path definitions. Dynamic path update may also be used to change path definition parameters such as VR pacing window size for inoperative routes.

To provide for dynamic path update, VTAM permits dynamic path update members to be filed in the VTAM definition library. A dynamic path update member may contain path specifications that are added, replaced, or deleted from one or more NCP or VTAM subareas. A set of path update specifications that is targeted to a specific subarea node within a dynamic path update member is called a path update specification set. A dynamic path update member may contain one or more path update specification sets.

The dynamic path update member shown in Figure 46 could be used to add NCP3 to the network shown in Figure 47 on page 252.

```

* Dynamic Path Specification Set for VTAM 1 (subarea 1)
VTAM1  VPATH NETID=NETA
        PATH DESTSA=3,
          ER0=(2,1),
          VR0=0
* Dynamic Path Specification Set for VTAM 5 (subarea 5)
VTAM5  VPATH NETID=NETA
        PATH DESTSA=3,
          ER0=(4,1),
          VR0=0
* Dynamic Path Specification Set for NCP 2 (subarea 2)
NCP2   NCPPATH NETID=NETA
        PATH DESTSA=3,
          ER0=(3,10)
* Dynamic Path Specification Set for NCP 4 (subarea 4)
NCP4   NCPPATH NETID=NETA
        PATH DESTSA=3,
          ER0=(3,11)

```

Figure 46. Sample Dynamic Path Update Member for Network NETA

A dynamic path update may be triggered by any of the following methods:

- Activating a dynamic path update member
- Specifying "NEWPATH=" when activating an NCP with an operator command
- Activating an NCP that has "NEWPATH=" specified on the PCCU statement for this host.

Dynamic Path Update (V3R2)

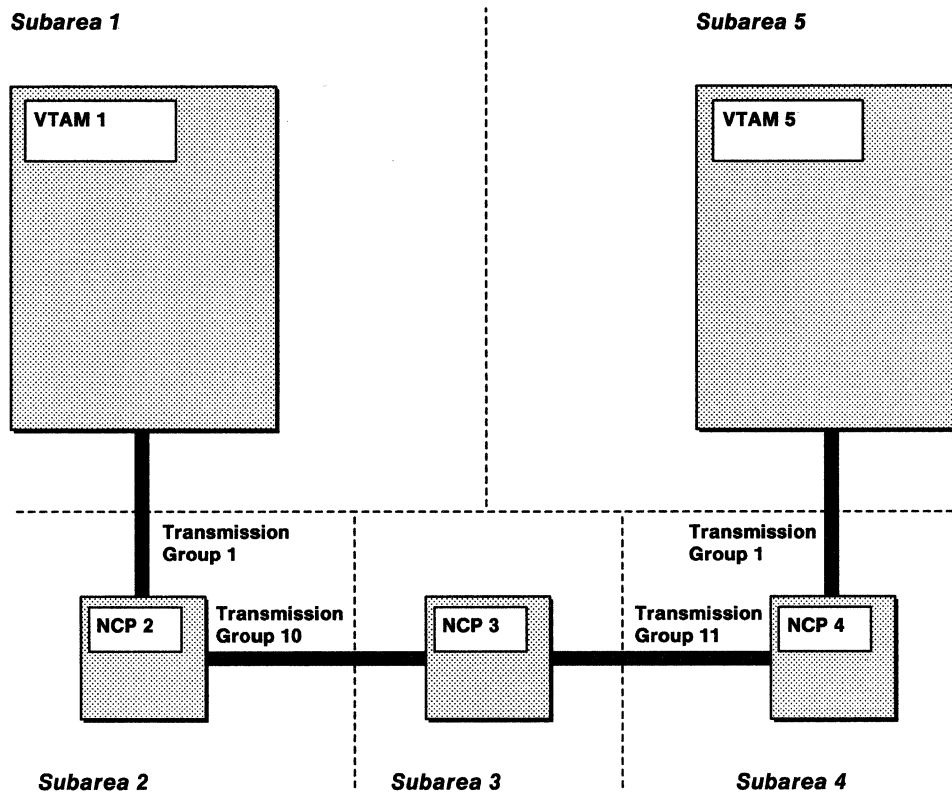


Figure 47. Sample Network NETA

The dynamic path update member shown in Figure 46 on page 251 could be filed in both VTAM1 and VTAM5's definition library. When the operator activates the dynamic path update member, VTAM1 ignores VTAM5's path update specification set because the name in the VPATH definition statement does not match its SSCPNAME. VTAM1 ignores NCP4's path update specification set because it did not activate the NCP (the SSCP-PU session does not exist). Similarly, VTAM5 ignores path update specification sets for VTAM1 and NCP2.

You should file the path update specification set for each subarea in separate dynamic path update members to avoid possible performance deterioration. In the above example, if NCP2 and NCP4 were owned by both VTAM1 and VTAM5, there would be two update attempts for each NCP when the operators at both hosts activated the dynamic path update member.

VTAM distinguishes path definition sets from dynamic path update members based on the first noncomment card in the member. If the first noncomment card contains a PATH definition statement, it is considered a path definition set. If the first noncomment card contains a VPATH or NCPPATH definition statement, it is considered a dynamic path update member. If a pre-V3R2 version of VTAM processes a dynamic path update member, it will not understand the VPATH or NCPPATH definition statement, and therefore, will reject the activate request.

The following restrictions are placed on path definition sets and dynamic path update members:

- A path definition set can include path definitions for only one VTAM host. If an unknown statement or VPATH or NCPPATH definition statement is encountered, VTAM discards all PATH definition statements that follow the invalid statement and issues a warning message. PATH definition statements that were already processed are not affected.
- A path definition set can include the DELETER operand if it applies to the host activating the path definition set.
- If a dynamic path update member contains an unknown statement, VTAM discards all PATH definition statements that follow the invalid statement up to the next recognizable VPATH or NCPPATH definition statement, and issues a warning message. The first noncomment card in the member, however, must be a valid VPATH or NCPPATH definition statement.

VTAM saves the name of the path definition set in the NODELST data set (VTAM's configuration restart data set). The name of the dynamic path update member is not saved.

Extreme caution must be used when deleting or replacing a route for a node that is an intermediate routing node for other routes.

Dynamic Update NCP Paths

The dynamic path specification set for an NCP contains NCPPATH and PATH definition statements.

NCPPATH Definition Statement

The NCPPATH definition statement identifies the NCP and the network to which the path update specification set applies in a dynamic path update member. This definition statement is required, and must precede the path update specifications for each network supported by the NCP.

The format of the NCPPATH definition statement is:

Name	Definition Statement	Operands
ncpname	NCPPATH	NETID = network ID

ncpname

specifies a 1 – 7 character name of the NCP to which the path update specification set applies. *ncpname* is required.

ncpname must be identical with the NCP's load module name.

If the specified NCP is not currently active or is being activated when the dynamic path update member is activated, VTAM issues a warning message and discards the path update specification set. The PATH definition statements that follow, however, are checked for validity, and warning messages are issued if there are errors.

NETID = network ID

specifies a 1 – 8 character network identifier to which the path update specification set applies. This operand is required. If it is not coded, VTAM ignores the entire path update specification set and issues a warning message.

If the specified NETID is not defined in the NCP, the NCP rejects the update request and responds to the SSCP with an invalid NETID indicator. This causes VTAM to issue a warning message.

NCP's PATH Definition Statement

The format of the PATH definition statement is:

Name	Definition Statement	Operands
[name]	PATH	DESTSA = n (n1,n2,n3,...) [,DELETER = er# (er0,er1,er2,...,er7)] [,ER0 = (adjsub[,tg#] [,lo 5000] [,med 5000] [,hi 5000] [,tot 20000])] [,ER1 = (adjsub[,tg#] [,lo 5000] [,med 5000] [,hi 5000] [,tot 20000])] : [,ER7 = (adjsub[,tg#] [,lo 5000] [,med 5000] [,hi 5000] [,tot 20000])] [,VR0 = er#] [,VR1 = er#] : [,VR7 = er#] [,VRPWS00 = (min#,max#)] [,VRPWS01 = (min#,max#)] [,VRPWS02 = (min#,max#)] [,VRPWS10 = (min#,max#)] [,VRPWS11 = (min#,max#)] [,VRPWS12 = (min#,max#)] [,VRPWS20 = (min#,max#)] : [,VRPWS72 = (min#,max#)]

name

is the name of the PATH represented by this statement, and is not checked by VTAM for validity. Its value is to point out the particular PATH statement in case of a definition error or warning message during activation. This operand is optional.

DESTSA = n|(n1,n2,n3,...)

n is the destination subarea number for the routes being defined to subarea nodes in your network. You may code more than one destination subarea as long as the route definition statement holds for each one.

DELETER = er#|(er0,er1,er2,...,er7)

er# is the explicit route number for the routes to be deleted. The value of *er#* can be 0–7, and up to eight explicit route numbers can be specified in one PATH statement.

The NCP deletes the specified explicit route from its routing table if the explicit route is not currently operative. Virtual route numbers mapped to the explicit

NCP Dynamic Path Update: PATH

route are deleted as well. If the requested explicit route is currently operative, the request is rejected, and a warning message displayed.

Specifying this operand requires extreme caution. Deleting one explicit route may make several routes unusable because multiple origin subareas may use the same routing table entry. The DELETER operand should be used only when there is no other method of correcting errors or resolving problems. If the explicit route must be redefined, you should use the add or replace function.

ER0 = (adjsub[,tg#][,lo|5000][,med|5000][,hi|5000][,tot|20000])

.

ER7 = (adjsub[,tg#][,lo|5000][,med|5000][,hi|5000][,tot|20000])

names the adjacent subarea and optionally specifies:

- The transmission group number for the associated explicit routes originating in the host and leading to the destination subarea.
- The NCP's transmission group flow-control thresholds. The maximum value for any threshold is 524,287.

adjsub

is the subarea number (in decimal) of the adjacent subarea to which traffic should be sent from the host subarea for the explicit route being defined.

tg#

is an optional transmission group number for the explicit route being defined. VTAM always uses the value 1 for channel links.

lo

is the NCP's transmission group flow-control threshold for low priorities. The default value is 5000.

med

is the NCP's transmission group flow-control threshold for medium priorities. The default value is 5000.

hi

is the NCP's transmission group flow-control threshold for high priorities. The default value is 5000.

tot

is the NCP's transmission group flow-control threshold for the total traffic in characters. The default value is 20000.

VR0 = er#,...,VR7 = er#

associates the virtual route with the explicit route.

er#

is the explicit route number to which the virtual route is mapped as a decimal integer 0–7.

Note: You must code at least one of the keyword identifiers for routes (ER0,...,ER7, VR0,...,VR7).

VRPWS00 = (min#,max#),...,VRPWS72 = (min#,max#)

is the default pacing window size for a certain virtual route and transmission priority. The virtual route must be defined within this path definition.

The first number in the operand identifies the virtual route number; the second number identifies the transmission priority associated with the virtual route.

For example, `VRPWS02 = (128,255)` defines a minimum virtual route window size of 128 and a maximum window size of 255 for VR0, transmission priority 2.

The minimum window size must be greater than zero and less than or equal to the maximum window size. The maximum window size must be greater than or equal to the minimum window size and less than or equal to 255. If either value is not valid, `VRPWS` is ignored.

VTAM will send the minimum and the maximum values specified with this parameter to NCP. If this parameter is not coded, no window sizes will be sent, and NCP will use already defined values if they exist. If the window sizes are not defined for a VR when the VR is activated, NCP will dynamically calculate the value at the VR activation time.

The value (0,0) has special meaning. If this value is coded, the currently specified values in the NCP, if any, will be nullified and values dynamically calculated at VR activation time will be used.

For additional information on virtual route window sizes, see *Network Program Products Planning*.

Dynamic Update VTAM Paths

The dynamic path specification set for VTAM contains VPATH and PATH definition statements.

VPATH Definition Statement

The VPATH definition statement identifies the VTAM subarea and the network to which the path update specification set applies in a dynamic path update member. This definition statement is required and must precede the path update specifications for each subarea. The VPATH definition statement is not allowed in the path definition set.

The format of the VPATH definition statement is:

Name	Definition Statement	Operands
sscpname	VPATH	NETID = network ID

sscpname

specifies a 1–8 character name of the VTAM subarea to which the path update specification set applies. *sscpname* is required. *sscpname* must be identical with the SSCPNAME specified in the VTAM START command; otherwise, VTAM ignores the path update specification set.

NETID = network ID

specifies a 1–8 character network identifier to which the path update specification set applies. This operand is required.

The specified NETID must be identical with the NETID specified in the VTAM START command; otherwise, VTAM ignores the path update specification set.

VTAM's PATH Definition Statement

The format of the PATH definition statement is:

Name	Definition Statement	Operands
[name]	PATH	DESTSA = n (n1,n2,n3,...) [,DELETER = er# (er0,er1,er2,...,er7)] [,ER0 = (adjsub[,tg#])] [,ER1 = (adjsub[,tg#])] : : [,ER7 = (adjsub[,tg#])] [,VR0 = er#] [,VR1 = er#] : : [,VR7 = er#] [,VRPWS00 = (min#,max#)] [,VRPWS01 = (min#,max#)] [,VRPWS02 = (min#,max#)] [,VRPWS10 = (min#,max#)] [,VRPWS11 = (min#,max#)] [,VRPWS12 = (min#,max#)] [,VRPWS20 = (min#,max#)] : : [,VRPWS72 = (min#,max#)]

For more information on the PATH definition statement and on the operands, see "The VTAM PATH Definition Statement" on page 248.

Defining a Multiple-Domain VTAM Network

The following sections describe how to define CDRMs, CDRSCs and default SSCP lists within an adjacent SSCP table. Additional path statements are required for cross-domain communication. For more information, see “Defining VTAM Routes” on page 248.

Defining Cross-Domain Resource Managers

One or more major nodes can be defined for cross-domain resource managers (CDRMs). Each CDRM major node is defined with a VBUILD statement and each minor node is defined with a CDRM definition statement. Within a domain there must be exactly one cross-domain resource manager, called an external CDRM, defined for every other domain (in this network or another network) with which this domain directly communicates.

Note: Each domain must also have a definition of its own cross-domain resource manager, called the host CDRM.

You can use the CDRM definition statement to define CDRMs in other networks. See “The CDRM Definition Statement” on page 346 for details.

The VBUILD Statement

Code a VBUILD statement for each set of CDRM definition statements.

Code the VBUILD statement like this:

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = CDRM [,CONFIGDS = name] [,CONFIGPW = password]

name

a *name* is optional.

TYPE = CDRM

means that the VBUILD statement defines a CDRM major node to VTAM. This operand is required.

MVS VSE CONFIGDS = name

is a 1–8 character data definition name that identifies the configuration restart data set defined by the user to be used for this major node. Include a DD statement with this operand in the VTAM start procedure. Refer to *Network Program Products Planning* for a description of configuration restart.

MVS VSE CONFIGPW = password

is the 1–7 character alphanumeric password used by VTAM to gain access to the configuration restart data set. If you do not code CONFIGPW and it is required by VSAM, VSAM prompts the VTAM operator for the correct password when VTAM attempts to open the data set.

You may code CONFIGPW only if you also code CONFIGDS.

The NETWORK Definition Statement

The NETWORK definition statement names the network in which each of the CDRMs being defined resides. The NETWORK statement appears after the VBUILD statement and immediately before one or more CDRM statements defining CDRMs residing in the network.

Name	Definition Statement	Operands
[name]	NETWORK	[NETID = network ID]

name

identifies this NETWORK statement in error messages from the VTAM system definition processor. To avoid confusion, you should code the same value for both *name* and the NETID operand. This operand is optional.

NETID = network ID

is an optional 1 – 8 character name that identifies the network in which the CDRM or set of CDRMs reside. This NETID pertains to the CDRM or set of CDRMs defined following the NETWORK statement and before any other NETWORK statement in the same set of definitions.

For more information on coding the NETWORK definition statement, see “The NETWORK Definition Statement” on page 345.

The CDRM Definition Statement

CDRM definition statements define cross-domain resource manager (CDRM) minor nodes. One or more of these statements, when preceded by a VBUILD statement, define a CDRM major node.

Name	Definition Statement	Operands
cdrmname	CDRM	[CDRDYN = YES NO] [,CDRSC = OPT REQ] [,ELEMENT = n 1] [,ISTATUS = ACTIVE INACTIVE] [,RECOVERY = YES NO] [,SPAN = spanname] [,SUBAREA = n] [,VPACING = n 0 63]

cdrmname

is the minor node name of the CDRM represented by this statement. It is recommended that the host CDRM have the same name as the SSCP in the SSCPNAME start option.

For special considerations for cross-network resources, see “Defining Cross-Domain Resources” on page 267.

CDRDYN = YES|**NO**

determines whether the host CDRM is authorized to dynamically define CDRSC representations of cross-domain or cross-network resources at the time a session request is received from or sent to an adjacent SSCP.

YES

authorizes dynamic definition of cross-domain or cross-network resources by this CDRM, eliminating the need to predefine certain CDRSCs. If you are defining a gateway SSCP, you **should** code CDRDYN = YES.

Both origin LUS and destination LUS can be dynamically redefined.

NO

causes the failure of any cross-domain or cross-network session request in behalf of a cross-domain or cross-network resource that has no predefined CDRSC entry. NO is the default.

Notes:

1. Use this operand with the CDRSC operand to set up dynamic CDRSC definition. See *Network Program Products Planning* for more information on this function.
2. An intermediate host may also build dynamic definitions for CDRSCs.

CDRSC = OPT|**REQ**

determines whether resources owned by the CDRM being defined by this statement may be dynamically defined at the time a session request is received from or sent to the external CDRM which manages the resource. This determines whether dynamic CDRSC definitions are allowed when cross-domain or cross-network session requests are received from or sent to certain domains.

OPT

authorizes dynamic definition of cross-domain or cross-network resources from this CDRM, eliminating the need to predefine certain CDRSCs.

REQ

causes the failure of any cross-domain or cross-network request to or from this CDRM on behalf of a cross-domain resource that has no predefined CDRSC entry. REQ is the default.

Note: Use this operand with the CDRDYN operand to set up dynamic CDRSC definition. See *Network Program Products Planning* for more information on the dynamic CDRSC definition function.

ELEMENT = n|1

is the element part of the network address of the CDRM. This operand, in conjunction with the SUBAREA value, defines the network address of the CDRM. For the host CDRM the ELEMENT value must be 1. For external CDRMs (CDRMs in other domains or networks) this number can be a decimal integer in the range 0–32767. If you do not code ELEMENT, ELEMENT=1 is assumed by default. For SNA network interconnection considerations, see “Defining Cross-Domain Resource Managers” on page 344.

ISTATUS = ACTIVE|INACTIVE

is the initial status of the CDRM.

For the host CDRM:

- ACTIVE (the default value) means that it is capable of going into session with an external CDRM.
- INACTIVE means that it is **not** capable of going into session with an external CDRM until activated.

For an external CDRM:

- ACTIVE (the default value) means that a CDRM-CDRM session will be attempted between the host in which this statement is being defined to the CDRM named by this statement. Note that the attempt to establish this session fails if the host CDRM, or the external CDRM are not active. You should code ISTATUS=ACTIVE only if:
 - This CDRM is in the same major node as the host CDRM (for which ISTATUS=ACTIVE as well), or
 - This CDRM major node is to be activated after the host CDRM is active.
- INACTIVE means that a CDRM-CDRM session will not automatically be attempted upon activation of the CDRM major node.

After its major node has been activated, a CDRM defined as INACTIVE can be activated by using the VARY ACT command, or in the case of a CDRM in another domain, by receiving a session-activation request from the domain.

RECOVERY = YES|NO

determines whether the SSCP-SSCP session between the named CDRM and the host CDRM should be automatically restarted when a session outage occurs.

Both the host CDRM and the external CDRM **must** have RECOVERY=YES (the default) to enable automatic recovery.

VM This operand is ignored if coded in a V3R1 system.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

SUBAREA = n

is the number of the subarea in which the CDRM represented by this statement resides. This number can be 1–255. The SUBAREA value for each subarea used in cross-domain or cross-network communications must be unique throughout the network, but not throughout a set of interconnected networks. For a host CDRM, this SUBAREA value must be the same as the host's subarea specified by the HOSTSA start option. This operand is required for cross-domain communication, but it is optional for cross-network communication.

See “Defining Cross-Domain Resource Managers” on page 344 for SNA network interconnection considerations concerning the SUBAREA operand.

VPACING = n|0|63

is the maximum number (in decimal) of requests that other CDRMs should send to this CDRM before waiting to receive a pacing response. This value is exchanged during CDRM-CDRM session establishment. If the value is not in the range 0–63, the maximum of 63 is used. If VPACING=0, no pacing is done.

63 is the default.

The GWPATH Definition Statement (Interconnection only)

Each GWPATH definition statement defines a possible cross-network session path between the VTAM host CDRM and a CDRM in another network and their related LU-LU sessions.

The GWPATH definition statement is optional.

You should code a GWPATH definition statement only if VTAM is started with:

(V3R2) GWSSCP=YES
(V3R1 or V3R1.1) NETID specified.

The format of the GWPATH statement is:

Name	Definition Statement	Operands
[name]	GWPATH	[ADJNET = adjacent network ID] [,ADJNETEL = adjacent network element 1] [,ADJNETSA = adjacent network subarea] [,ELEMENT = element address 1] [,GWN = gateway NCP name] [,SUBAREA = subarea address]

For more information on the GWPATH definition statement and on the operands, see "The GWPATH Definition Statement" on page 349.

Defining Cross-Domain Resources

One or more major nodes can be defined for cross-domain resources (CDRSCs). Each CDRSC major node is defined with a VBUILD definition statement, and each minor node is defined with a CDRSC definition statement.

If VTAM is part of a multiple-domain network, two definitions with the same resource name (a logical unit and a CDRSC) can co-exist. In a backup and recovery situation where one host is assuming ownership of a logical unit from another host in the same network, the logical unit can be activated by the new host even though an application program within it currently has a cross-domain session with the logical unit. If the physical units and logical units being recovered support ACTPU(ERP) and ACTLU(ERP) requests, the sessions with the logical units are not affected when the physical units and logical units are activated. The CDRSC definition automatically becomes a shadow resource and the logical unit is now defined as a same-domain (APPL, LU, or LOCAL) resource. If the current host wishes to relinquish ownership of the logical unit, it releases or deactivates the logical unit and its associated physical unit, causing VTAM to activate its CDRSC representation—again making it a cross-domain resource.

Note: For pre-V3R2 the process of relinquishing ownership **does** disrupt ongoing sessions. For V3R2 you can release ownership of a session nondisruptively. For further information on relinquishing ownership, refer to *Network Program Products Planning*.

The VBUILD Statement

Code a VBUILD statement for each set of CDRSC definition statements.

Code the VBUILD statement like this:

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = CDRSC [,CONFIGDS = name] [,CONFIGPW = password]

name

a *name* is optional.

TYPE = CDRSC

means that this VBUILD statement defines a CDRSC major node to VTAM. This operand is required.

MVS VSE CONFIGDS = name

is a 1 – 8 character data definition name that identifies the configuration restart data set defined by the user for this major node. Include a DD statement with this operand in the VTAM start procedure. Refer to *Network Program Products Planning* for a description of configuration restart.

MVS VSE CONFIGPW = password

is the 1 – 7 character alphanumeric password used by VTAM to gain access to the configuration restart data set. If you do not code CONFIGPW, and it is required by VSAM, VSAM prompts the VTAM operator for the correct password when VTAM attempts to open the data set.

You may code CONFIGPW only if you also code CONFIGDS.

The NETWORK Definition Statement

The NETWORK definition statement names the network in which the logical units, represented by the CDRSC statements, reside. One or more NETWORK statements may appear anywhere after the VBUILD statement. If consecutive NETWORK statements are coded (without intervening CDRSC statements), only the last one is used.

If no NETWORK statement exists before a CDRSC definition statement, the resource is considered valid for any network. Such CDRSCs may be resources within VTAM's network or alias names for resources in another network.

Name	Definition Statement	Operands
[name]	NETWORK	[NETID = network ID]

name

identifies this statement in error messages from the VTAM system definition processor. To avoid confusion, use the same value for both *name* and the NETID operand. This operand is optional.

NETID = network ID

is an optional 1 – 8 character name that identifies the network in which the CDRSC or set of CDRSCs resides. This NETID pertains to the CDRSC or set of CDRSCs defined following the NETWORK statement and before any other NETWORK statement in the same set of definitions.

Note: In V3R2, if a CDRSC is defined with a *network ID* of the host network then the resource is considered real. (Previously, if a CDRSC was defined with the *network ID* of the host, the resource was treated as an alias.) In V3R2, a CDRSC defined with a *network ID* of the host network must reside in the host network.

Note: If VTAM is started without NETID specified (pre-V3R2), NETWORK statements are ignored.

The CDRSC Definition Statement

CDRSC definition statements define cross-domain resource (CDRSC) minor nodes for those cross-domain resources with which an application program or logical unit within this domain can have a session. One or more of these statements, when preceded by a VBUILD statement, defines a CDRSC major node. These are optional in some cases; see *Network Program Products Planning* for more information.

Notes:

1. Information on coding the CDRSC statement for TSO/VTAM is in "Multiple-Domain Network" on page 405.
2. The same set of CDRSC statements can be used throughout the network.
3. You can use the CDRSC definition statement to define resources in other networks. For details, see "The CDRSC Definition Statement" on page 354.

Name	Definition Statement	Operands
cdrsname	CDRSC	[CDRM = cdrmname] [, ISTATUS = ACTIVE INACTIVE] [, SPAN = spanname] [, VFYOWNER = YES NO] (V3R2)

cdrsname

is the name of a resource in another domain or network (a logical unit or application program) that this CDRSC is to represent. *cdrsname* is required. *cdrsname* can be the name of the LU or application as known in this network (the alias name). If the resource is a VTAM application program, and the CDRSC is to satisfy the real name, *cdrsname* must be the same as in the *name* field (not the ACBNAME operand) of the application program's APPL statement in the VTAM definition in the other domain.

If the NETWORK statement is not specified, the *cdrsname* is either the real name of the resource or the alias name of the resource. If a CDRSC is predefined in the same domain for the real name, and another CDRSC is predefined in that domain for the alias name, the session setup will fail. Two static representations of the same resource in a single domain are not allowed.

For special considerations when the CDRSC definition statement defines a resource in another network, see "The CDRSC Definition Statement" on page 354.

CDRM = cdrmname

names the CDRM that is in the same domain as the cross-domain resource, and that controls the resource.

When you do not code the CDRM operand, the default SSCP list is used to send session setup requests to SSCPs in the list, until the owning SSCP is found or the end of the list is reached. When the owning SSCP is found, VTAM remembers the owning SSCP.

If a NETID is associated with the CDRSC, and the CDRM operand is coded, it **must** be the SSCP name of the CDRM in which the resource resides. Otherwise, the session setup will fail.

If a NETID is not associated with the CDRSC, the CDRM operand, if coded, is used as an adjacent SSCP. Adjacent SSCP routing will be attempted to this entry first, before trying other entries in the adjacent SSCP table.

When the name coded in the CDRM operand is also in the default SSCP list, this CDRM name is moved to the top of the list. When the name coded in the CDRM operand is not in the default SSCP list, VTAM places the CDRM name at the top of the list. The default SSCP list is then used to send session setup requests to SSCPs in the list, until the owning SSCP is found or the end of the list is reached. When the owning SSCP is found, VTAM remembers its name.

Note: The prior actions do not affect the actual adjacent table SSCP table, only the internal copy of the adjacent SSCP table maintained for each CDRSC. Upon termination of the last session for this resource, the CDRM name is reset to the CDRM value specified on the CDRSC statement. The MODIFY CDRM command can be used to change the CDRM name.

ISTATUS = ACTIVE|INACTIVE

is the initial status of this CDRSC. Logically active means that the session-establishment requests can be sent to the adjacent SSCP using the resource.

ISTATUS=ACTIVE means that this resource is logically active to this domain. The resource is not necessarily active in its own domain.

ISTATUS=INACTIVE means that this resource is not logically active to this domain. The resource is not necessarily inactive in its own domain. Sessions will fail to this resource from this domain.

ACTIVE is the default.

SPAN = spanname

Code this operand if you are using the NetView program or NCCF. For a full description, refer to either *NetView Installation and Administration Guide* or *NCCF Installation and Resource Definition*.

VFYOWNER = YES|NO

determines whether or not owner verification is to take place when trying to establish sessions with this resource. When VFYOWNER=YES, if the owner specified on the CDRSC does not match the owner specified in the session initiation request, the session is rejected. When VFYOWNER=NO, if the owning SSCP received on an initiation request does not match the owner specified on the CDRSC, the CDRSC is updated with the owning SSCP name received.

Notes:

1. VFYOWNER=YES can only be specified for a CDRSC that is predefined with NETID. CDRM=*cdmname* is required.
2. In the SSCP of the OLU, the CDRM name of the DLU, if known, must be correct. If the CDRM name of the DLU is not correct, the operator must issue a MODIFY CDRM command to change the CDRM name.
3. The owning CDRM name may be permanently changed with the MODIFY CDRM command.

Defining Adjacent SSCP Tables

The adjacent SSCP table contains lists of SSCPs that may be in session with the VTAM SSCP and can be used to reach destination SSCPs in the same or other networks. One or more adjacent SSCP tables may be activated in each VTAM host. File the definitions in VTAMLST files (or as members in the SYS1.VTAMLST data set).

The VBUILD Statement

Code a VBUILD statement for an adjacent SSCP table.

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = ADJSSCP

name

a *name* is optional.

TYPE = ADJSSCP

means that the VBUILD statement defines an adjacent SSCP table.

The NETWORK Definition Statement

The NETWORK statement names a destination network. If you do not code a NETWORK statement, this adjacent SSCP table defines a default SSCP list for either a single-network or a multiple-network environment. In a multiple-network environment, you can use the NETWORK statement to provide a specific default SSCP list for a given destination network. If ADJCDRM statements follow a NETWORK statement, without intervening CDRM statements, they also comprise a list of default SSCPs. See “Defining Default SSCP Lists Within an Adjacent SSCP Table” on page 276 for more information.

Name	Definition Statement	Operands
[name]	NETWORK	[NETID = destination network ID]

name

identifies this NETWORK statement in error messages from the system definition processor. To avoid confusion, use the same value for both *name* and the NETID operand. This operand is optional.

NETID = destination network ID

is the optional 1–8 character name of the destination network. Omitting NETID defines a default SSCP list for all networks.

Note: If VTAM is started without NETID specified (pre-V3R2), NETWORK statements are ignored.

The following rules apply to the placement of the NETWORK statement within the adjacent SSCP table definition:

1. The NETWORK statement can be followed by a NETWORK, CDRM, or ADJCDRM statement.
2. Consecutive NETWORK statements result in the same adjacent SSCP table for each of the networks.
3. If an invalid statement is encountered within the adjacent SSCP table definition, that statement and any subsequent statements are rejected until another NETWORK statement or the end of the definition is encountered.

Note: In V3R2 an ADJSSCP table defined with a NETWORK of the host network is used only when the destination resource is known to reside in the host network. (Previously, an ADJSSCP table defined with a NETWORK of the host NETWORK was treated as a default table, which is used when the network of the destination is not known or when a network-specific table does not exist.) In V3R2, a default table is coded without a NETWORK statement.

The CDRM Definition Statement

One or more CDRM statements may follow a NETWORK or ADJCDRM statement. The CDRM statement defines the adjacent SSCP table to a CDRM level.

Name	Definition Statement	Operands
sscpname	CDRM	

sscpname

is the real name of the SSCP. It must match the name assigned to that SSCP in its own network by the SSCPNAME start option or, if SSCPNAME start option was not coded, by the host CDRM definition statement.

The CDRM statements within the adjacent SSCP table have no required operands, although any operands that are valid on the CDRM definition statement in a CDRM major node are accepted. These operands are ignored when the CDRM statement is part of an adjacent SSCP table.

Note: You can define adjacent SSCP tables to reach a new interconnected network by adding only a few statements to the existing CDRM definition of that network.

A CDRM statement can be followed by another CDRM statement or an ADJCDRM statement.

The CDRM statement in the definitions for the adjacent SSCP table causes VTAM to locate the adjacent SSCP on a CDRM level.

The ADJCDRM Definition Statement

Consecutive ADJCDRM definition statements or a set of ADJCDRM definition statements comprise the list of default SSCP. See Figure 48 for an example.

Name	Definition Statement	Operands
cdrmname	ADJCDRM	

cdrmname

is the name of an adjacent SSCP as known to VTAM. It must be the same as the name on the CDRM definition statement that defines the SSCP to VTAM. Each ADJCDRM statement should have a unique *cdrmname*. Otherwise, an error message will be issued.

There are no operands on the ADJCDRM definition statement.

Name	Definition Statement	Operands
	VBUILD	TYPE = ADJSSCP
	NETWORK	NETID = NET1
SSCP3	ADJCDRM	
SSCP4	ADJCDRM	
SSCP5	ADJCDRM	
SSCP1	CDRM	
SSCP1	ADJCDRM	
SSCP2	ADJCDRM	
SSCP2	CDRM	
SSCP2	ADJCDRM	

Figure 48. Using the ADJCDRM Statements

Defining Default SSCP Lists Within an Adjacent SSCP Table

A default SSCP list for a single network consists of a VBUILD statement with TYPE=ADJSSCP followed by a NETWORK definition statement and a set of ADJCDRM definition statements.

Alternatives to Predefining Cross-Domain Destination Logical Units

There are three ways to lay the groundwork for communicating with a destination LU in another domain. One is to define the destination logical unit to VTAM as a cross-domain resource owned by an external CDRM, as described in “Defining Cross-Domain Resources” on page 267. However, you can also use either default SSCP selection or the alias name translation facility to allow communication with a cross-domain destination logical unit. These alternatives are discussed in the following sections.

SSCP Selection

If you have defined an SSCP list, VTAM sends the session setup request for an undefined destination logical unit to SSCPs in the list, until the owning SSCP is found, or the end of the list is reached. If there is no SSCP-SSCP session with an SSCP named in the list, the SSCP is ignored.

If the SSCP to which a same-network session setup request is routed does not own the destination logical unit, the request is rejected.

During this trial-and-error routing of a cross-domain initiate request, the request may be routed to an SSCP that also has a default SSCP list. That SSCP may reroute the request. It can directly reroute the request to an SSCP in the same network as this SSCP, as long as it was not received from another SSCP in the same network. It cannot reroute the request to the same SSCP from which the request came. Once the owning SSCP is found, VTAM merges the learned information (real owning SSCP name, and real network identifier if this CDRSC is predefined with NETID, or dynamically defined) into the CDRSC that was created as part of trial-and-error routing.

Using default SSCP selection means you do not have to code cross-domain resource (CDRSC) definition statements for logical units in other domains, but VTAM's performance is slower because of the time it takes to send startup requests to SSCPs that do not own the logical unit.

Refer to “Defining Default SSCP Lists Within an Adjacent SSCP Table” for more information about defining a default SSCP list.

Note: When an invalid resource name is entered in a logon request, the request is not rejected until every SSCP in the default SSCP list is sent the initiate request, and rejects it.

MVS VM Using an Alias Name Translation Facility

This alias name translation facility was developed for resolving duplicate logical unit names when interconnecting two or more independent networks. However, in a system with one network, this function can be used to determine the owning SSCP for a requested resource. To do this:

- You must use the alias name translation facility of the NetView program, or code your own alias application.

- You must assign a NETID for the network when starting VTAM (see “The NETID Start Option” on page 306), and define GWSSCP=YES for V3R2.
- Define all or some of the logical units (or, those that will have cross-domain sessions) in the network to the alias name translation facility.

To use this method, you must define all the logical units in the network and their owning SSCPS to the alias name translation facility. Define each alias name to be the same as the real name. During a session setup request, if VTAM does not have a definition of a destination logical unit or does not know the owning SSCP for the resource, it calls the alias name translation facility with the name of the logical unit. The alias name translation facility returns the name of the SSCP defined as the owner of the logical unit, as well as the destination network identifier and the logical unit's alias name in that network. Since this system has just one network, the network identifier is VTAM's network identifier and the alias name is the same as the real name. Thus, the alias name translation facility is used as a directory to the owning SSCP.

If the SSCP has a session with the destination logical unit's SSCP, and dynamic definition of cross-domain resources is allowed, the initiate request for the session is sent to the destination logical unit's SSCP. VTAM automatically creates a CDRSC definition table entry for the logical unit if one is defined. (You can allow dynamic definition of a resource by coding CDRDYN=YES on the CDRM statement for the VTAM host CDRM and CDRSC=OPT on the CDRM statement for the destination logical unit's SSCP.) Refer to “Using an Alias Name Translation Facility” on page 331 for information on how to define a name translation facility to VTAM.

If you are not using an alias name translation facility or if the alias name translation facility fails to return the name of the destination logical unit's owning SSCP, default SSCP selection is tried next. See “Defining Default SSCP Lists Within an Adjacent SSCP Table” on page 276 for a discussion of this topic.

Note: The alias name translation facility cannot translate names as known in a network to a different name in the same network.

Adjacent SSCP Tables: ADJCDRM

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Chapter 6. Defining Start Options

Overview of the Process

If you are already familiar with the VTAM start options, refer to the alphabetic listing in Appendix B, “Quick Reference for VTAM Start Options” on page 401.

If you are unfamiliar with the start options, refer to this chapter for explanations.

This chapter discusses:

- Start option sources
- Creating start option and configuration lists
- Coding start options
- Specifying start options.

Start Option Sources

When VTAM is started, options can be provided from any combination of the following sources:

- IBM-supplied values internal to VTAM. These are used as values for options that are not provided in one of the ways listed below. These values are the defaults shown for the options in “Coding Start Options” on page 283. For example, the SSCPID is not one of the IBM-supplied values; you must code it when starting VTAM.
- Default start option list. When VTAM is started, it reads from the VTAM definition library a list of user-defined default values named ATCSTR00.
- Supplemental start option lists. Among the start options entered by the VTAM operator is the LIST start option, which can be entered at the console. Using the LIST start option, you can name another list to supplement ATCSTR00. The supplemental list can override options in the default ATCSTR00 list, as well as the IBM-supplied internal default values.
- Prompted start options. You can code the PROMPT option only in ATCSTR00 to request that the operator be prompted to enter further start options.
- Start options re-entered by the system operator to correct errors in the original entry. If VTAM detects an error in a start option list, it notifies the system operator, who must re-enter that option. Additional options can also be entered at that time.

How Options Can Be Overridden

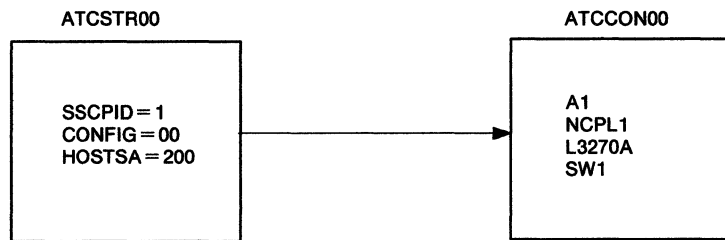
An option from one source can override the same option from another source, depending on the relative priority of the sources. The list of start option sources above is arranged from the lowest priority to the highest. For example, if ATCSTR00 has CONFIG=01, but the operator enters LIST=ST and ATCSTRST contains the option CONFIG=02, the configuration defined by ATCCON02 is activated.

Any or all of the start options can be filed together in a single list. The default start option list (ATCSTR00) is automatically processed when VTAM is started; therefore, it must exist before VTAM is started.

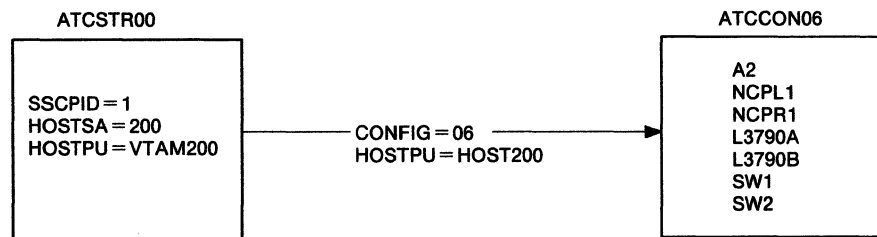
Figure 49 contains examples of the start procedure showing how you can use CONFIG and LIST.

Refer to "Creating Start Option and Configuration Lists" on page 283. For more information on customizing start option lists, see *VTAM Customization*.

Example 1. The operator starts VTAM with no start options. The automatically processed member ATCSTR00 contains a set of start options including CONFIG=00. The result is:



Example 2. The operator starts VTAM with the following start options: CONFIG = 06 and HOSTPU = HOST200. CONFIG = 06 refers to ATCCON06, which contains a list of major node names. The HOSTPU option overrides the option filed in ATCSTR00. The result is:



Example 3. The operator starts VTAM with the start option LIST = ST, and CONFIG = 07. LIST = ST refers to ATCSTRST, which contains a set of start options. CONFIG = 07 refers to ATCCON07. The result is:

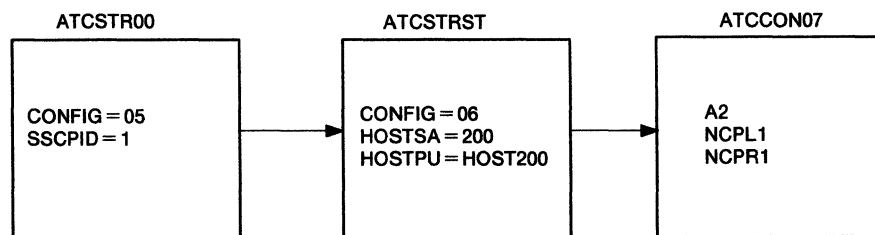


Figure 49. Examples of Using CONFIG and LIST Start Options

Coding Start Options

When prompted during the start procedure, the VTAM operator can enter start options (unless otherwise noted in the following lists of start options) as operands on the `MVS VM START` command or `VSE EXEC` command. Additionally, the operator can use a start option list. If the VTAM operator enters the start options as operands on the `START` or `EXEC` command, the length of the entire number of options cannot exceed the console's line length.

Note: If you are entering start options from the console in response to a VTAM prompt and cannot fit all the desired options on one line, place a comma after the last option on the line. VTAM prompts you for more start options.

Creating Start Option and Configuration Lists

If a start option list is used, you must create a list and put it in a VTAMLST file named `ATCSTRyy` (`MVS` a member named `ATCSTRyy` in `SYS1.VTAMLST`). The `yy` can be any 2 alphanumeric characters. They must be the same as the `yy` in the start option `LIST=yy` entered by the VTAM operator.

In `V3R1.1`, whether or not the VTAM operator enters `LIST=yy` as a start option, VTAM attempts to locate `ATCSTR00`. If it does not exist, VTAM sends a warning message to the operator, followed by a message prompting the operator for start options. To avoid receiving the message, file a single comment entry in `ATCSTR00`.

Notes:

1. **vm** Whenever you change start option lists, you must use the `GCS ACCESS` command to re-access the disk that contains the corresponding VTAMLST files before you restart VTAM.
2. **vm** Start options for `VSCS` are coded as operands on the `DTIGEN` macroinstruction. The macroinstruction and its operands are described in "The `DTIGEN` Macroinstruction" on page 417.

If a configuration list is specified either in a start option list or by the VTAM operator, this optional list of major node names must have been created and put in the VTAM definition library under the file name (or member name) `ATCCONxx`. The `xx` can be any 2 alphanumeric characters. They must be the same as the `xx` in the start option `CONFIG=xx` entered by the VTAM operator.

The same major node name can be in more than one configuration list. For example, a group of channel-attached terminals named `LOCCON01` can be in `ATCCON00` and `ATCCON06`. However, only one of the two configuration lists will be activated once during VTAM initialization.

The major node names in the configuration list correspond to the names assigned to the major nodes when they are defined and put into the VTAM definition library using the system utility program. If no configuration lists exist, the VTAM operator must use the `VARY` command to activate each major node.

Refer to "The `CONFIG` Start Option" on page 301 for a description of the configuration list. The format section below describes the required format for both start option lists and configuration lists.

MVS VTAM definition statements can be filed during the same execution of IEBUPDTE used for filing start options. For information on IEBUPDTE, refer to *MVS/Utilities*.

Formats

Code these lists as one or more 80-byte records in this format:

position	position
1	71
[...]item[,item]..	..

[...] signifies that one or more blanks may precede the first item.

item represents (1) a major node name, if a configuration list is being coded, or (2) a start option, if a list of start options is being coded.

Separate items with commas. There must be no intervening blanks.

Position 72 is reserved for the continuation indicator. VTAM ignores positions 73–80.

Depending on the number of items, two or more records may be required for the configuration list or the start option list. You must follow these “rules” if more than one record is required:

- Every record, except comment records and the **last** record, must have a non-blank character in position 72.
- If you wish, you can code data through position 71, even if you are in the middle of an item. The remainder of the item can be continued in the next record.
- If you do not code data through position 71, you must end the data in one record with an item, followed by a comma, and begin the next record with a new item.
- To create a comment card, enter an asterisk (*) in position 1 of any card other than a continuation card.

MVS VM START Command

The START command starts VTAM. Under MVS, you can enter the START command only at a master or secondary system console. Under VM, you can enter the START command at whatever console is controlling the VTAM virtual machine. **MVS** See “Starting the Logon Manager” on page 435 for information on how to start the logon manager.

The syntax for the START command is:

VM Prefix	Operation	Operands
vtam	{START S}	procname [,,(option,option,...)] MVS [,option,option,...] VM

vtam vm

is the prefix required for commands issued to VTAM running under VM. This prefix (usually VTAM) is determined by an operand of the GCS LOADCMD command. Use the prefix required by your installation.

procname

is the procedure name for the command.

MVS The procname can be specified as either *startnm.ident* or *startnm*, where *startnm* is the name of the JCL procedure used to start VTAM, and *ident* is an optional identifier.

The procname used for this command determines the procname used for all MODIFY commands as follows:

- If the procname in the START command is specified as *startnm.ident*, where *startnm* is the VTAM start procedure and *ident* is the optional identifier, then either *startnm.ident* or simply *ident* can be specified for procname for subsequent modify commands.
- If the procname in the START command is *startnm*, then *startnm* must be specified for procname.

Therefore, if you use NET as the optional identifier in this command, you can consistently use NET as the procname for all VTAM commands.

VM Procname is always NET and is an optional operand.

options

are VTAM start options supplied by the system programmer. The VTAM operator can enter one or more options. Some of the start options are operating system-dependent or release-dependent.

MVS Precede the option list with three commas, enclose the group of options in parentheses, and separate the options with commas. Do not leave any blanks between options.

VM Precede the option list with a comma only if you specified NET, and separate the options with commas. Do not leave any blanks between options.

If more than one line is necessary for the start options:

MVS Enter a comma and a closing parenthesis after the last option.

VM Enter a comma after the last option and VTAM prompts for another line.

The values established by the start options go into effect when VTAM is started and remain in effect until VTAM is halted. Many of the options, however, can be altered while VTAM is running.

The start options for MVS and VM are listed below by VTAM release number. The start options for VTAM V3R1.1 are listed first, followed by the start options for V3R2.

MVS VM VTAM V3R1.1 Start Options

```

SSCPID = n
[poolname = (baseno,bufsize,slowpt,F,xpanno,xpanpt)]
[CDRSCTI = n|480]
[COLD|WARM] mvs
[CONFIG = x|00|name]
[CSALIMIT = 0|n|nK|nM]
[CSA24 = 0|n|nK|nM] mvs/XA
[DLRTCB = n|32]
[HOSTPU = host-subarea-puname|ISTPUS]
[HOSTSA = n|1]
[IOINT = n|180]
[ITLIM = n|0]
[LIST = yy|00]
[MAXSUBA = n|15]
[MSGMOD = YES|NO]
[NETID = network ID]
[NODELST = name] mvs
[PPOLOG = YES|NO]
[PROMPT|NOPROMPT1]
[SONLIM = [m|60],[n|30]]
[SSCPDYN = YES|NO]
[SSCPNAME = name]
[SSCPORD = PRIORITY|DEFINED] (interconnect only)
[SUPP = NOSUP|INFO|WARN|NORM|SER]
[TNSTAT|NOTNSTAT[,CNLSL|NOCNSL][TIME = n|60]]
[TRACE|NOTRACE,TYPE = BUF,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = IO,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = LINE,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SIT,ID = linename[COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SMS,ID = VTAMBUF]
[TRACE,TYPE = VTAM[,MODE = INT|EXT]
    [,OPTION|OPT = ALL|option|(option[,option...])]
    [,SIZE = size|2]4]
[NOTRACE,TYPE = VTAM4]
[USSTAB = table name]

```

Notes:

1. The VTAM operator cannot enter the PROMPT|NOPROMPT start option. It can be coded only in a predefined list.
2. EVERY may be abbreviated as E.
3. COUNT applies to the 3720 and 3725 Communication Controllers only.
4. Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list. VTAM accepts more than one TRACE start option during initialization. You can code only one type of VTAM trace in each TRACE|NOTRACE start option (whether selected by the VTAM operator or predefined in a list of start options).

VM VTAM V3R1.2 Start Options

```

SSCPID = n
[poolname = (baseno,bufsize,slowpt,F,xpanno,xpanpt,xpanlim)]
[CDRSCTI = n|480]
[CONFIG = x|00|name]
[CSALIMIT = 0|n|nK|nM]
[DLRTCB = n|32]
[HOSTPU = host-subarea-puname|ISTPUS]
[HOSTSA = n|1]
[IOINT = n|180]
[ITLIM = n|0]
[LIST = yy|00]
[MAXSUBA = n|15]
[MSGMOD = YES|NO]
[NETID = network ID]
[PPOLOG = YES|NO]
[PROMPT|NOPROMPT1]
[SONLIM = [m|60][,n|30]]
[SSCPDYN = YES|NO]
[SSCPNAME = name]
[SSCPORD = PRIORITY|DEFINED] (interconnect only)
[SUPP = NOSUP|INFO|WARN|NORM|SER]
[TNSTAT|NOTNSTAT[,CNLSL|NOCNSL][TIME = n|60]]
[TRACE|NOTRACE,TYPE = BUF,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = IO,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = LINE,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SIT,ID = linename[COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SMS,ID = VTAMBUF]
[TRACE,TYPE = VTAM[,MODE = INT|EXT]
    [,OPTION|OPT = ALL|option|(option[,option...])]
    [,SIZE = size|2]4]
[NOTRACE,TYPE = VTAM4]
[USSTAB = table name]

```

Notes:

1. The VTAM operator cannot enter the PROMPT|NOPROMPT start option. It can be coded only in a predefined list.
2. EVERY may be abbreviated as E.
3. COUNT applies to the 3720 and 3725 Communication Controllers only.
4. Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list. VTAM accepts more than one TRACE start option during initialization. You can code only one type of VTAM trace in each TRACE|NOTRACE start option (whether selected by the VTAM operator or predefined in a list of start options).

MVS VM VTAM V3R2 Start Options

NETID = network ID
 SSCPID = n
 SSCPNAME = name
 [poolname = (baseno, bufsize, slowpt, F, xpanno, xpanpt, xpanlim)]
 [ASYDE = **TERM**|KEEP]
 [CDRSCTI = n|**480**]
 [**COLD**|WARM] mvs
 [CONFIG = x|**00**|name]
 [CSALIMIT = **0**|n|nK|nM]
 [CSA24 = **0**|n|nK|nM] mvs/XA
 [DLRTCB = n|**32**]
 [GWSSCP = **YES**|NO]
 [HOSTPU = host-subarea-puname|**ISTPUS**]
 [HOSTSA = n|**1**]
 [IOINT = n|**180**]
 [LIST = yy|**00**]
 [MAXSUBA = n|**15**]
 [MSGMOD = YES|**NO**]
 [NODELST = name] mvs
 [PPOLOG = YES|**NO**]
 [**PROMPT**|NOPROMPT¹]
 [SONLIM = [m|**60**],[,n|**30**]]
 [SSCPDYN = **YES**|NO]
 [SSCPORD = **PRIORITY**|DEFINED] (interconnect only)
 [SUPP = **NO SUP**|INFO|WARN|NORM|SER]
 [TNSTAT|**NOTNSTAT**[, CNSL|**NOCNSL**][, TIME = n|**60**]]
 [TRACE|**NOTRACE**, TYPE = BUF, ID = nodename[, EVERY]²]
 [TRACE|**NOTRACE**, TYPE = IO, ID = nodename[, EVERY]²]
 [TRACE|**NOTRACE**, TYPE = LINE, ID = linename[, COUNT = n|**ALL**]³]
 [TRACE|**NOTRACE**, TYPE = SIT, ID = linename[, COUNT = n|**ALL**]³]
 [TRACE|**NOTRACE**, TYPE = SMS, ID = VTAMBUF]
 [TRACE, TYPE = VTAM[, MODE = **INT**|EXT]
 [, OPTION|OPT = ALL|option|(option[, option...])]
 [, SIZE = size|**2**]⁴]
 [**NOTRACE**, TYPE = VTAM⁴]
 [USSTAB = table name]

Notes:

1. The VTAM operator cannot enter the PROMPT|NOPROMPT start option. It can be coded only in a predefined list.
2. EVERY may be abbreviated as E.
3. COUNT applies to the 3720 and 3725 Communication Controllers only.
4. Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list. VTAM accepts more than one TRACE start option during initialization. You can code only one type of VTAM trace in each TRACE|NOTRACE start option (whether selected by the VTAM operator or predefined in a list of start options).

VSE EXEC Command

In VSE systems, VTAM is started with the EXEC command. The EXEC command can be entered only at the system console.

The syntax for the EXEC command is:

Operation	Operands
EXEC	PROC = procname

PROC = procname

provides the name of the filed procedure that contains the JCL needed to start and run VTAM. Written and named by the user, this start procedure should be on the VSE system procedure library.

The options for VSE are listed on the following pages in order by VTAM release number. The options for VTAM V3R1 are listed first, followed by the options for V3R1.2 and for V3R2.

VSE VTAM V3R1 Start Options

```

SSCPID = n
[poolname = (baseno,bufsize,slowpt,xpanno,xpanpt)]
[CDRSCTI = n|480]
[COLD|WARM]
[CONFIG = x|00|name]
[HOSTPU = host-subarea-puname|ISTPUS]
[HOSTSA = n|1]
[IOINT = n|180]
[ITLIM = n|0]
[LIST = yy|00]
[MAXSUBA = n|15]
[MSGMOD = YES|NO]
[PROMPT|NOPROMPT1]
[SONLIM = [m|60][,n|30]]
[SUPP = [NOSUP|INFO|WARN|NORM|SER]]
[TNSTAT|NOTNSTAT[,CNLS|NOCNSL][,TIME = n|60]]
[TRACE|NOTRACE,TYPE = BUF,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = IO,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = LINE,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SIT,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = LINE,ID = linename]
[TRACE|NOTRACE,TYPE = SMS,ID = VTAMBUF]
[TRACE,TYPE = VTAM[,MODE = INT|EXT]
    [,OPTION|OPT = ALL|option|(option[,option...])]
    [,SIZE = size|2]4]
[NOTRACE,TYPE = VTAM4]
[USSTAB = table name]

```

Notes:

1. The VTAM operator cannot enter the PROMPT|NOPROMPT start option. It can be coded only in a predefined list.
2. EVERY may be abbreviated as E.
3. COUNT applies to the 3725 Communication Controller only.
4. Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list. VTAM accepts more than one TRACE start option during initialization. You can code only one type of VTAM trace in each TRACE|NOTRACE start option (whether selected by the VTAM operator or predefined in a list of start options).

VSE VTAM V3R1.2 Start Options

```

SSCPID = n
[poolname = (baseno, bufsize, slowpt, xpanno, xpanpt, xpanlim)]
[CDRSCTI = n|480]
[COLD|WARM]
[CONFIG = x|00|name]
[HOSTPU = host-subarea-puname|ISTPUS]
[HOSTSA = n|1]
[IOINT = n|180]
[ITLIM = n|0]
[LIST = yy|00]
[MAXSUBA = n|15]
[MSGMOD = YES|NO]
[PPOLOG = YES|NO]
[PROMPT|NOPROMPT1]
[SONLIM = [m|60][,n|30]]
[SSCPDYN = YES|NO]
[SSCPORD = PRIORITY|DEFINED] (interconnect only)
[SUPP = [NOSUP|INFO|WARN|NORM|SER]]
[TNSTAT|NOTNSTAT[,CNLSL|NOCNSL][,TIME = n|60]]
[TRACE|NOTRACE,TYPE = BUF,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = IO,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = LINE,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SIT,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = LINE,ID = linename]
[TRACE|NOTRACE,TYPE = SMS,ID = VTAMBUF]
[TRACE,TYPE = VTAM[,MODE = INT|EXT]
    [,OPTION|OPT = ALL|option|(option[,option...])]
    [,SIZE = size|2]4]
[NOTRACE,TYPE = VTAM4]
[USSTAB = table name]

```

Notes:

1. The VTAM operator cannot enter the PROMPT|NOPROMPT start option. It can be coded only in a predefined list.
2. EVERY may be abbreviated as E.
3. COUNT applies to the 3725 Communication Controller only.
4. Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list. VTAM accepts more than one TRACE start option during initialization. You can code only one type of VTAM trace in each TRACE|NOTRACE start option (whether selected by the VTAM operator or predefined in a list of start options).

VSE VTAM V3R2 Start Options

```

NETID = network ID
SSCPID = n
SSCPNAME = name
[poolname = (baseno,bufsize,slowpt,xpanno,xpanpt,xpanlim)]
[ASYDE = TERM|KEEP]
[CDRSCTI = n|480 ]
COLD|WARM]
[CONFIG = x|00|name]
[HOSTPU = host-subarea-puname|ISTPUS]
[HOSTSA = n|1]
[IOINT = n|180]
[LIST = yy|00]
[MAXSUBA = n|15]
[MSGMOD = YES|NO ]
[PPOLOG = YES|NO]
PROMPT|NOPROMPT1]
[SONLIM = [m|60],[n|30]]
[SSCPDYN = YES|NO]
[SSCPORD = PRIORITY|DEFINED] (interconnect only)
[SUPP = [NOSUP|INFO|WARN|NORM|SER]]
[TNSTAT|NOTNSTAT[,CNLSL|NOCNSL][,TIME = n|60]]
[TRACE|NOTRACE,TYPE = BUF,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = IO,ID = nodename[,EVERY]2]
[TRACE|NOTRACE,TYPE = LINE,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = SIT,ID = linename[,COUNT = n|ALL]3]
[TRACE|NOTRACE,TYPE = LINE,ID = linename]
[TRACE|NOTRACE,TYPE = SMS,ID = VTAMBUF]
[TRACE,TYPE = VTAM[,MODE = INT|EXT]
    [,OPTION|OPT = ALL|option|(option[,option...])]
    [,SIZE = size|2]4]
NOTRACE,TYPE = VTAM4]
[USSTAB = table name]

```

Notes:

1. The VTAM operator cannot enter the PROMPT|NOPROMPT start option. It can be coded only in a predefined list.
2. EVERY may be abbreviated as E.
3. COUNT applies to the 3720 and 3725 Communication Controllers only.
4. Do not use NOTRACE when starting VTAM, except to override a TRACE start option coded in a predefined list. VTAM accepts more than one TRACE start option during initialization. You can code only one type of VTAM trace in each TRACE|NOTRACE start option (whether selected by the VTAM operator or predefined in a list of start options).

Specifying Start Options

The Buffer Pool Start Options

Meaning of the Options

poolname = (baseno,bufsize,slowpt,F,xpanno,xpanpt,xpanlim)

describes a buffer pool used by VTAM for holding data or building control blocks. This set of options defines fixed-length buffer pools. **MVS VM** The F option applies to MVS and VM only.

poolname

is the name of the fixed-length buffer pool to which these options apply. Refer to Figure 50 for a list of the buffer pool names and a description of each buffer pool's function.

For more information, refer to *Network Program Product Storage Estimates*.

Pool Name	Systems	Use
APBUF(V3R2)	all	Buffer pool that provides fixed common storage addressable with a 24-bit address. It is used for buffers not related to I/O. Note: This is not the same as the APBUF which was previously supported by VTAM.
CRPLBUF	MVS, VM	RPL-copy pool in pageable or virtual storage
IOBUF	MVS, VM	Message pool in fixed storage. MVS/XA (V3R2) If the cryptographic facility is inactive, this pool is 31-bit addressable; otherwise, the pool is 24-bit addressable. MVS VM (and all pre-V3R2) The IOBUF pool uses 24-bit addressable storage.
LFBUF	all	Large buffer pool in fixed storage (serves as a transient data pool)
LPBUF	all	Large buffer pool in pageable or virtual storage
SFBUF	all	Small buffer pool in fixed storage
SPBUF	all	Small buffer pool in pageable or virtual storage
VFBUF	VSE	Variable-length buffer pool in fixed storage
VPBUF	VSE	Variable-length buffer pool in pageable storage
WPBUF	all	Message-control buffer pool in pageable or virtual storage

Figure 50. The VTAM Buffer Pools

Buffer Pool Name	baseno	bufsize ¹	slowpt	xpanno	xpanpt	xpanlim	adjval ²
APBUF (V3R2)	16	64	2	1	3	-	0
CRPLBUF	60	116	0	1	60	-	0
IOBUF	51	64 ³	5	1	6	0	0
LFBUF	2	80 (68)	0	1	1	-	0
LPBUF	12	1344	0	1	6 (1)	-	4
SFBUF	51	72 (64)	0	1	1	-	5
SPBUF	2	112	0	1	1	-	0
WPBUF	20	208 (184)	0	1	19	-	0

Notes:

1. The *bufsize* shown does not include headers. To estimate storage needs, round this number to a multiple of 8 and add 16 bytes to the result. For IOBUF, add 55 bytes to the result.
2. *adjval* is the minimum number of buffers required to open the VTAM ACB and start VTAM. The *adjval* value is a constant. You cannot change it.
3. Although VTAM does not enforce it, you should override this value to equal the value of the UNITSZ operand in the NCP HOST definition statement.
4. In the above table each cell may contain one or two numbers. If there is only one number, it applies for V3R1.1, and V3R2. If there are two numbers, the number in parentheses applies for V3R1.1 while the other number applies to V3R2.

Figure 51. IBM-Supplied VTAM Buffer Pool Values in MVS

The Buffer Pool Start Options

Buffer Pool Name	baseno	bufsize ¹	slowpt	xpanno	xpanpt	xpanlim	adjval ²
APBUF (V3R2)	16	60	2	1	3	-	0
CRPLBUF	60	116	0	1	60	-	0
IOBUF	51	64 ³	5	1	6	0	0
LFBUF	2	80 (68)	0	1	1	-	1
LPBUF	12	1344	0	1	6	-	5
SFBUF	51	72 (64)	0	1	1	-	1
SPBUF	2	112	0	1	1	-	0
WPBUF	20	208 (184)	0	1	19	-	0

Notes:

1. The *bufsize* shown does not include headers. To estimate storage needs, round this number to a multiple of 8 and add 16 bytes to the result. For IOBUF, add 55 bytes to the *bufsize* number, round to a multiple of 8, and add 16 bytes to the result.
2. *adjval* is the minimum number of buffers required to open the VTAM ACB and start VTAM. The *adjval* value is a constant. You cannot change it.
3. Although VTAM does not enforce it, you should override this value to equal the value of the UNITSZ operand in the NCP HOST definition statement. If you are running X.25, IOBUF must be at least 128.
4. In the above table each cell may contain one or two numbers. If there is only one number, it applies for V3R1.1, V3R1.2 and V3R2. If there are two numbers, the number in parentheses applies for V3R1.1 and V3R1.2 while the other number applies to V3R2.

Figure 52. IBM-Supplied VTAM Buffer Pool Values in VM

Buffer Pool Name	baseno	bufsize ¹	slowpt	xpanno	xpanpt	xpanlim	adjval ²
APBUF (V3R2)	16	60	2	1	3	-	0
LFBUF	17	288 ³	2	1	3	0	0
LPBUF	9	1344	0	1	2	-	0
SFBUF	10	396 (392)	0	1	3	-	1
SPBUF	3	112	0	1	1	-	0
VFBUF	-	10240	-	-	-	-	-
VPBUF	-	262144 ⁴	-	-	-	-	-
WPBUF	20	208 (184)	0	1	19	-	0

Notes:

1. Buffer elements do not cross page boundaries.
2. *adjval* is the minimum number of buffers required to open the VTAM ACB and start VTAM. The *adjval* value is a constant. You cannot change it.
3. Although VTAM does not enforce it, you should override this value to equal the value of the UNITSZ operand in the NCP HOST definition statement. For SDLC lines attached through a communication adapter, *bufsize* must be at least 196 bytes. For BSC lines attached through a communication adapter, *bufsize* must be at least 285 bytes (286 bytes if the network also includes channel-attached SNA devices).
4. This value is the minimum needed to initialize VTAM. Use the guidelines in *Network Program Products Storage Estimates* to choose a VPBUF buffer size appropriate to your network.
5. In the above table each cell may contain one or two numbers. If there is only one number, it applies for V3R1, V3R1.2 and V3R2. If there are two numbers, the number in parentheses applies for V3R1 and V3R1.2 while the other number applies to V3R2.

Figure 53. IBM-Supplied VTAM Buffer Pool Values in VSE

baseno

is the base number of buffers in the pool.

The minimum base number of buffers in the pool is 1.

The maximum base number of buffers in the pool is:

- 32767 for pre-V3R2
- 2147483647 for V3R2.

Do not code a comma within the number.

bufsize

is the size in bytes of each buffer in the pool. The only buffer pools for which the *bufsize* value can be changed are the fixed-storage message pools (that is, MVS VM IOBUF and VSE LFBUF). For all other buffer pools, the *bufsize* value is ignored.

The minimum value that can be specified for *bufsize* is 1 byte.

The maximum value that can be specified for *bufsize* is:

- MVS VM 4032 bytes
- VSE 2000 bytes.

The Buffer Pool Start Options

If a channel-attached NCP is in this domain, the *bufsize* value for the fixed-storage message pool must match or be greater than the value used for the *UNITSZ* operand in the *HOST* statement in the NCP definition. If the values do not correspond, the NCP cannot be activated.

The minimum and maximum values for *bufsize* are different for different buffer pools. If the value of *bufsize* is less than the minimum, VTAM increases the value to the minimum value and issues a message to the VTAM operator.

slowpt

provides a minimum set of buffers available only for priority requests, for example, read from a channel-attached device. When the number of available buffers in this buffer pool is equal to or less than this number, buffers are allocated only for priority requests. Normal requests are queued or rejected. This is called slowdown mode.

For buffer pools to which no programs make priority requests, this operand has no meaning. Therefore, if *slowpt* is greater than 0, you are wasting buffers.

If you choose too high a value, you will never come out of slowdown mode to handle normal requests.

MVS VM F

tells VTAM that a buffer pool is to be **MVS** fixed in storage or **VM** locked in storage.

The **F** attribute has meaning only for buffer pools that are normally in pageable storage, but it can be coded for buffer pools that are located in fixed storage by default. If you intend to use the *xpanno* and *xpanpt* operands, but not the **F** attribute, then you must code the double comma between the *slowpt* operand and the *xpanno* operand. For example:

```
LPBUF=(baseno,bufsize,slowpt,,xpanno,xpanpt,xpanlim)
```

applies whether the buffer pool's default attribute is fixed or pageable.

xpanno

is the number of buffers, in decimal, that VTAM acquires when expanding the buffer pool. This value is rounded upward to the number of buffers that fills the nearest whole page of storage. The value must be 0–32767. If you code 0, dynamic buffering is not performed and the buffer pool will never expand. If you do not code *xpanno*, a value of 1 is used.

The use of an *xpanno* that is too small for a pool that has frequent expansions and contractions results in inefficient use of storage.

xpanpt

is a decimal integer that determines the expansion point for this buffer pool. When the number of available buffers in the buffer pool falls to a value that is equal to or less than *xpanpt*, VTAM schedules an asynchronous routine to expand the buffer pool by the number of buffers defined by *xpanno*. The value of *xpanpt* must be greater than the value of *slowpt*, but less than the difference between *baseno* and *adjval*, where *adjval* is an adjustment value for this buffer pool.

If you code an *xpanpt* value but omit the *slowpt* value, make sure that the *xpanpt* value is greater than the default *slowpt* value for the pool. If you code a *slowpt* value but omit the *xpanpt* value, make sure that the *slowpt* value is less than the default *xpanpt* value for the pool.

For example, suppose you want the large pageable-storage buffer pool to:

- Be in fixed storage with a base allocation of 12 buffers
- Have the IBM-supplied value for the buffer pool size

- Have a slowdown point at two buffers
- Have an expansion increment of one buffer
- Have an expansion point at three buffers.

MVS VM You would code:

LPBUF=(12,,2,F,1,3)

See Figure 51 on page 295 for the MVS default values; see Figure 52 on page 296 for the VM default values.

VSE You would code:

LPBUF=(12,,2,1,3)

because pageable buffer pools cannot be in fixed storage.

See Figure 53 on page 297 for the VSE default values.

xpanlim

is the maximum allowed size for this buffer pool. This operand can be specified only for the fixed-storage message pools (IOBUF **MVS VM**, and LFBUF **VSE**). The value is specified in units of 1024 bytes. The value must be between 0 and 2,097,152 for **MVS/XA**, and between 0 and 16,384 for all other operating systems. If you code 0, or if you do not specify an *xpanlim*, buffer expansion is not limited. If *xpanlim* is greater than *baseno* and less than $2 * xpanno + baseno$, *xpanlim* is changed to $2 * xpanno + baseno$.

VTAM will transform the expansion limit (entered in bytes) into the number of buffers represented by that limit. This new limit will take into account how many buffers fit on a page, the unused space from the initial allocation (that is, allocating *baseno* buffers), as well as unused space from each expansion.

Consider the following example for MVS:

For IOBUF=(50,128,,,40,20,32), the following values are initially assumed:

- *baseno* = 50 buffers
- *bufsize* = 128 bytes
- *slowpt* = 5 (IBM-supplied default value)
- *xpanno* = 40 buffers
- *xpanpt* = 20 buffers
- *xpanlim* = 32768 bytes (32K).

Given the above values, VTAM will take the following actions:

1. *bufsize* will be rounded up to 200 bytes to account for VTAM headers.
2. 12K bytes will be allocated for the base number of buffers since buffers are allocated in units of a page (4K bytes). Of the 12K, 2K will be unused since the base allocation only occupies 10K.
3. Each expansion will require 8K since buffers are always allocated in page-size multiples. This means that of the 8192 bytes in each page, 192 bytes will be unusable since each buffer is 200 bytes in length.
4. With 12K for the base number of buffers and 8K for each expansion, the limit of 32K can accommodate 2 expansions of the buffer pool. This means that the expansion limit will be set to 90 ($baseno + 2 * xpanno$).

Use the DISPLAY BFRUSE output to determine the peak buffer pool usage.

Note: If the value of *xpanlim* is less than or equal to that of *baseno*, static buffering will be assumed and the pool's *xpanno* and *xpanpt* values will be ignored.

The ASYDE Start Option

vse variable-length poolname = vbsz

is the size in bytes of the variable-length buffer pools, where *variable-length poolname* represents VFBUF or VPBUF. The minimum size is 1 byte; the maximum size is 16777215 bytes. If the value is not a multiple of the VSE page size (either 2048 or 4096 bytes), VTAM rounds it up to the next page multiple.

vbsz is the only option you can code for a variable-length buffer pool. The variable-length buffer pools are:

- VFBUF variable-length buffer pool in fixed storage.
- VPBUF variable-length buffer pool in pageable storage. The VPBUF pool is also used to provide pageable storage for any other buffer pool that does not expand.

See Figure 53 on page 297 for the default values.

Overriding Buffer Pool Values

All buffer pool values that you code override the previously entered values, while values you do not code default to the IBM-supplied values.

In the following examples, you have defined overriding LPBUF values in the default start option list. When VTAM is started, the system operator selects start option list ST, which contains new LPBUF values. VTAM processes these values in the order shown below. For more details on processing, see "The LIST Start Option" on page 305 and *Network Program Product Storage Estimates*.

mvs vm Example: In this example, the operator enters LIST=ST.

IBM default	LPBUF=(9,1344,0,,1,2)
ATCSTR00	LPBUF=(128,,1,,0,0)
ATCSTRST (LIST=ST)	LPBUF=(8,,0,F,,)

The result is:

LPBUF=(8,1344,0,F,0,0)

vse Example: In this example, the operator enters LIST=ST. (The F option does not apply in VSE.)

IBM default	LPBUF=(9,1344,0,1,2)
ATCSTR00	LPBUF=(128,,1,0,0)
ATCSTRST (LIST=ST)	LPBUF=(8,,0,8)

The result is:

LPBUF=(8,1344,0,8,0)

Note: The double commas in the above examples denote values that are not coded.

The ASYDE Start Option (V3R2 only)

ASYDE = TERM|KEEP

Upon receipt of an asynchronous device end from a local non-SNA device, VTAM uses this option to decide whether to keep or terminate the session between the device and its application. An asynchronous device end is caused when the device is powered off.

With ASYDE=KEEP, VTAM allows the session to remain up. Actually, VTAM generates an exception request for the application, and the application determines whether or not to end the session.

With `ASYDE=TERM` (the default), VTAM unconditionally terminates the session.

This option applies to all locally attached non-SNA devices except printers. See also the description of `FEATUR2=PRINTR|NOPRINTR` for a LOCAL device.

The CDRSCTI Start Option

CDRSCTI = n|480

is the minimum amount of time, in seconds, that the system retains dynamically defined cross-domain resources after the last session with the resource has been terminated. *n* must be a decimal integer in the range 0–32767.

If you omit `CDRSCTI` from the `START` command and `START` list, a 480-second (8 minute) default is assumed. In `V3R2`, dynamic `CDRSCTI`s also are created when `INQUIRE` requests are issued for cross-domain resources. Performance can be improved by allowing the dynamic `CDRSCTI`s to be retained across multiple requests.

The COLD|WARM Start Option MVS VSE

COLD|WARM

is the status to which the VTAM configuration restart facility restores each major node identified by the `CONFIG` start option.

COLD

instructs VTAM to restore each major node to its initial status as defined by the user. VTAM issues the equivalent of

```
VARY NET,ACT,ID=major node name,SCOPE=U
```

for each major node identified by the `CONFIG` start option.

WARM

instructs VTAM to issue the equivalent of

```
VARY NET,ACT,ID=major node name,WARM
```

for each major node identified by the `CONFIG` start option.

Refer to the description of the activation of specific major nodes in *VTAM Operation* for information on the effect of the `COLD` and `WARM` options.

The CONFIG Start Option

CONFIG = xx|00|name

names a list of major nodes to be activated when VTAM is started.

For more information, see “Creating Start Option and Configuration Lists” on page 283.

xx

is 1–2 alphanumeric characters that specify the file (or member) in the VTAM definition library containing a list of major nodes activated when VTAM is started. You can file the list of major nodes under the name `MVS VM ATCCONxx`; `VSE ATCCONxx.B`. You can file more than one list of major nodes to give the user a choice of configurations and to avoid having to issue a separate `VARY` command to activate each major node. The operator, however, can choose only one configuration from the list.

00

is the default value for the `CONFIG` start option. A user-defined configuration list of major nodes can be filed under the name `MVS VM ATCCON00`; `VSE ATCCON00.B`.

The CSALIMIT Start Option

VTAM always uses this predefined list unless the system operator uses the CONFIG option to select another list, or the CONFIG option is included in the set of LIST start options. If a default configuration list does not exist when VTAM is started, an error message is sent to the system or domain operator. VTAM initialization continues without the configuration list.

Note: The configuration list named by CONFIG=*xx* replaces the default configuration list. This differs from start option list processing where LIST=*xx*, if coded, is merged with the 00 list.

MVS VSE name

is the 3–8 character file name of the configuration restart VSAM file. This file contains a list of the major nodes that were active and a list of the DRDS files and sets of PATH statements that were in effect at the time of failure or deactivation.

VTAM must have used the file previously to record the list of active major nodes. In other words, the file name must have been coded in the NODELST option during some previous execution of VTAM.

If the file is empty, VTAM does not activate any major nodes during startup. The VTAM operator is prompted for a password if one is required to gain access to the file.

- **mvs** Include a DD statement using this data definition name in the VTAM start procedure.
- **vse** Include DLBL and EXTENT statements for this file name in the VTAM start procedure.

MVS VM The CSALIMIT Start Option

CSALIMIT = 0|n|nK|nM

is the maximum amount of common service area (CSA and ECSA) that can be used by VTAM. This can be expressed as a number followed by a K (which represents 1024), or a number followed by an M (which represents 1048576). The largest possible CSALIMIT is **MVS/XA** 2 gigabytes (expressed as 2048M); **MVS/370 VM** 16 megabytes (expressed as 16M).

0

is the default value. If you code 0 or take the default, no limit is enforced on the amount of CSA used by VTAM.

n|nK

n is the number of 1-kilobyte increments, in decimal, that is the maximum amount of CSA that can be used by VTAM. The value of *n* is rounded up to the next multiple of 4.

nM

n is the number of 1-megabyte increments, in decimal, that is the maximum amount of CSA that can be used by VTAM.

If neither **M** nor **K** is coded, **K** is assumed.

Notes:

1. If the number you code is greater than the available CSA, no limit is enforced.
2. If the limit you code is reached, errors are likely to occur. If LPBUF cannot be expanded, VTAM could enter an interlock condition. Therefore, if you code CSALIMIT, you must define LPBUF so that it does not have to expand.

Other possible consequences are lost messages or failures when sessions are initiated or terminated.

MVS/XA The CSA24 Start Option

The CSA24 option limits the amount of only explicitly requested 24-bit addressable storage (GETMAIN LOC=BELOW). If VTAM does not explicitly request the desired storage location (GETMAIN LOC=ANY) and MVS returns 24-bit addressable storage, the CSA24 limitations do not apply. The DISPLAY BFRUSE command does not list the storage with CSA24 values (24-bit), but instead lists it as 31-bit addressable storage.

CSA24 = 0|n|nK|nM

is the maximum amount of 24-bit addressable common service area (CSA) that can be used by VTAM. This number can be expressed as a number followed by a K, or a number followed by an M. The largest possible value for CSA24 is 16 megabytes (expressed as 16M).

0

is the default value. If you code 0 or take the default, no limit is enforced on the amount of 24-bit addressable CSA used by VTAM.

n|nK

n is the number of 1-kilobyte increments, in decimal, that is the maximum amount of 24-bit addressable CSA that can be used by VTAM. The value of *n* is rounded up to the next multiple of 4.

nM

n is the number of 1-megabyte increments, in decimal, that is the maximum amount of CSA that can be used by VTAM.

If neither M nor K is coded, K is assumed.

MVS VM The DLRTCB Start Option

DLRTCB = n|32

is the largest number of task control blocks (TCBs) used by dump-load-restart subtasks. *n* is a decimal integer 1 – 64. If you code 0, VTAM uses the default value of 32.

MVS VM The GWSSCP Start Option (V3R2 Only)

GWSSCP = YES|NO

tells VTAM whether the SSCP is a gateway-capable SSCP.

YES

is the default. GWSSCP=YES allows the SSCP to:

- Use the alias name translation facility
- Reroute initiation requests
- Perform gateway functions in a session setup path.

NO

this SSCP:

- Cannot use the alias name translation facility
- Cannot reroute initiation requests, so it cannot be an intermediate SSCP in the session setup path
- Cannot perform the gateway functions.

The ITLIM Start Option

Refer to “Interconnected Networks” on page 323 for a description of the SNA interconnection considerations for GWSSCP.

The HOSTPU Start Option

HOSTPU = host-subarea-puname|ISTPUS

is the network name of the VTAM host subarea PU contained in this host. The VTAM host subarea PU name allows you to uniquely identify the host PU containing channel-attached, or application resources. It is recommended that you code HOSTPU if you are using the NetView program or NLDM. If you do not code HOSTPU, VTAM uses ISTPUS as the host PU name.

Notes:

1. The name for HOSTPU must not be the same as the name for this CDRM or the name coded for the SSCPNAME start option for this SSCP. This host PU name should be network-unique. If the same name is used, HOSTPU is set to ISTPUS.
2. For releases prior to V3R2, VTAM initialization is terminated and message IST844I is issued if a reserved name other than ISTPUS is specified on the HOSTPU parameter. For V3R2, you are prompted for the correct name if a reserved name other than ISTPUS is specified on the HOSTPU parameter.
3. If you do not use the default name, ISTPUS, a node will still be defined to the system call ISTPUS. The name that you use as the HOSTPU value is interchangeable with the name ISTPUS in VTAM commands.

The HOSTSA Start Option

HOSTSA = n|1

is a decimal integer chosen by the user to identify this host VTAM's subarea. This start option must be coded for any VTAM that engages in cross-domain communication. *n* is an integer 1–255. When this host VTAM is active and is part of a multiple-domain network, no other subarea in the multiple-domain network that has the same subarea number can also be active.

The IOINT Start Option

IOINT = n|180

is the time interval (in seconds) after which any outstanding response for most request units sent by the SSCP, physical unit services, or logical unit services of VTAM, are identified with a VTAM message. It must be a decimal integer 0–99,999,999. Coding IOINT=0 deactivates the function. If you do not code IOINT, the default of 180 is assumed. If you code a value less than 60, IOINT=60 (1 minute) is assumed.

The ITLIM Start Option (Pre-V3R2)

ITLIM = n|0

is the maximum number of session services requests, USS requests, and VTAM macroinstruction requests that VTAM can process simultaneously. (Examples of VTAM macroinstruction requests are SIMLOGON and CLSDST.)

These maximums apply to cross-network sessions, cross-domain sessions, and same-domain sessions. *n* is a decimal integer 0–65535.

If VTAM receives more requests than allowed by ITLIM, these requests are queued within VTAM and are processed after the current requests have completed.

By placing a limit on the number of session services, USS, and macroinstruction requests that VTAM can process concurrently, the storage allocations needed to process these requests can be distributed over a longer period of time. This distribution of storage allocations reduces the total amount of storage needed for domain start-up and shutdown.

If you code 0 or take the default, VTAM does not restrict the number of concurrent requests and schedules each request for processing as soon as the request is received. See *Network Program Products Planning* for recommendations on defining ITLIM and storage.

The LIST Start Option

LIST = yy|00

determines which list of predefined start options is used to initialize a specific VTAM domain. Each ATCSTRyy list is filed in the VTAM definition library and the user can choose any 2 alphanumeric characters (for yy) to identify user-defined lists of start options.

For more information, see “Creating Start Option and Configuration Lists” on page 283.

LIST=yy can be entered only by the VTAM operator when starting VTAM. The default start list, ATCSTR00, does not have to be entered because it is always processed, regardless of any value specified by the operator. If a value is specified by the operator, it is concatenated to the ATCSTR00 start list. Any duplicate options in the start list entered by the operator will override those in ATCSTR00.

If the VTAM operator enters more than one LIST start option, VTAM processes only the last LIST start option entered.

The MAXSUBA Start Option (Pre-ENA)

MAXSUBA = n|15

n is the highest SUBAREA value, in decimal, that can be assigned to any node within this network for communicating with pre-ENA SSCPs and NCPs that do not support ENA.

If you do not code MAXSUBA, then a pre-ENA VTAM cannot function as a gateway SSCP together with this gateway NCP.

This parameter is required if **any** host or NCP in the network does not support ENA.

n is an integer 1 – 255. If you code MAXSUBA, the range of its values must be the same for all nodes in the same network.

In networks where there are no pre-ENA nodes, or where you do not want to communicate with any such nodes, you do not need to code MAXSUBA.

See *Network Program Products Planning* for considerations when using MAXSUBA.

The NETID Start Option

The MSGMOD Start Option

MSGMOD = YES|NO

YES

tells VTAM to insert the last 5 characters of the name of the VTAM module that issued a VTAM message into each VTAM message written following the message identifier.

Note that messages may be truncated.

NO

tells VTAM not to identify the issuing VTAM module in a VTAM message. If you do not code MSGMOD, MSGMOD=NO is assumed.

The NETID Start Option

NETID = network ID

is the 1 – 8 character name of the network containing the host. NETID should be unique within a set of interconnected networks. This start option is required for V3R2 regardless of whether the host is gateway capable.

For pre-V3R2, using NETID allows the host to function as a gateway. For V3R2, specifying GWSSCP=YES allows the host to function as a gateway. If the SSCP is a gateway, it may:

- Use the alias name translation facility
- Reroute initiation requests to other networks
- Perform gateway functions in a session setup path.

See “Alternatives to Predefining Cross-Domain Destination Logical Units” on page 276.

In an interconnected network, the network ID allows VTAM to determine which gateway NCP definition statements apply to the gateway host. The gateway SSCP also uses the network ID when sending and receiving cross-network requests.

Both NETID and SSCPNAME are required in a gateway configuration. Previous to V3R2, if you code one without the other, you receive a reminder at initialization that you must code the missing operand if VTAM is to serve as a gateway SSCP. For V3R2 gateway SSCPS, GWSSCP=YES is also required.

For additional information, see “The NETID Start Option (Required for V3R2)” on page 363.

We recommend that you choose the NETID carefully for your network, even if you do not use SNI. Do not choose a simple name like **NETA** or **B** that is likely to be duplicated by others defining their own networks. It is impossible to connect two SNA networks with the same name. If names are duplicated and interconnection is required, one of the networks must change its name. This may be very difficult to do.

VSE The NETID start option is available only in V3R2.

MVS The NODELST Start Option**NODELST = name**

is the name of a file in which VTAM maintains a list of all currently active major nodes.

After VTAM is halted or the host operating system, the host processor, or VTAM fails, the VTAM operator can reactivate the major nodes or the dynamic reconfiguration data set active at the time of deactivation or failure. The operator codes `CONFIG=name` in the VTAM start procedure, where *name* is the NODELST name in effect when VTAM was last running.

The VTAM operator is prompted for a password if one is required.

If NODELST and CONFIG have the same value when VTAM is started, VTAM attempts to activate the major nodes listed in the configuration restart data set. This same data set is then used as the NODELST data set, and is updated when major nodes are activated or deactivated.

If you code NODELST and VTAM is unable to open the data set, the configuration list is not processed.

If the name in NODELST is different from the name in CONFIG when VTAM is restarted, the data set identified by NODELST is erased before any major nodes are activated.

The PPOLOG Start Option**PPOLOG = YES|NO**

determines how much information is to be recorded in the primary program operator (PPO) log. When a primary program operator is running, the following events are always recorded in the PPO log:

- Commands issued by the program operator
- Messages issued by VTAM in response to those commands
- Unsolicited VTAM messages (for example, messages pertaining to alerts).

Note: When the NetView program is running, it is always the primary program operator.

The PPOLOG start option allows you to record these additional events in the PPO log:

- Commands entered at the system console
- Messages issued by VTAM in response to those commands.

YES

means that all VTAM commands entered at the system console (except START and HALT) and all messages VTAM issues in response are recorded in the PPO log.

Note: Messages that are suppressed by the MODIFY SUPP command or by the SUPP start option will neither be recorded in the PPO log, nor will they appear on the system console.

NO

means that VTAM commands entered at the system console and messages VTAM issues in response are **not** recorded in the PPO log.

NO is the default. PPOLOG=NO is assumed if you do not code the PPOLOG option.

PPOLOG is supported by the NetView program. It should be used only if the primary program operator can support the option.

The SONLIM Start Option

VSE The PPOLOG start option is available only in V3R1.2 and V3R2.

The PROMPT Start Option

PROMPT|NOPROMPT

PROMPT and NOPROMPT can be coded only in the ATCSTR00 predefined list of start options. You **cannot** code PROMPT in any other predefined start option list. PROMPT means that VTAM prompts the VTAM operator to enter VTAM start options. If you code NOPROMPT in ATCSTR00, VTAM does not prompt the operator. If NOPROMPT appears in ATCSTR00, you cannot override it by including PROMPT on the START command or in a predefined list. Do not put NOPROMPT in ATCSTR00 unless you are sure that the VTAM operator will never want to change the VTAM start options.

When entering start options from the console due to a prompt from VTAM, if all the desired options cannot be entered on one line, place a comma after the last option on the line of input, and VTAM prompts you for more start options.

The SONLIM Start Option

SONLIM = ([m|60] [,t|30])

is the maximum number of fixed I/O buffers available for the session outage notification (SON) request units. The buffers controlled by SONLIM may contain SON request units for routes between the host processor and:

- Channel-attached cluster controllers
- Channel-attached communication controllers
- Channel-attached host processors.

VTAM calculates the *m* number of buffers and the *t* value, using the values you code as the percentage of the I/O buffers available for SON. These numbers are calculated when VTAM is started, and are not affected by any increase in the number of I/O buffers due to dynamic buffering. When a virtual route fails, VTAM determines the number of buffers that may be allocated for these request units by using the maximum value calculated when VTAM was started. VTAM informs each session using the failing virtual route that the session is no longer usable.

This process does not pre-allocate buffers. When virtual route failures are not being processed, no I/O buffers are allocated.

m|60

is the percentage of the fixed I/O buffer pool that may be allocated for session outage notification request units. It does this by using this *m* percentage and a value coded for **MVS VM IOBUF** or **VSE LFBUF**. When a virtual route fails, this is the maximum number of buffers that may be allocated for notification request units. The value must be a decimal integer 1–99. The default is 60. If VTAM cannot initiate all the SON request units (one buffer is required for each request unit) within the available storage, it suspends the notification process until the number of buffers allocated for SON request units drops below the calculated threshold. Then the process begins again and more SON request units are generated.

t|30

is the percentage of fixed I/O buffers that are still allocated to session outage notification request units when the notification process begins again. Once the number of buffers allocated to session outage notification drops below this *t* value, the process begins generating SON reports again. The value must be a decimal integer 1–99. The default *t* value is 30.

Note: The value of *t* must be less than the value of *m*.

The SSCPDYN Start Option (V3R1.1 and later)

SSCPDYN = YES|NO

determines whether VTAM is to dynamically add entries to the adjacent SSCP table.

If SSCPDYN=YES (the default), VTAM adds a new entry to a cross-domain resource's adjacent SSCP table whenever it receives a session initiation request from the resource through an SSCP that is not already in the table.

If SSCPDYN=NO, VTAM does not add new entries **unless** it is the owner of the resource. The owner is determined by the CDRM operand of the CDRSC definition statement, or by session initiation.

This start option is closely related to SSCPORD. "Using SSCPDYN and SSCPORD to Improve Performance" on page 338 tells how you can use them together to get optimum performance.

For more details on SSCPDYN alone, see "The SSCPDYN Start Option" on page 364.

The SSCPID Start Option

SSCPID = n

is a decimal integer 0–65535. It is part of an SSCP identifier used when a PU or external CDRM establishes contact with VTAM. This parameter is required.

It is advisable, but not required, for the SSCPID in each network and each connecting network to be unique. If the SSCPs within a network do not have cross-network sessions, then the SSCPIDs are not required to be unique. If the SSCPs do have cross-network sessions, then the SSCP for each end of the cross-network sessions must have a different SSCPID. If multiple SSCPs in one network have the same SSCPID, then they are unable to both have a session with the same SSCP in another network. See "The SSCPID Start Option" on page 363 for SNA network interconnection considerations.

VTAM uses the SSCPID value to construct an identification sequence sent to a PU when a session is established using the SNA ACTPU command. In a multiple-domain network, it is also sent to another CDRM when a session is established. The PU or cross-domain resource manager can thereby identify the SSCP with which it is in session.

The SSCPNAME Start Option (V3R1.1 and later)

SSCPNAME = name

is the 1–8 character name of the VTAM SSCP. It is recommended that you use the same name here as you use on the host CDRM in multi-domain networks. See "The CDRM Definition Statement" on page 263. For pre-V3R2, this option is required if VTAM is to be a gateway SSCP, although it is recommended for all SSCPs. For V3R2, this start option is required.

Both NETID and SSCPNAME are required in a gateway configuration. For pre-V3R2, if you code one without the other you will receive a reminder at initialization that you must code the missing operand if VTAM is to serve as a gateway SSCP. For V3R2 gateway SSCPs, GWSSCP=YES is also required.

vse The SSCPNAME start option is available only in V3R2.

See "The SSCPNAME Start Option (Required for V3R2)" on page 364 for SNA network interconnection considerations concerning this start option.

The SUPP Start Option

The SSCPORD Start Option (V3R1.1 and later)

SSCPORD = PRIORITY|DEFINED (interconnect only)

determines whether VTAM searches an adjacent SSCP table in priority order (the default) or in the order in which the table is defined.

Priority order means that VTAM gives preference to SSCPs for which the most recent session initiation attempt succeeded, or for which no sessions have been tried.

Defined order means that VTAM scans the table in the same order that SSCPs are listed, regardless of whether past session initiation attempts were successful, with the exception that the owner, if known, is tried first.

This start option is closely related to SSCPDYN. “Using SSCPDYN and SSCPORD to Improve Performance” on page 338 tells how you can use them together to get optimum performance.

For more details on SSCPORD itself, see “The SSCPORD Start Option” on page 365.

The SUPP Start Option

SUPP = NOSUP|INFO|WARN|NORM|SER

is the highest class of VTAM messages for which VTAM suppresses message output to the VTAM operator console, and suppresses transmission to a program operator, if one exists. After VTAM is started, the VTAM operator can use the MODIFY SUPP command to change the message suppression level.

mvs If multiple console support (MCS) is included in the system, all suppressed messages, originally destined for an MVS console, are sent to the hard-copy log. Otherwise, if the destination for a suppressed message was a program operator, the message is lost.

The SUPP start option and the MODIFY SUPP command are identical in form and effect.

VTAM suppresses messages within a multiple line write-to-operator (MLWTO) group based on the suppression level of the first message in the group. VTAM ignores the suppression levels for subsequent messages within the group.

NOSUP

means that all VTAM messages are printed at the console. (NOSUP means “no suppression.”)

INFO

means that informational messages are suppressed. Informational messages are those that tell the operator that commands or procedures have been accepted for processing.

WARN

means that warning messages (as well as informational messages) are suppressed. Warning messages identify error conditions that do not cause commands to fail or be rejected. These messages tell the operator that there is a problem, such as an invalid operand or a minor node that cannot be activated, but that VTAM can continue to process other parts of the command or procedure.

NORM

means that normal completion messages (as well as informational and warning messages) are suppressed. Normal completion messages tell the operator that commands have completed processing successfully, a config-

uration has been activated successfully, a procedure has been terminated, and so on.

SER

means that serious error messages (as well as informational, warning, and normal completion messages) are suppressed. Serious error messages identify error conditions that cause commands or procedures to fail. These messages tell the operator that a command must be re-entered or a procedure re-initiated.

Error messages that identify an even more serious situation, such as the abnormal termination of a user task or of VTAM itself, cannot be suppressed. Messages that are generated in response to an operator request (such as the DISPLAY command) and messages that require a response (prompting messages) also cannot be suppressed.

Refer to *VTAM Messages and Codes* for individual suppression levels.

Note: Messages that are suppressed by the MODIFY SUPP command or by the SUPP start option will be recorded in the PPO log, even though they will not appear on the system console.

The TNSTAT Start Option

TNSTAT[,CNSL|**NOCNSL**][,TIME = n|60]|**NOTNSTAT**

determines whether VTAM keeps tuning statistics. Refer to *VTAM Customization* for further information on tuning.

TNSTAT

means that tuning statistics should be kept.

NOTNSTAT

means that tuning statistics should not be kept.

If you code neither TNSTAT nor NOTNSTAT, NOTNSTAT is assumed.

Note: If you do not code TNSTAT at start time, you cannot use the MODIFY command to request that tuning statistics be kept at a later time. **MVS SMF** is required to record tuning statistics.

The following operands are valid only if you code TNSTAT:

CNSL

means that the tuning statistics records are written to the console as well as to the **MVS** system management facilities (SMF) data set; **VSE** trace file; **VM** VTAM TUNSTATS file. For more information, see *VTAM Customization*.

NOCNSL

means that the tuning statistics records are written only to the **MVS** SMF data set; **VSE** trace file; **VM** VTAM TUNSTATS file.

TIME = n

is the number of minutes that should elapse between records. One record is written every *n* minutes for each channel-attached SNA controller in the network. A record is also written when a controller is deactivated or when a MODIFY TNSTAT or MODIFY NOTNSTAT command is issued.

The value for TIME must be 1 – 1440. If you do not code TIME, TIME=60 is assumed.

The TRACE Start Options

Notes:

1. If you do not code CNSL or NOCNSL, NOCNSL is the default.
2. **vm** You can direct trace output to any file by issuing a FILEDEF command before you start VTAM. The default file name is FILE TUNSTATS.

The TRACE Start Option for Buffer, I/O, NCP Line, or SMS TRACES

TRACE|NOTRACE,TYPE = BUF,ID = nodename[,EVERY]

TRACE|NOTRACE,TYPE = IO,ID = nodename[,EVERY]

TRACE|NOTRACE,TYPE = LINE,ID = linename[,COUNT = n|ALL]

TRACE|NOTRACE,TYPE = SIT,ID = nodename[,COUNT = n|ALL]

TRACE|NOTRACE,TYPE = SMS,ID = VTAMBUF

determines whether VTAM starts or cancels a specific type of trace for a node or line, or monitors the usage of all the VTAM buffer pools.

TRACE

tells VTAM to start a specific type of trace for a node or line, or to monitor the usage of all the VTAM buffer pools. Once started, the trace remains in effect until it is stopped, either by stopping VTAM or by entering the MODIFY NOTRACE command. More than one trace can be in effect at the same time, but you must code a separate TRACE start option to start each trace.

NOTRACE

tells VTAM to cancel the trace requested in the ID and TYPE operands. You should code this start option only when it is necessary to override a predefined TRACE start option. You must code a separate NOTRACE start option to stop each trace.

ID = nodename

names the specific node for which a VTAM trace is started or stopped. *nodename* corresponds to the name assigned to the node and filed in the VTAM definition library. See *VTAM Diagnosis Guide* (V3R1 and V3R1.1) or *VTAM Diagnosis* (V3R2) for a complete list of the types of nodes you can choose. You can use ID=VTAM to trace all SSCP activity and, in a multiple-domain network, all cross-domain resource manager activity. You can use ID=ISTPUS to trace all PU-PU activity.

Each terminal or LU traced must be explicitly coded in a TRACE start option.

TYPE = BUF|IO

is the specific type of VTAM trace that is started or stopped for a node. You can request only one type of VTAM trace in each TRACE start option (whether entered by the VTAM operator or predefined in a list of start options). In the TYPE operand, BUF is coded for a VTAM buffer trace, or IO for a VTAM I/O trace.

EVERY

tells VTAM that the requested trace is started or stopped for the resource named in the ID operand and all appropriate minor nodes of this resource (that is, all minor nodes for which I/O is done). You may also abbreviate this operand as E. This operand pertains only to buffer and I/O traces. For example:

```
TRACE,ID=linename,TYPE=IO,E
```

This start option initiates an I/O trace for the line and each of its minor nodes.

Note: This operand is not valid if ID=ISTPUS or ID=ISTIRN is also coded. If ID names a channel-attachment major node, you must code the EVERY option.

You can name the link in a channel-attachment major node, but not the link station.

ID = *linename*

names the specific line for which a VTAM trace is started or stopped. *linename* corresponds to the name on the LINE statement that represents the same line.

Each line traced must be explicitly coded in a TRACE start option.

TYPE = LINE

tells VTAM that an NCP line trace is started or stopped for a communication controller. There can be up to eight concurrent line traces and scanner interface traces for each NCP, depending on how each NCP is generated.

TYPE = SIT

tells VTAM that a scanner interface trace (SIT) is started for a 3720 or 3725 Communication Controller. There can be up to eight concurrent line traces and scanner interface traces for each NCP, depending on how each NCP was generated.

COUNT = *n*|ALL

is the number of bytes of data you want traced. *n* is a decimal number 0–254. If you do not code COUNT, or if you code COUNT=ALL, VTAM traces the entire path information unit (PIU).

COUNT is valid only if you are running an SIT or LINE trace for a 3720 or 3725 communication controller.

TYPE = SMS, ID = VTAMBUF

tells VTAM to monitor the number of its requests to obtain buffers in the VTAM buffer pools. (After a specified number of requests occur, the trace creates a record to show how the pools are being used at that time.) If you code TYPE=SMS, you must also code ID=VTAMBUF.

The TRACE Start Option for VTAM Internal Trace

TRACE,TYPE = VTAM

[,MODE = INT|EXT]

[,OPTION|OPT = ALL|option|(option[,option...])]

[,SIZE = n|2]

NOTRACE,TYPE = VTAM

determines whether VTAM starts or cancels a VTAM internal trace (VIT). NOTRACE is the default.

TRACE,TYPE = VTAM

requests a VTAM internal trace when VTAM is started. TYPE=VTAM must be the first operand after the word TRACE. Otherwise, the start option is ignored and you get the default, NOTRACE.

You do not have to code TRACE,TYPE=VTAM in a start option list (ATCSTRxx) to be able to use the VTAM internal trace. You can activate it using the MODIFY command, even if NOTRACE is coded in the start option list.

Note that if the internal trace buffer is active, it uses at least 4K bytes of storage. Therefore, you should activate the trace only when necessary.

NOTRACE,TYPE = VTAM

means an internal trace is not started. Note that if this is coded, all other NOTRACE operands are invalid.

MODE = INT|EXT

determines that tracing is recorded on an external device (EXT) or on an internal trace table (INT). MODE=EXT prevents loss of information because of wraparound in the internal trace table.

mvs You can record all VTAM traces by the generalized trace facility (GTF). You can format output using the PRDMP service aid. GTF must be active when traces are initiated.

vse You can run the VTAM trace print utility (TPRINT) as a subtask under VTAM or as a job step under VSE. This program records trace records in wraparound fashion either in main storage or in a trace file assigned to a disk or tape. If the trace is on a disk or tape, the operator is notified when the end of the trace file is reached. When a trace file is full, the oldest records are overlaid by the new trace records. Therefore, if trace data is being produced faster than the trace utility can print it, trace data is lost, because of wraparound.

The trace table is allocated from VFBUF storage.

Refer to *VTAM Operation* for instructions on how to use the MODIFY SUBTASK command to attach TPRINT.

vm You can issue the CPTRAP command to enable the recording of GCS and VTAM virtual machine trace data in the CPTRAP spool file. The VM TRAPRED service routine formats trace data in the CPTRAP spool file using a VTAM exit routine. ACF/TAP, which is part of the NCP System Support Product (SSP), provides extended formatting for VTAM and NCP trace records.

See *VTAM Diagnosis Guide* (v3R1 and v3R1.1) or *VTAM Diagnosis* (v3R2) for a more detailed description of formatting and printing trace output.

OPTION = ALL[option](option[,option...])

is a listing of the VTAM functions that you wish to trace. This operand may be abbreviated as OPT. You may code one or more of the following operands:

ALL	All functions listed below
API	Application program interface
APPC	LU 6.2 application program interface (V3R2 only)
CIO	Channel I/O trace
ESC	Execution sequence control (V3R2 only)
LOCK	Locking
MSG	Messages
NRM	Network resource management (V3R2 only)
PIU	Path information units
PSS	Process scheduling services
SMS	Storage management services
SSCP	System services control point.

If you omit the OPTION operand, only exception records are traced.

When VTAM encounters an exception condition involving an API, NRM, PIU, SSCP, or SMS function, it generates a trace record whether or not you have activated that option.

For information on the VIT record entries that are traced, see *VTAM Diagnosis Guide* (V3R1 and V3R1.1) or *VTAM Diagnosis* (V3R2).

Note: Each trace option is provided at the expense of some system overhead. Be cautious when specifying OPTION=ALL until you understand the effect this function may have on performance in your environment.

SIZE = n|2

is the size of the MVS VM internal trace table or VSE external trace table.

The table contains information on VTAM resource utilization for the use of the VTAM internal trace. Use this option to choose the number of pages allocated for the trace table. You may code decimal integers in the range 1 – 999. If you omit this option, the default is 2.

If you do not choose a large enough value for the SIZE option, valuable information may be destroyed because of wraparound in the trace table. If you use this operand to select a different size on a subsequent MODIFY TRACE command, information is lost because VTAM frees the trace table so that it can obtain another table with a new size.

VSE The trace information is written sequentially into a tape or direct-access file. The file must be defined in DLBL and EXTENT statements, with the file name TRFILE as the first operand of the DLBL statement. When the trace file is full, the file is overwritten, with the newest trace records overlaying the oldest trace records. Subsequently, the trace-print facility can be used to write the formatted trace information onto SYSLST. The trace records are written to TRFILE in 2048-byte blocks. The number of tracks of direct-access storage allocated depends on the number of 2048-byte records that the user wishes preserved. The VTAM trace facility is described in more detail in *VTAM Diagnosis Guide* (V3R1 and V3R1.1) or *VTAM Diagnosis* (V3R2).

The USSTAB Start Option

USSTAB = tablename

is the name of a USS table to be used for VTAM operator messages and for VTAM operator commands that are processed through USS. *tablename* is the 8-character name of a USS table. You can choose one of the following USS tables:

- ISTINCNO, which contains the IBM-supplied VTAM messages and commands. ISTINCNO is the default. This table may be supplemented with a user-defined table.
- ISTCFCMM contains a master copy of the original messages in ISTINCNO. Choose this table name if you want to continue using these original messages in program operator applications after ISTINCNO is modified. Commands processed through USS continue to use ISTINCNO.
- A user-defined table that contains user-modified messages and commands. Messages and commands not defined in the user-defined table continue to use ISTINCNO. The user defined table should not be named either ISTINCNO or ISTINCDT; otherwise you may not be able to use all of the defined USS commands and messages.

In V3R2, the MODIFY TABLE command lets you dynamically replace a USS table. See *VTAM Operation*. Before you can use the MODIFY TABLE operator command against a given USS table, you must reassemble that table using the VTAM V3R2 macroinstruction definition libraries.

If the attempt to load the specified table fails, VTAM will fall back to using ISTINCNO. Message IST116I will be issued if the specified table is not found; message IST448I will be issued if there is not sufficient storage to load the table.

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Chapter 7. MVS VM SNA Network Interconnection Considerations

Overview of the Process

This chapter discusses the installation of interconnected SNA networks. You can use interconnection on MVS and VM systems.

These considerations include:

- Defining VTAM resources
- Defining VTAM requirements for the NCP
- Defining VTAM start options.

General discussions of these topics, along with the formats of definition statements and start options, are in the preceding chapters. This chapter discusses only additional things you must consider for interconnection.

Note: Network interconnection requires that you specify:

- GWSSCP= YES (V3R2)
- SSCPNAME and NETID (pre-V3R2)

as a start option on each interconnected SSCP that is to be used as an intermediate SSCP.

Defining VTAM Resources

Defining Application Program Major Nodes

The Alias Name Translation Facility

If your installation uses interconnected SNA networks and you want to use the alias name translation facility provided by the command facility component of the NetView program, by the NCCF licensed program, or by a similar user-written application, you must include an APPL definition statement for that application program in the application program major node. The name on the APPL statement must be ALIASAPL. Following is an example of an APPL statement for the alias name translation facility:

```
ALIASAPL APPL AUTH=(CNM),PRTCT=NETVW
```

where NETVW is a password for the NetView program.

For complete coding information for the APPL definition statement, see “The APPL Definition Statement” on page 71.

CNM Application Programs

The AUTH=CNM operand on the APPL definition statement means that this application program can use the communication network management (CNM) interface. This operand must be coded for all CNM applications, including:

- The session monitor component of the NetView program
- The NetView program alias name translation facility
- The NLDM licensed program
- A user-written application program used for name translation.

For a complete list of IBM CNM application programs, see *VTAM Customization*.

Defining a Cross-Network Controlling Primary Logical Unit

Using the LOGAPPL operand, you can define a cross-network controlling primary logical unit on any 1.0, 2.0, or 2.1 PU type, either local or remote, switched or non-switched.

The effect is the same as if a same-network CDRSC were the controlling primary logical unit, except that the resulting session is cross-network rather than same network.

For coding information, see the appropriate section in Chapter 5, “Defining the Network to VTAM” on page 59. For defining major nodes, *NCP Resource Definition Reference* may also be helpful.

Deferred Session Setup

In a single-network environment, when the SSCP-SSCP session necessary for the establishment of a controlling primary logical unit session is not immediately available, VTAM stores information necessary for session setup. When the necessary SSCP-SSCP session becomes active, VTAM establishes the LU-LU session.

You can establish cross-network controlling primary logical unit sessions through any number of intermediate SSCPs, provided that all required SSCP-SSCP sessions are active when the LU-LU session setup is attempted.

In the case of a cross-network session where the session setup path consists of more than one SSCP-SSCP session, the session setup proceeds as far as establishing the session control blocks at each active SSCP along the setup path. At some point along the path, an SSCP may determine that the session request cannot be routed any further because it has no active sessions with any SSCPs in its adjacent SSCP list for the specific destination logical unit. If this occurs, the request is rejected, the session control blocks are freed, and the operator is notified of the failure. Once the necessary SSCP-SSCP sessions are active, the operator must try to re-establish the session. If all required SSCP-SSCP sessions exist but the controlling application is unavailable, VTAM will fail the initiation request until the application is available. When the application becomes available, VTAM will automatically attempt to re-establish the session.

Defining Cross-Network Resources

Single Network

In a single-network configuration, a session can be established between an application (APPL1) in HOST1 and a terminal (TERM1) owned by HOST2 as shown in Figure 54.

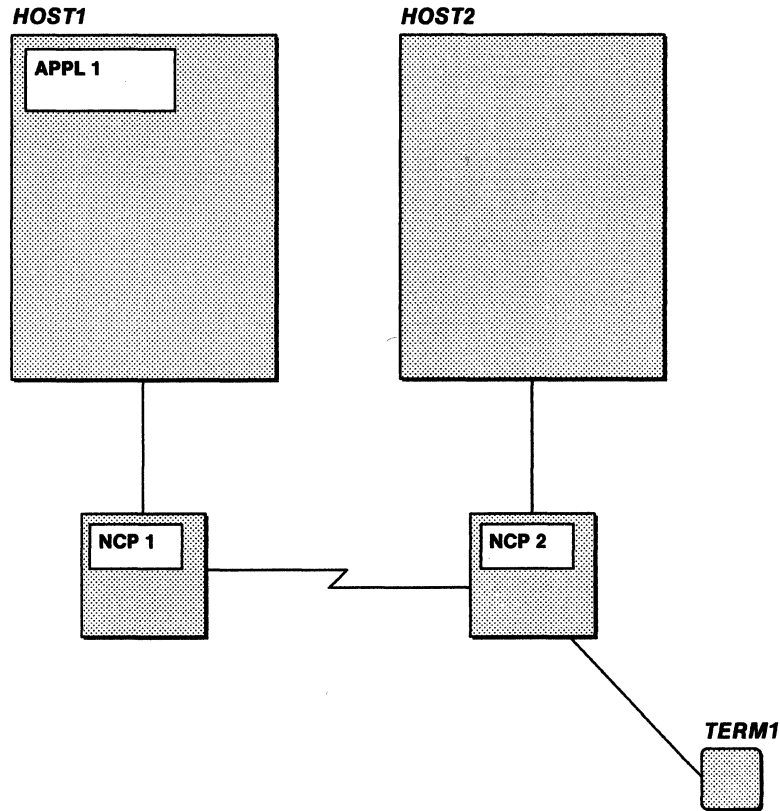


Figure 54. Example of a Single-Network Configuration

The cross-domain resource definitions in HOST1 are:

```
CDRMSEG1  VBUILD  TYPE=CDRM,...  
HOST2     CDRM    ...  
HOST1     CDRM    CDRDYN=YES,...
```

```
CDRSCSEG  VBUILD  TYPE=CDRSC,...  
TERM1     CDRSC   CDRM=HOST2,...
```

In this example, the external CDRM (HOST2) is defined to VTAM in HOST1 using the CDRM definition. TERM1 is defined to VTAM in HOST1 using the CDRSC definition.

Similarly, in HOST2, HOST1 is defined to HOST2 using the CDRM definition. If APPL1 initiates the session with TERM1, the CDRSC definition of APPL1 to HOST2 is optional.

CDRSC definition of the requested session partner (also known as the destination logical unit (DLU)) in both HOST1 and HOST2 is optional if default routing is defined and CDRSC=OPT is coded on the CDRM definition statements. See "Alternatives to Predefining Cross-Domain Destination Logical Units" on page 276. See *SNA: Concepts and Products* for details on request unit flow during session initiation.

Interconnected Networks

With interconnected networks, defining CDRSCs becomes more complex as cross-network sessions, alias name translation, and adjacent SSCP rerouting are introduced. The configuration in Figure 55 shows two interconnected networks.

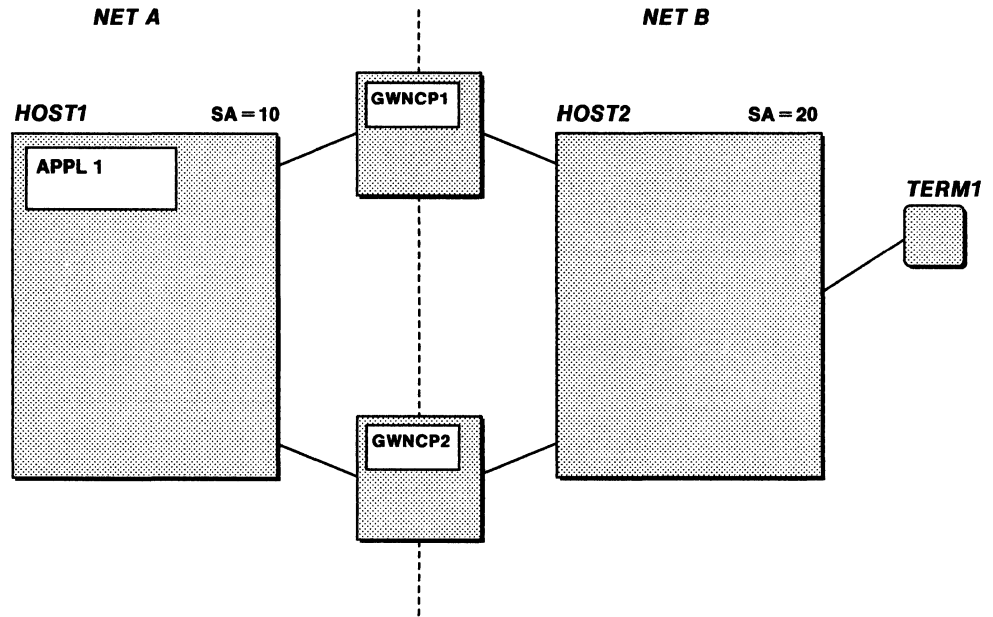


Figure 55. Example of Two Interconnected Networks

To establish cross-network sessions between APPL1 in NETA and TERM1 in NETB, the following CDRM definitions are required if sessions are initiated from either HOST1 or HOST2.

This CDRM major node is filed in HOST2 for the external CDRM, HOST1:

```

HOST1    NETWORK  NETID=NETA
         CDRM    CDRDYN=YES,CDRSC=OPT
         GWPATH  GWN=GWNCP1,ADJNETSA=10,ADJNETEL=1,...
         GWPATH  GWN=GWNCP2,ADJNETSA=10,ADJNETEL=1,...
    
```

This CDRM major node is filed in HOST1 for the external CDRM, HOST2:

```

HOST2    NETWORK  NETID=NETB
         CDRM    CDRDYN=YES,CDRSC=OPT
         GWPATH  GWN=GWNCP1,ADJNETSA=20,ADJNETEL=1,...
         GWPATH  GWN=GWNCP2,ADJNETSA=20,ADJNETEL=1,...
    
```

In an interconnected network configuration, there are three ways of defining CDRSCs:

- Dynamic allocation of CDRSCs

Instead of predefining CDRSCs, you can decide whether some or all CDRSCs will be dynamically allocated and defined. The host that owns the logical unit initiating a session (the origin logical unit or OLU) can dynamically define the requested session partner—the destination logical unit. In the intermediate SSCP, both the OLU and the DLU resource can be dynamically defined. In the DLU SSCP, the OLU resource can be dynamically defined.

Cross-Network Resources

- CDRSC definitions without network specified
 - Without the NETWORK definition statement
 - With this host's NETID coded (this variation of CDRSC definition does not apply for V3R2 since anytime NETID is coded, whether in this network or another, it signifies a real CDRSC).

This method of defining CDRSCs can be used by hosts within either of the networks in which the session partners reside or by intermediate SSCPS. The definition can be used to satisfy either a real or alias name, but if the alias application is used, you cannot define a CDRSC for both. For example, in HOST1 (in Figure 55 on page 323), you could code:

```
CDRSCSEG  VBUILD      TYPE=CDRSC,...  
TERM1     CDRSC       [CDRM=HOST2,]...
```

- CDRSC with network specified

CDRSC definitions with the owning host's NETIDS coded on NETWORK definition statements.

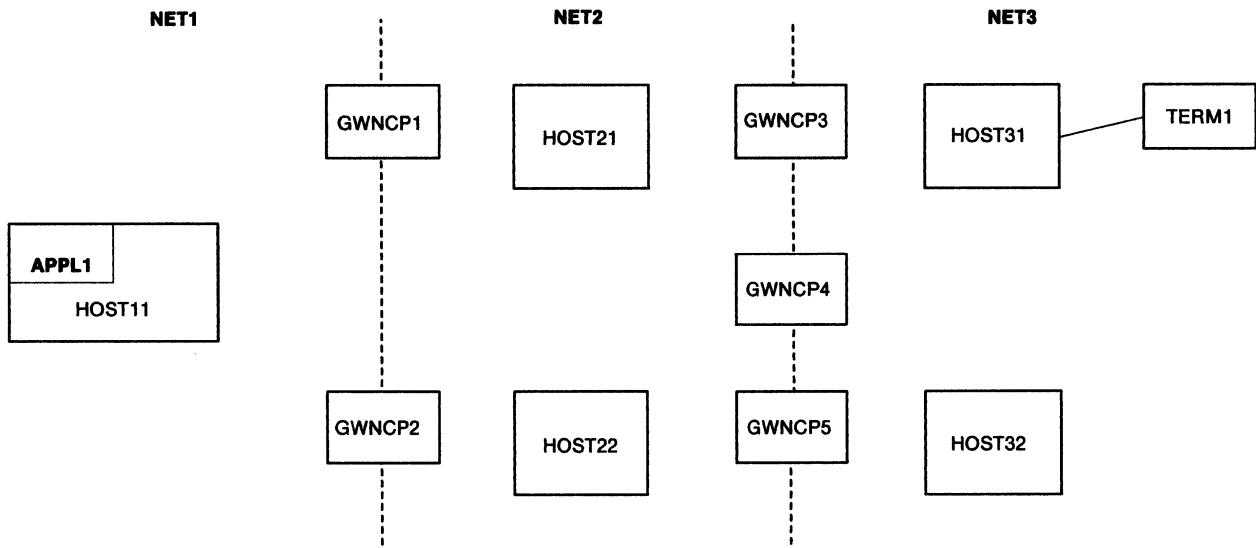
This method of defining CDRSCs can be used by any of the hosts involved in establishing the requested session. This method provides for the best performing session setup. For example, in HOST1 (in Figure 55 on page 323), you could code:

```
CDRSCSEG  VBUILD      TYPE=CDRSC,...  
           NETWORK    NETID=NETB  
TERM1     CDRSC       [CDRM=HOST2,]...
```

VTAM offers such wide flexibility in defining (or not defining) CDRSCs because:

- The wide range of supported configurations results in different requirements for each SSCP in the configuration.
- Methods other than predefining CDRSCs can be used, such as alias name translation and default SSCP selection. These methods provide additional function as well as an alternative to predefining CDRSCs. (See the following section for a detailed explanation of alias name translation and default SSCP selection.)
- Customers are using SNA network interconnection for many reasons. For example, to connect independent networks or to split existing networks to provide additional network addresses.

You can better understand the three methods of defining CDRSCs (and the advantages and disadvantages of each) by studying the multiple-network configuration in Figure 56 on page 325.



Note: The connections between hosts and NCPs have been omitted for clarity. You can assume that each NCP connects to each host in the networks to the left and right of it.

Figure 56. Example of Three Interconnected Networks

If APPL1 in HOST11 attempts to establish a session with TERM1 (owned by HOST31), TERM1 (the destination LU) can be defined to HOST11 in one of the ways mentioned in the immediately preceding paragraphs:

- Dynamically defined CDRSCS
- CDRSC definitions without network specified
 - Without NETID
 - With this host's NETID (does not apply for v3R2).
- CDRSC definitions with network-specified CDRSC definitions that will satisfy real or alias names.

Dynamically Defined CDRSC

If you choose not to predefine a CDRSC for TERM1 (and the CDRM definition for HOST11 and HOST31 is set up to allow dynamic CDRSC definition), the following occurs:

1. A CDRSC for TERM1 is dynamically allocated in HOST11.
2. If duplicate-resource names exist (for example, TERM1 exists in both NET1 and NET3), VTAM must select an alias name to refer to the session partner located in the other network. (For example, VTAM chooses an alias name whereby NET1 refers to the TERM1 located in NET3.) VTAM uses the alias name translation facility to identify the network in which the session partner resides. Then, VTAM resolves the alias name to the name used in the session partner's network. Optionally, the alias name translation facility can be used to obtain the name of the SSCP that owns the session partner.
3. VTAM uses an adjacent SSCP table to locate the next SSCP to which the session setup request should be sent to reach the destination network.

Once the session-initiation request leaves the first gateway (that is, the gateway connecting NET1 and NET2), the destination logical unit's alias name, if not yet translated, is treated as the real name. (This applies only to selecting the next SSCP to

route to if NET2 does the gateway function instead of NET1.) Therefore, VTAM assumes that the destination logical unit resides in the network of the SSCP to which the request is being rerouted.

If no translation takes place in the configuration in Figure 56 on page 325, the session initiation request means that the destination network is NET3 when the request is sent to either HOST31 or HOST32.

Advantages: Some advantages of using this method are:

- The number of definitions required in HOST11 is reduced.
- Once the real name and network are known, the lack of predefined CDRSCS does not affect the length of the session setup path.

Disadvantages: The main disadvantage of eliminating predefined CDRSCS is that the length of the session setup path is increased before VTAM identifies the destination logical unit's real name and network. In this case, a CDRSC is dynamically allocated using the alias name. Once the real name is determined, either by using the alias name translation facility, or by initiate response, the acquired information (the real name and network) is merged into the existing dynamically allocated CDRSC. Note that unless an alias name translation facility that supplies the name of the SSCP owning the session partner is used, each adjacent SSCP leading to the destination network is tried until the session is established, or it is determined that none of the SSCPS owns that requested session partner.

In the configuration in Figure 56 on page 325, there are no name conflicts. If HOST11 did not have an alias name translation facility installed, the dynamic CDRSC would have been allocated by HOST11 using what it considers to be the resource's alias name: TERM1. At initiate response time, the acquired information (the real SSCP name and network) is merged into the existing dynamically allocated CDRSC named TERM1.

Recommendation: Using this method of dynamically allocating CDRSCS appears to be most beneficial for intermediate and destination networks along the session setup path; the destination logical unit's real name and network identifier are known by the time the session request reaches these hosts, so replacing CDRSCS is not required. Without dynamic definition of CDRSCS, the number of resources requiring definition could be extremely large. If you provide networking services within an enterprise or for external users, this method is recommended.

Predefined CDRSC without Network

This method of defining CDRSCS involves defining CDRSCS:

- Without the NETWORK definition statement
- With the host network's NETID coded (this variation of CDRSC definition does not apply for V3R2 since any time NETID is coded, whether in this network, or another, it signifies a real CDRSC).

Using the configuration in Figure 56 on page 325, you could define TERM1 (the destination LU) this way:

```
          VBUILD TYPE=CDRSC, . . .  
TERM1    CDRSC  CDRM=HOST21, . . .
```

Notice that the CDRM, HOST21, is not the owning SSCP. Rather, it is the SSCP adjacent to the origin logical unit's owning SSCP (HOST11). Because the CDRSC is defined in

HOST11's network (or is allowed to default), the resource name (TERM1) is assumed to be the name known in HOST11's network—that is, the alias name.

Advantages: Predefining CDRSCs using this method has some advantages:

- Coding the CDRM operand on the CDRSC definition statement allows you to select the next SSCP in the session setup path. For simple networks that do not plan to provide alternate adjacent SSCPs, this method could eliminate the need for defining adjacent SSCP tables. For more complex configurations, this method of defining CDRSCs identifies the first SSCP that should be tried when alternate adjacent SSCPs are available. In this case, VTAM reorders the adjacent SSCP table you defined; the first SSCP in the table is now the SSCP named in the CDRM operand of the CDRSC definition, causing this CDRM to be used first for routing.
- For some configurations, new CDRSC definitions are not required. If a multiple-network configuration is the result of splitting a single network and the owning CDRMs have not changed, the CDRSC definitions previously defined still cause the request to be routed to the correct SSCP.

Disadvantages: The disadvantages of predefining CDRSCs with this method are:

- For pre-V3R2: This method can be used in the origin logical unit's network, the intermediate logical unit's network, and the destination logical unit's network. Within the first gateway, the alias name and NETID from the origin logical unit's network are used by the gateway SSCPs to locate cross-domain resource definitions until the real name and NETID are known. In Figure 56 on page 325, if HOST21 received a CDINIT request from HOST11 for a session between APPL1 and TERM1, HOST21 assumes TERM1 to be the resource's alias name as known in NET1. Therefore, a predefined CDRSC defaulting to NET2's NETID is never located. HOST21 must then use dynamic CDRSC definition to define TERM1.
For V3R2: The resource is immediately located and used for session setup.
- The length of the session setup path is increased, though not as much as with dynamically defined CDRSCs using the resource's alias name (since no definitions have to be built dynamically). When the real SSCP name and NETID are determined, VTAM updates the predefined CDRSC to represent the real name. When the last session for that CDRSC terminates, VTAM restores the alias name so that the CDRSC is the same as originally predefined, and restores the CDRM if it is coded.

Recommendation: This method of predefining CDRSCs is most suitable for simple configurations (for example, where one network is split into two) or for hosts that rely on another host for gateway support. In our example, HOST11 passes all session requests to HOST21 or HOST22. Those hosts are then responsible for alias name translation, alias address requests, adjacent SSCP rerouting, and so forth.

Predefined CDRSC with Network

The third method of predefining CDRSCs involves including NETWORK definition statements in the CDRSC definition to identify the network in which the resource is located. For example, the following is defined in HOST11:

```

          VBUILD TYPE=CDRSC, . . .
          NETWORK NETID=NET3
TERM1    CDRSC [CDRM=HOST31,] . . .

```

In this example, TERM1 is defined to be in NET3. Its owning CDRM is HOST31. When a CDRSC is defined using the NETWORK statement, VTAM recognizes the owning CDRM as

the actual owning SSCP—not as the next SSCP on the session setup path. A session with this CDRM is required only if it is also the next SSCP on the session setup path.

Advantages: Some advantages to using this method are:

- In a configuration with no name conflicts, this method defines the shortest session setup path. However, a resource, even when defined with a NETID, cannot be predefined if its name is not uniquely known in the host's network. This method of predefining CDRSCs was designed for those systems that want to quickly locate a resource and use its real name. Therefore, the name must be uniquely known within the network in which it is defined.
- Predefining CDRSCs in this way allows you to define very specific adjacent SSCP tables. Because the NETID and, optionally, the destination SSCP are known, you can define adjacent SSCP tables for a specific NETID, or NETID and SSCP name. This could eliminate VTAM's need for a default SSCP list, which may not provide the shortest session setup path.

Disadvantages: Some disadvantages also exist:

- If you have coded the CDRM operand on the CDRSC definition statement, VTAM assumes it to be the owning SSCP name. Changing CDRMs in a backup situation is complex. The operator must issue a MODIFY CDRM command in each network that contains a CDRSC definition, with the previous CDRM listed as the owner. Then (as in Figure 56 on page 325), if HOST31 fails and TERM1 is acquired by HOST32, but the CDRM is not updated in HOST11, the session setup attempt would fail since HOST31 is still defined as the destination logical unit's owning CDRM. To avoid this problem of updating CDRSCs should a backup situation arise, omit the CDRM operand; VTAM uses the default SSCP list defined for the destination logical unit's network to find the adjacent SSCP.

Note: The optional operand VFYOWNER on the CDRSC definition statement eliminates this disadvantage.

- This method does not work for interconnected networks with duplicate names. In many cases, renaming and predefining CDRSCs using NETID is preferable to using the alias name translation facility.

Recommendation: This method is recommended for networks that contain unique names and require fast session setup.

Initiation Request Processing

Assume that the CDRSC for TERM1 is successfully defined or allocated in HOST11. Initiate requests carry a NETID if one is specified² when VTAM starts; otherwise, the NETID field is blank.

Assuming that HOST11 and HOST21 start with NETIDS and SSCPNAMES specified and, for V3R2, start with GWSSCP=YES specified, the Initiate request carries the alias resource name and network identifier for TERM1 and, if known, the real name and network

² For V3R2:

- NETID is a required START option
- GWSSCP=YES must be specified when VTAM starts if alias name translation, rerouting of initiation requests in intermediate SSCPs, or gateway functions along the session setup path are performed.

identifier. The alias name is TERM1 in NET1; the real name is TERM1 in NET3. A pair of names (real and alias) is also carried in the request for the origin logical unit, APPL1.

The origin logical unit's real name is APPL1 in NET1; the origin logical unit's alias name is APPL1 in NET3. Note that APPL1 and TERM1 are not duplicate resource names in this configuration. Therefore, the only difference between the real and alias names is the network identifier. If duplicate resource names exist, the resource name would differ, as well, for the real and alias names.

Note: The request flow described herein assumes that GWCTL=SHR is in the host's PCCU definition statement. If, according to the rules for gateway control described later in this chapter, HOST11 is designated to request an alias address for GWN1, the real name is determined in HOST11.

If the CDRSC for TERM1 is dynamically defined in HOST11 or predefined using its alias name, the Initiate request carries only the alias name TERM1 in NET1. If, however, the CDRSC for TERM1 is predefined in HOST11 using its real name, the Initiate request carries both the alias name and the real name TERM1 in NET3.

In NET2, there are three ways to define TERM1:

- Dynamically allocate a CDRSC,
- Predefine the resource using its real name and network identifier, or
- For V3R2, predefine the resource without the network identifier.

If only the alias name is passed to HOST21 in the Initiate request, a CDRSC is dynamically allocated for TERM1 in NET1 (unless one already exists from a previous session attempt). VTAM attempts to determine the real name using the alias name translation facility, if it is available. The session setup request is then routed to HOST31 using an adjacent SSCP table. This requires that the request leave the first gateway. Therefore, if the real name is not determined using the alias name translation facility, the real name is assumed to be the same as the alias name and the network of the adjacent SSCP to which the request is routed, that is, TERM1 in NET3. The alias CDRSC representation (TERM1 in NET1) is updated to reflect the real CDRSC representation (TERM1 in NET3).

If both the real and alias names are passed in the Initiate request, either a predefined real CDRSC representation for TERM1 in NET3 is located or a dynamic CDRSC is allocated. For V3R2, a predefined CDRSC without a network identifier specified could be located. In any case, the resource name is not passed to the alias name translation facility, even if one is available.

In SSCP21, a resource must be defined or dynamically created for APPL1, as well. Since APPL1 is the origin logical unit, its real name and network identifier are known. A predefined CDRSC requires a NETWORK definition statement with NET1 as the network identifier. If a CDRSC is not predefined, the dynamically created CDRSC contains the network identifier, NET1, and the real name, APPL1.

The initiate request that flows from HOST21 to HOST31 contains both real and alias names for TERM1. HOST31 determines that it owns the destination logical unit. At that time, a CDRSC representation for APPL1 is located or is dynamically allocated using the real name (APPL1 in NET1). If APPL1 is known by an alias name in NET3, VTAM searches for the CDRSC representation for that resource using its alias name as received in the Initiate request. When the representation is found, VTAM merges any pertinent information from the alias CDRSC representation with the real representation.

Alternatives to Predefining Destination LUs

If initiation request processing is successful, HOST31 sends a positive response. When HOST11 receives the response, further processing depends on how TERM1 is defined in HOST11. If TERM1 is dynamically allocated, VTAM merges the acquired information (real network ID and owning SSCP name) into the existing CDRSC. If TERM1 is predefined using its alias name, the predefined CDRSC representation is updated with the real name, network identifier, and owning SSCP. If TERM1 is predefined using its real name and network identifier, no further processing is required. Session setup continues, and resources are recognized by their real names and network identifiers.

Which Method Should You Use?

This section contains guidelines only for predefining CDRSCs. You will have to decide which method or combination of methods is best suited to your configuration. Carefully consider the following questions:

- How many CDRSCs would you have to predefine?
- How many duplicate names exist? How many resources would you have to rename and redefine if you did not install the alias name translation facility?
- What is your main reason for using SNA network interconnection? Are you splitting an existing network? Or, are you joining two or more independent networks?
- Do you plan to use the alias name translation facility?

Your answers to these questions should help you decide which method of predefining CDRSCs you should use.

Alternatives to Predefining Cross-Network Destination Logical Units

There are three ways to lay the groundwork for communicating with a destination logical unit in another domain. One is to define the destination logical unit to VTAM as a cross-domain resource owned by an external CDRM, as described in "Defining Cross-Domain Resources" on page 352. However, you can also use either default SSCP selection or the alias name translation facility to allow communication with a cross-domain destination logical unit. These alternatives are discussed in the following sections.

Default SSCP Selection

If you have defined an adjacent SSCP table, VTAM sends the session setup request for an undefined destination logical unit, or for a predefined CDRSC without a network ID, to the adjacent SSCPs in the list until the owning SSCP is found or the end of the list is reached. If the adjacent SSCP to which a cross-network session setup request is routed does not own the destination logical unit, it reroutes the request, provided (1) a list of default SSCPs exists for that SSCP, (2) the maximum SSCP rerouting count (described in *VTAM Customization*) has not been reached, and (3) this SSCP is gateway capable. Otherwise, the request is rejected.

If dynamic definition of resources is allowed, VTAM automatically creates a CDRSC for the logical unit as part of routing. Once the owning SSCP is found by trial-and-error routing of the Initiate request, the dynamically defined CDRSC is updated with the real network ID and owning SSCP name.

Note: If two hosts both attempt to establish a cross-network session with a logical unit that is not predefined in either of the initiating hosts, a conflict may arise in any intermediate host that receives these requests. The receiving host may then issue sense code X'08880007', indicating duplicate destination logical unit (DLU)

names. The sessions may be successfully established if the requests can be rerouted. This situation can be avoided, however, by predefining the DLU with NETID instead of allowing it to be dynamically defined.

Performance: It is recommended that you know the NETIDS of the other-network CDRMS and define specific entries for these CDRMS in your adjacent SSCP table. Doing this saves time when VTAM does trial-and-error routing since a more specific table can be used for routing the Initiate request.

Using an Alias Name Translation Facility

Another alternative to predefining destination logical units to VTAM is to install a name translation facility and define to it all logical units (or, at least, those that have cross-network sessions) in the interconnected networks.

To use this method, you must define all the logical units in the interconnected networks that are not already defined, and their owning SSCPS, to the name translation facility and assign alias names. If VTAM does not have a complete definition of a destination logical unit for a session setup request, it calls the name translation facility with the name of the logical unit. The alias name translation facility returns the name of the SSCP defined as the owner of the logical unit, as well as the destination network ID and the logical unit's real name in that destination network.

If no predefined CDRSCs are used and VTAM has a session with the owning SSCP, and dynamic definition of cross-domain resources is allowed, the request for the session is sent to the owning SSCP. VTAM automatically creates a CDRSC definition table entry for the logical unit. (You can allow dynamic definition of a resource by coding CDRDYN=YES on the CDRM statement for the VTAM host CDRM and CDRSC=OPT on the CDRM statement for the owning SSCP.)

If you have not installed a name translation facility, or if the name translation facility fails to return the name of the owning SSCP, default SSCP selection is tried next. (Defining an alias name translation facility to VTAM is described in "The Alias Name Translation Facility" on page 320.)

Defining Adjacent SSCP Tables

The adjacent SSCP table contains lists of SSCPs that may be in session with the VTAM SSCP and can be used to reach destination SSCPs in the same or other networks. One or more adjacent SSCP tables may be activated in each VTAM host. File the definitions in VTAMLST files (or as members in the SYS1.VTAMLST data set).

You can individually activate multiple adjacent SSCP table definitions. Each new set of definitions is added to the internal table used by VTAM. New definitions for destinations already in the internal table replace the current adjacent SSCP list for those destinations, but you cannot deactivate existing adjacent SSCP lists. If a new table replaces an existing one, VTAM issues a message informing the operator.

An adjacent SSCP table is defined using the following definition statements:

- VBUILD TYPE=ADJSSCP
- NETWORK
- CDRM
- ADJCDRM.

These rules describe how to define an adjacent SSCP table.

1. The first statement is a VBUILD statement with TYPE=ADJSSCP.
2. The second statement is a NETWORK or ADJCDRM statement. Not coding a NETWORK statement immediately after the VBUILD statement is the same as coding a NETWORK statement with no NETID operand; this defines a default SSCP list for all networks.
3. Consecutive NETWORK statements define the same default SSCP list for each network.
4. VTAM ignores the name fields on the VBUILD and NETWORK statements, but they are used in error messages by the system definition processor.
5. If VTAM is started without NETID specified (pre-V3R2), you must allow the NETID operand on the NETWORK statement to default by either omitting it entirely or giving it a null value.
6. One or more CDRM statements may follow NETWORK statements or ADJCDRM statements. The name field of each CDRM statement names a destination SSCP in the network identified by the preceding NETWORK statement, or, if there is no NETWORK statement, in the network where the table is defined. The CDRM statement is followed by another CDRM statement or an ADJCDRM statement.
7. The CDRM definition statements within the adjacent SSCP table have no required operands, although any operands that are valid on the CDRM statement in a CDRM major node are accepted. VTAM ignores these operands when they appear in an adjacent SSCP table. Therefore, you can define an adjacent SSCP table to reach a new host in an interconnected network simply by adding to the CDRM statements that already exist for that network.
8. Consecutive ADJCDRM definition statements following the CDRM statements provide a list of adjacent SSCP names for the preceding destination SSCPs identified on the CDRM statements. The name field of each ADJCDRM statement is the name of an adjacent SSCP. This name must match the name specified on the CDRM definition statement for the external CDRM. Each ADJCDRM statement must have a unique CDRMNAME. There are no operands on the ADJCDRM statement.

9. The ADJCDRM statement is followed by another ADJCDRM statement, a CDRM statement, or a NETWORK statement (or nothing, if it is the end of the table).
10. If ADJCDRM statements follow a NETWORK or VBUILD statement, without intervening CDRM statements, they comprise a list of default SSCPS. Two types of default SSCP lists are possible depending on the following conditions:
 - a. If you code the NETID of a specific network, the NETID is that of the destination network. The ADJCDRM statements name the SSCPS to use when the destination network ID is known, and the destination SSCP name is not known or does not have a CDRM statement coded for it in the table. This type of table is referred to as a network-specific adjacent SSCP table. The defined SSCPS are used to route for the specified network **only**.
 - b. If there is no NETWORK statement, or there is a NETWORK statement without NETID specified, the ADJCDRM statements name the SSCPS to use when the destination network ID is unknown and the destination SSCP is unknown. This type of table is referred to as a default SSCP list for all networks.
11. In V3R2 an ADJSSCP table defined with a NETWORK statement for the host network is only used when the destination resource is known to reside in the host network. Prior to V3R2, an ADJSSCP table defined with a NETWORK statement for the host network is treated as a default table: the default table is used when the destination is not known or when a network-specific table for the destination network does not exist. In V3R2 a default ADJSSCP table is coded without a NETWORK statement.

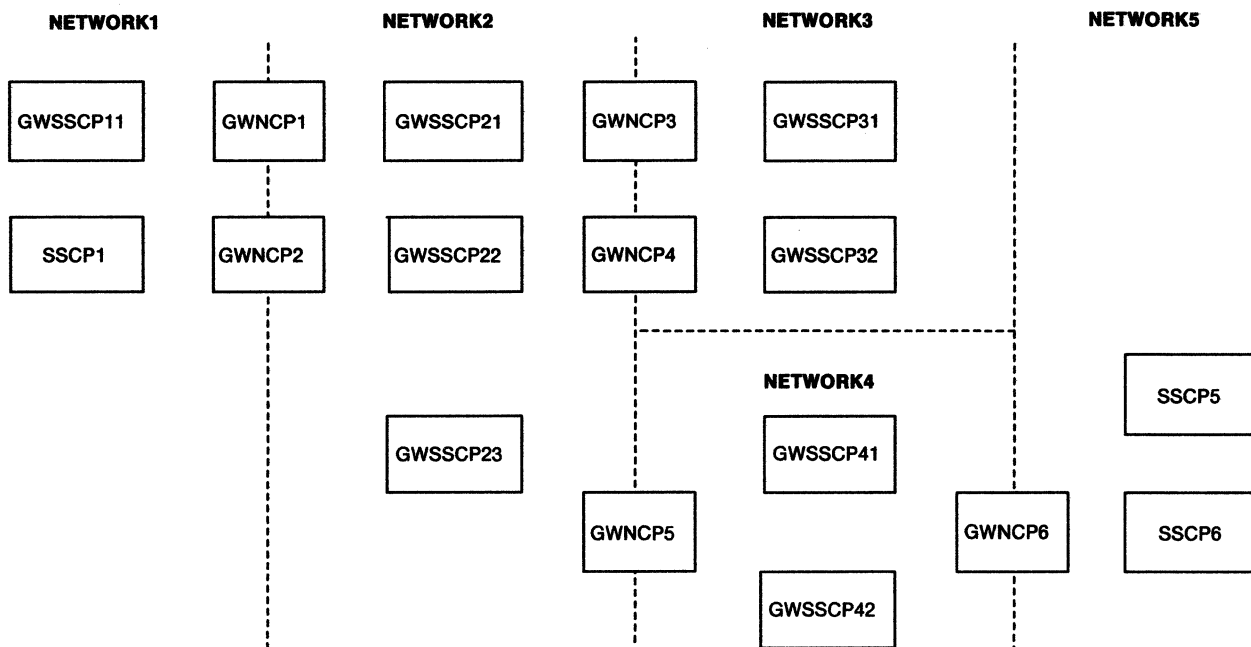
The tables are searched in the following manner:

1. If the NETID and CDRM name are known, a search is done for a table coinciding with the known information.
2. If that table is not found, or if only NETID is known, a search is done for a table defined with just the NETID given.
3. If an attempt to find that table fails, or if only CDRM name is known, the indicated CDRM adjacent SSCP table for all networks is used.
4. If an attempt to find that table fails, the default adjacent SSCP table for all networks is used.

Example of an Adjacent SSCP Table

The sample adjacent SSCP table definitions included here are written for the configuration in Figure 57 on page 334. Keep in mind that this example and those that follow are for illustrative purposes only.

Adjacent SSCP Tables



Note: The connections between hosts and NCPs have been omitted for clarity. You can assume that each NCP connects to each host in the networks it joins.

Figure 57. Example of a Multiple-Network Configuration

The adjacent SSCP table definition for gateway SSCP11 (GWSSCP11) is shown in Figure 58.

```

TABLE1  VBUILD  TYPE=ADJSSCP
NETWORK3 NETWORK  NETID=NETWORK3  destination network
GWSSCP31 CDRM      destination SSCP
GWSSCP32 CDRM      destination SSCP
GWSSCP21 ADJCDRM  adjacent SSCP list
GWSSCP22 ADJCDRM  for GWSSCP31 and GWSSCP32
GWSSCP23 ADJCDRM  in NETWORK3
*
NETWORK4 NETWORK  NETID=NETWORK4  destination network
GWSSCP41 CDRM      destination SSCP
GWSSCP21 ADJCDRM  adjacent SSCP list
GWSSCP22 ADJCDRM  for GWSSCP41
GWSSCP23 ADJCDRM  in NETWORK4
GWSSCP42 CDRM      destination SSCP
GWSSCP23 ADJCDRM  adjacent SSCP list
GWSSCP22 ADJCDRM  for GWSSCP42
GWSSCP21 ADJCDRM  in NETWORK4
*
NETWORK5 NETWORK  NETID=NETWORK5  destination network
SSCP5    CDRM      destination SSCP
SSCP6    CDRM      destination SSCP
GWSSCP23 ADJCDRM  adjacent SSCP list
GWSSCP21 ADJCDRM  for SSCP5 and SSCP6
GWSSCP22 ADJCDRM  in network NETWORK5
    
```

Figure 58. Adjacent SSCP Table Definition for GWSSCP11

If GWSSCP11 receives an Initiate request for a destination logical unit owned by GWSSCP31 in NETWORK3, and GWSSCP11 knows the destination logical unit's owning SSCP and network, VTAM uses the adjacent SSCP table to determine what route to use for the session setup path. VTAM first looks in the table for the destination network, NETWORK3, and the destination SSCP, GWSSCP31. The adjacent CDRMs given for that destination are GWSSCP21, GWSSCP22, and GWSSCP23. VTAM attempts to establish the session using the adjacent SSCPs in the order they appear in the table.

This example does not include a list of adjacent SSCPs for NETWORK2. The list could be included, but it is not always necessary. A host does not need an adjacent SSCP list for a network if:

1. The host SSCP is directly in session with the destination SSCP (that is, there are no intermediate SSCPs on the session path), and the host SSCP knows the destination SSCP name.
2. Predefined CDRSCs without NETWORK but with CDRM are specified.
3. The alias application is used to find the destination SSCP name.

In this case, the host SSCP simply sends the request to the destination SSCP. VTAM knows the destination SSCP name once it is determined from a CDRSC definition or from the alias name translation facility. In this example, GWSSCP11 is directly in session with each SSCP in NETWORK2, and all destination SSCP names are known.

Example of a Default SSCP List

The default SSCP list is used whenever one of these conditions is true:

- The destination network is not known.
- The destination network is known, but there is not a network-specific table associated with the network.
- The destination network and owning SSCP name are known, but the specific table could not be located.

The default SSCP list is part of the adjacent SSCP table. You can include network-specific SSCP lists for each network and a default list for use when the real network is not known.

The adjacent SSCP table shown in Figure 59 on page 336 applies to GWSSCP21 in NETWORK2 and contains default SSCP lists for all the networks in Figure 57 on page 334.

Adjacent SSCP Tables

```

TABLE2  VBUILD  TYPE=ADJSSCP
        NETWORK ,          unnamed network definition
GWSSCP11 ADJCDRM ,          with default adjacent SSCP
GWSSCP31 ADJCDRM           list for all networks
GWSSCP32 ADJCDRM
GWSSCP41 ADJCDRM
GWSSCP42 ADJCDRM
*
        NETWORK NETID=NETWORK1 destination network
SSCP1    CDRM    ,          destination SSCP
GWSSCP11 ADJCDRM ,          adjacent SSCP for NETWORK1

```

V3R2 Network-Specific Table for NETWORK2

```

*
        NETWORK NETID=NETWORK2 destination network
GWSSCP22 ADJCDRM ,          default adjacent SSCP list
GWSSCP23 ADJCDRM           for NETWORK2

```

End of V3R2 Network-Specific Table for NETWORK2

```

*
        NETWORK NETID=NETWORK3 destination network
GWSSCP32 ADJCDRM ,          default adjacent SSCP list
GWSSCP31 ADJCDRM           for NETWORK3
*
        NETWORK NETID=NETWORK4 destination network
        NETWORK NETID=NETWORK5 destination network
GWSSCP41 ADJCDRM ,          default adjacent SSCP list
GWSSCP42 ADJCDRM           for NETWORK4 and NETWORK5
*
SSCP5    CDRM    ,          destination SSCP
GWSSCP42 ADJCDRM ,          adjacent SSCP list for
GWSSCP41 ADJCDRM           for SSCP5 in NETWORK5

```

Figure 59. Adjacent SSCP Table Definition for GWSSCP21

In this table, the default SSCP list for all networks is

```

GWSSCP11
GWSSCP31
GWSSCP32
GWSSCP41
GWSSCP42.

```

This list is used whenever:

- The destination logical unit's network is not known.
- The destination network ID is known, but no entries existed corresponding to the destination network.

If the SSCP that sent the session setup request is in the list, the entry is not used to reroute the request. This prevents a request from looping. The actual table you defined is unaltered.

The network-specific adjacent SSCP table for NETWORK1 is GWSSCP11.

This list (of one SSCP) is used whenever VTAM knows that NETWORK1 is the destination network, and SSCP1 is the destination SSCP.

For V3R2, an ADJSSCP table defined with a NETWORK statement for the host network is only used when the destination resource is known to reside in the host network. In V3R2, if a destination resource is known to reside in NETWORK2, the list of ADJSSCPs used for a session request is:

```
GWSSCP22
GWSSCP23.
```

In pre-V3R2 VTAM an ADJSSCP table defined with a NETWORK statement for the host network is treated as a default table.

The default SSCP list for session requests for NETWORK3 is:

```
GWSSCP32
GWSSCP31.
```

This list is used whenever VTAM knows that NETWORK3 is the destination network, but does not know the destination SSCP name.

The default SSCP list for NETWORK4 and NETWORK5 is the same:

```
GWSSCP41
GWSSCP42.
```

This list is used whenever VTAM knows the destination network to be either NETWORK4 or NETWORK5 but does not know the destination SSCP name.

If the destination SSCP is known to be SSCP5 in NETWORK5, the following adjacent SSCP list is used instead:

```
GWSSCP42
GWSSCP41.
```

Overriding an Adjacent SSCP List

If a list of adjacent SSCPs exists for a destination network or SSCP or both, and VTAM already has an SSCP-SSCP session with the destination SSCP, session setup processing can override the list; that is, that destination SSCP becomes the first choice for the specific session request. This override is temporary and does not change the actual adjacent SSCP table that you defined.

Thus, the default SSCP list, TABLE2, includes the following statements:

```
NETWORK NETID=NETWORK3 destination network
GWSSCP32 ADJCDRM default adjacent SSCP list
GWSSCP31 ADJCDRM for NETWORK3
```

Assume that a cross-network SSCP-SSCP session exists between GWSSCP21 and GWSSCP31. If GWSSCP21 received a cross-network Initiate request for a session with a logical unit owned by GWSSCP31 in NETWORK3, the list of adjacent SSCPs in the table

```
GWSSCP32
GWSSCP31
```

would be reordered to

```
GWSSCP31
GWSSCP32
```

Adjacent SSCP Tables

for this session setup. The actual table you defined is unaltered.

The destination SSCP name, GWSSCP31, is available in the Initiate request if the alias name translation facility or a predefined CDRSC with CDRM name was used.

Using SSCPDYN and SSCPORD to Improve Performance

For optimum performance and reliability during session setup, VTAM:

- Adds a new entry to the adjacent SSCP table whenever it receives a session initiation request from an SSCP that is not already in the table.
- When looking for an SSCP with which to initiate a session, scans the adjacent SSCP table in **priority** order, giving preference to:
 - SSCPs for which the most recent session initiation attempt succeeded
 - SSCPs for which no session initiation attempts have been made.

For performance reasons, however, you may wish to change one or both of these processes. The SSCPDYN and SSCPORD start options allow you to do so. Use the following table to help you decide how to set SSCPDYN and SSCPORD in your system.

Note: If the CDRM name is coded for the CDRSC, that entry is still tried first.

SSCPDYN= YES SSCPORD= PRIORITY	<p>VTAM adds entries dynamically to the adjacent SSCP table.</p> <p>When establishing sessions, pre-V3R2 VTAM gives priority to SSCPs for which the most recent session initiation attempt succeeded or for which no attempt has been made—even if a more direct path to the CDRM that owns the DLU becomes available. When establishing sessions, VTAM V3R2 gives priority to the CDRM that owns the DLU (if known), then to SSCPs for which the most recent session attempt succeeded.</p> <p>This combination of options gives you the greatest flexibility for setting up routes across networks, and, if your adjacent SSCP table is large, it gives you the best performance during session setup.</p>
SSCPDYN= YES SSCPORD= DEFINED	<p>Entries are added dynamically to the adjacent SSCP table, but VTAM always searches the table from top to bottom when it tries to initiate a session. Since the dynamic entries are added at the bottom of the list, they are the last ones tried during session initiation.</p> <p>This combination of options results in increased session setup time if the primary paths (those near the top of the list) are not available. But if a secondary path (one nearer the bottom of the table) is used, it does not get priority for subsequent sessions.</p>

SSCPDYN=NO
SSCPORD=PRIORITY

No entries are added to the adjacent SSCP table, except when the owner of a cross-domain resource is defined explicitly by the CDRM operand of the CDRSC statement. Therefore, VTAM can use only the paths you define in the table, and if one of these paths fails, VTAM does not attempt to use it again until all other paths also fail.

This combination of options tends to limit the number of available cross-network routes. You may also need to define additional adjacent SSCP tables because VTAM does not build them automatically each time an application issues a CLSDST PASS macroinstruction for a cross-network session.

SSCPDYN=NO
SSCPORD=DEFINED

No entries are added to the adjacent SSCP table, except when the owner of a cross-domain resource is defined explicitly by the CDRM operand of the CDRSC statement. VTAM always searches the table from top to bottom when it tries to initiate a session. Again, VTAM can only use the paths you define in the table, but—since VTAM always searches the table from top to bottom—a path that fails can be used again as soon as it is restored.

This combination of options results in increased session setup time if the primary paths (those near the top of the list) are not available. But if a secondary path (one nearer the bottom of the table) is used, it does not get priority for subsequent sessions. You may also need to define additional adjacent SSCP tables because VTAM does not build them automatically each time an application issues a CLSDST PASS macroinstruction for a cross-network session.

VTAM does not add new entries unless it is the owner of the resource. The owner is determined by the CDRM operand of the CDRSC definition statement, or by session initiation.

For complete descriptions of these start options, see “The SSCP DYN Start Option” on page 364 and “The SSCP ORD Start Option” on page 365.

Adjacent SSCP Table: VBUILD

The VBUILD Definition Statement

Code a VBUILD statement for each adjacent SSCP table.

Name	Definition Statement	Operands
[name]	VBUILD	TYPE = ADJSSCP

name

is the name of the adjacent SSCP table represented by this statement. This operand is optional.

TYPE = ADJSSCP

means that the VBUILD statement defines an adjacent SSCP table.

The NETWORK Definition Statement

The NETWORK statement names a destination network. If you do not code a NETWORK statement, this adjacent SSCP table defines a default SSCP list for either a single-network or a multiple-network environment. In a multiple-network environment, you can use the NETWORK statement to provide a specific default SSCP list for a given destination network. If ADJCDRM statements follow a NETWORK statement, without intervening CDRM statements, they also comprise a list of default SSCPs.

Name	Definition Statement	Operands
[name]	NETWORK	[NETID = destination network ID]

name

identifies this NETWORK statement in error messages from the system definition processor. To avoid confusion, use the same value for both *name* and the NETID operand. This operand is optional.

NETID = destination network ID

is the optional 1–8 character name of the destination network. Omitting NETID defines a default SSCP list for all networks.

Note: If VTAM is started without NETID specified (pre-V3R2), NETWORK statements are ignored.

The following rules apply to the placement of the NETWORK statement within the adjacent SSCP table definition:

1. The NETWORK statement can be followed by a NETWORK, CDRM, or ADJCDRM statement.
2. Consecutive NETWORK statements result in the same adjacent SSCP table for each of the networks.
3. If an invalid statement is encountered within the adjacent SSCP table definition, that statement and any subsequent statements are rejected until another NETWORK statement or the end of the definition is encountered.

Note: In V3R2 an ADJSSCP table defined with a NETWORK of the host network is used only when the destination resource is known to reside in the host network. (Previously, an ADJSSCP table defined with a NETWORK of the host NETWORK was treated as a default table, which is used when the network of the destination is not known or when a network-specific table does not exist). In V3R2, a default table is coded without a NETWORK statement.

The CDRM Definition Statement

One or more CDRM statements may follow a NETWORK or ADJCDRM statement. The CDRM statement names a destination SSCP in the network identified on the preceding NETWORK statement.

Name	Definition Statement	Operands
sscpname	CDRM	

sscpname

is the real name of the SSCP. It must match the name assigned to that SSCP in its own network by the SSCPNAME start option or, if the SSCPNAME start option is not coded, by the host CDRM definition statement.

The CDRM statements within the adjacent SSCP table have no required operands, although any operands that are valid on the CDRM definition statement in a CDRM major node are accepted. These operands are ignored when the CDRM statement is part of an adjacent SSCP table.

Note: You can define adjacent SSCP tables to reach a new interconnected network by adding only a few statements to the existing CDRM definitions for that network.

The following rules apply to the placement of the CDRM statement within the adjacent SSCP table definition:

1. A CDRM statement can be followed by another CDRM statement.
2. One or more CDRM statements must be followed by an ADJCDRM statement.

The ADJCDRM Definition Statement

Consecutive ADJCDRM definition statements following the CDRM statements give the list of adjacent SSCP names for the preceding destination SSCPs.

Name	Definition Statement	Operands
cdrmname	ADJCDRM	

cdrmname

is the name of an adjacent SSCP known to VTAM. It is the same as the name on the CDRM definition statement that defines the SSCP to VTAM. (An adjacent SSCP may be an SSCP in a nonadjacent network, for example, in a back-to-back configuration. However, an SSCP-SSCP session must have been established.) The CDRM names must be unique among SSCPs that participate in cross-network sessions.

There are no operands on the ADJCDRM definition statement.

The following rules apply to the placement of the ADJCDRM statement within the adjacent SSCP table definition:

1. The ADJCDRM statement can be followed by a ADJCDRM, CDRM, or NETWORK statement.
2. If an ADJCDRM statement immediately follows a NETWORK statement, it is the default adjacent table for the specified network.
3. If an ADJCDRM statement immediately follows the VBUILD statement or a NETWORK statement without NETID specified, it is the default adjacent table for all networks.

Defining Cross-Domain Resource Managers

For SNA network interconnection, a cross-domain resource manager (CDRM) major node consists of:

- A VBUILD statement
- Optional NETWORK definition statements
- One or more CDRM definition statements
- Optional GWPATH definition statements.

There are no SNA network interconnection considerations for the VBUILD statement. Considerations for the remaining statements are described below. Following this description are guidelines for defining cross-network resources that include examples of how the above statements are used.

The NETWORK Definition Statement

For SNA network interconnection, the NETWORK definition statement is added to the CDRM major node definition to name the network in which each CDRM resides.

Name	Definition Statement	Operands
[name]	NETWORK	[NETID = network ID]

name

identifies this NETWORK statement in error messages from the VTAM system definition processor. To avoid confusion, use the same value for both *name* and the NETID operand. This operand is optional.

NETID = network ID

is an optional 1 – 8 character name that identifies the network in which the CDRM or set of CDRMs resides. This NETID pertains to the CDRM or set of CDRMs defined following the NETWORK statement and before any other NETWORK statement in the same set of definitions.

You may include more than one NETWORK definition statement in a CDRM major node definition. If you include consecutive NETWORK statements (without intervening CDRM definitions), only the last one is used. That is, the network name of a CDRM is defined by the last NETWORK statement preceding the CDRM definition statement.

If no NETWORK definition statement exists before one or more CDRM definition statements, the CDRMs are assumed to reside within this same VTAM network. The network name for this network (specified on “The NETID Start Option (Required for V3R2)” on page 363) is the NETID of the VTAM in which the definition is filed.

Note: *mvs vm* If VTAM is started without NETID specified, only CDRMs with no associated network ID are processed by this VTAM. All CDRM statements associated with a specific NETID (other than the null or blank) are ignored. This restriction applies only to VTAM prior to V3R2.

The CDRM Definition Statement

Name	Definition Statement	Operands
cdrmname	CDRM	[CDRDYN = YES NO] [,CDRSC = OPT REQ] [,ELEMENT = n 1] [,ISTATUS = ACTIVE INACTIVE] [,RECOVERY = YES NO] [,SPAN = spanname] [,SUBAREA = n] [,VPACING = n 0 63]

Although no additional operands are needed on the CDRM statement for SNA network interconnection, additional considerations do apply to the following existing operands:

cdrmname

For CDRMs in another network, this 1 – 8 character name is the name by which this VTAM knows the other-network CDRM. This *cdrmname* is used in the ID operand of VTAM operator commands. Therefore, it must be a unique name within this VTAM. As a result, the name fields of all CDRM definition statements that are active at one time must be unique and not conflict with other resource names in the same network. Because the CDRM statement in an adjacent SSCP table requires the SSCPNAME of an external CDRM, you may have to change the labels on the CDRM definition statements.

To make things simple for the network operator, it is recommended that you use the same *cdrmname* for the host CDRM as for the SSCPNAME start option. If you fail to do so, in some cross-network configurations, the session may fail.

CDRDYN = YES|NO

determines whether a host CDRM is authorized to dynamically define CDRSC representations of cross-domain or cross-network resources. Dynamic definition takes place at the time a session request is received from or sent to an adjacent SSCP.

YES

authorizes dynamic definition of cross-domain or cross-network resources by this CDRM, eliminating the need to predefine certain CDRSCs. If you are defining a gateway SSCP, you should code CDRDYN=YES.

Both origin LUS and destination LUS can be dynamically redefined.

NO

rejects any cross-domain or cross-network session request in behalf of a cross-domain or cross-network resource that has no predefined CDRSC entry. NO is the default.

Notes:

1. Use this operand with the CDRSC operand to set up dynamic CDRSC definition. See *Network Program Products Planning* for more information on this function.
2. An intermediate host may build dynamic definitions for CDRSCs.
3. When you define a gateway SSCP, you should code CDRDYN=YES.

4. Item 3 on page 355 describes another instance in which you should code CDRDYN=YES.

CDRSC = OPT|REQ

determines whether resources owned by the CDRM being defined by this statement may be dynamically defined at the time a session request is received from or sent to this external CDRM which manages the resource. This allows dynamic CDRSC definition to be allowed only when the cross-domain or cross-network session requests are received from or sent to certain domains.

OPT

authorizes dynamic definition of cross-domain or cross-network resources from this CDRM, eliminating the need to predefine certain CDRSCs.

REQ

rejects any cross-domain or cross-network request to or from this CDRM on behalf of a cross-domain resource that has no predefined CDRSC entry. REQ is the default.

Note: Use this operand with the CDRDYN operand to set up dynamic CDRSC definition. See *Network Program Products Planning* for more information on the dynamic CDRSC definition function.

ELEMENT = n|1 and SUBAREA = n

The alias address representing a cross-network SSCP in VTAM's network may not be available until a session with the SSCP is established. Therefore, coding these operands on a CDRM statement for an other-network SSCP is optional. If you do not code these operands, VTAM determines their values when a cross-network SSCP-SSCP session is activated.

When the gateway SSCP does not have a session with the gateway NCP used to support a cross-network session with the SSCP defined by the CDRM statement, or when the SSCP is a back-level VTAM, the SUBAREA and ELEMENT operands define the alias address of the external SSCP in the VTAM network. This address is within the gateway NCP used for the session path. The SUBAREA number may be in the range 1 – 255, and the element address may be in the range 1 – 32767.

The SUBAREA operand is required if:

- CDRM is defined for the same network
- (V3R1.1) NETID is **not** specified in the START options
- (V3R2) GWSSCP=NO is specified in the START options and this CDRM is defined for cross-network sessions.

Notes:

1. If no GWPATH definition statements follow the other-network CDRM statement, you must code the SUBAREA operand on that CDRM statement.
2. If a nongateway SSCP in this network participates in an SSCP-SSCP session with a gateway SSCP in another network, you must code the GWNAU definition statement in the NCP generation deck to predefine an element address for the gateway SSCP. You must also code this element address on the CDRM statement defining the gateway SSCP to the SSCP in the non-native network. See *NCP Resource Definition Reference* and *NCP Resource Definition Guide* for more information on the GWNAU definition statement.

Interconnection: CDRM

3. In a network where a gateway NCP is connected to two hosts, one with a release of VTAM that supports extended network addressing (ENA) and one without, you must observe these rules if you want to use ENA:
 - The gateway NCP must be controlled by the host that has ENA. Code GWCTL=ONLY on the PCCU statement for that host.
 - Activate the CDRM session **only** from the host that has ENA, either by the VARY ACT command or by using a start option list.
 - The gateway NCP must be a release that supports ENA.

The ELEMENT operand has a default value of 1 for both same- and cross-network CDRMS.

For coding information, see “The CDRM Definition Statement” on page 263.

The GWPATH Definition Statement

Each GWPATH definition statement defines a possible cross-network session path between the gateway host CDRM and a CDRM in another network. One or more gateway path (GWPATH) definition statements may follow a CDRM definition statement for a CDRM in another network. The order of the GWPATH statements is the order used by VTAM when selecting the path for a given session.

For an SSCP-SSCP session, each successive gateway path between two SSCPs is tried until:

1. The SSCP-SSCP session is established, or
2. All the possible session paths have been tried unsuccessfully.

For an LU-LU session, each gateway NCP (defined by a GWPATH statement) between the two SSCPs is tried until:

1. The requesting logical unit receives a positive response to the Initiate request for the session, meaning that the requested session partner has been located, or
2. All the possible gateway NCPS (defined by the GWPATH statements for the CDRM in another network) have been tried unsuccessfully, or
3. A failure not related to the GWNCP is detected.

Selection of Alternate Gateway Paths for LU-LU Sessions

The gateway NCP used for the cross-network SSCP-SSCP session is attempted first for LU-LU session setup. If this is unsuccessful, the gateway SSCP selects another gateway NCP for the session.

During session establishment of a cross-network LU-LU session, the gateway SSCP that is controlling gateway path selection gets the list of alternate gateway NCPS defined by the GWPATH statements. If the BIND RU that flows between the requesting logical unit and the session partner fails because a virtual route required by the session cannot be activated, no further gateway path selection is attempted; the requesting logical unit is informed in an appropriate exit routine. See *VTAM Programming* for a description of LU-LU session establishment.

If you have supplied a session management exit routine to shorten or reorder the list of gateway NCPS, the gateway SSCP uses that altered list to establish the LU-LU session path. For details, see *VTAM Customization*.

The GWPATH definition statement is required for all gateway SSCPs that initiate cross-network SSCP-SSCP sessions. If no GWPATH statements follow a CDRM statement for a CDRM in another network, you must code the SUBAREA operand on that CDRM statement. VTAM determines the gateway NCP to use from the SUBAREA value for the CDRM.

The operands on the GWPATH statement are listed here in alphabetical order for easy reference. However, you may find it easier to study and code them in this order: GWN, SUBAREA, ELEMENT, ADJNET, ADJNETSA, and ADJNETEL.

Name	Definition Statement	Operands
[name]	GWPATH	[ADJNET = adjacent network ID] [ADJNETEL = adjacent network element 1] [ADJNETSA = adjacent network subarea] [ELEMENT = element address 1] [GWN = gateway NCP name] [SUBAREA = subarea address]

name

identifies this GWPATH statement in error messages from the VTAM system definition processor. This operand is optional.

ADJNET = adjacent network ID

is the ID of the network that is adjacent to the gateway SSCP's network for this cross-network session path to the CDRM through the associated gateway NCP. The gateway NCP is determined by the GWN operand or from the SUBAREA operand.

If it is not coded, the adjacent network defaults to the ID of the network defined on the preceding NETWORK definition statement. The value coded must not be the same as the host's network ID.

Note: In back-to-back configuration, if multiple GWPATH statements are filed describing multiple GWN paths to the same CDRM, and these statements specify the same ADJNET, the ADJNETSA and ADJNETEL values must agree on all the GWPATH statements.

ADJNETEL = adjacent network element|1

is the element address of the CDRM for the adjacent network. ADJNETEL may be 1 – 32767.

You must code ADJNETEL if the actual network of the CDRM is not the same as ADJNET and the default value of 1 is not correct.

Code ADJNETEL for all GWPATH statements. Its value should be the same as that defined on the ELEMENT operand of the GWNAU definition statement. If the GWNAU definition statement is not coded, ADJNETEL should be the same as the element number of the adjacent SSCP.

ADJNETSA = adjacent network subarea

is the subarea address of the CDRM for the adjacent network. ADJNETSA may be 1 – 255. Code ADJNETSA for all GWPATH definition statements.

ADJNETSA is required when:

1. The actual network of the CDRM is not the same as the adjacent network (that is, a back-to-back configuration).

In this case, the subarea of the gateway NCP in the adjacent network is used as the gateway to the network that contains the SSCP being defined. If you considered the gateway NCP named by the GWN operand as the first one on the path to the SSCP being defined, this ADJNETSA value identifies a second gateway NCP on the session path. This second gateway NCP must contain a GWNAU definition statement for the SSCP being defined. See "The GWNAU Definition Statement" on page 361.

For ADJNETSA, code the same subarea address you coded on the SUBAREA operand for the BUILD or NETWORK definition statement in the second gateway NCP. The NETID value matches the adjacent network ID.

2. The CDRM being defined is within the adjacent network **and** this host wants to be able to initiate SSCP-SSCP sessions.

In this case, code ADJNETSA as the real subarea address of the CDRM within its network.

If you do not code the ADJNETSA operand, it must be coded in the external CDRM's definition of the VTAM host CDRM, and the external CDRM must initiate the SSCP-SSCP session. If neither CDRM has an ADJNETSA operand, the session cannot be established.

Note: The ADJNETSA value is **not** checked against the MAXSUBA value for VTAM's network. You must ensure that the address agrees with the MAXSUBA restrictions, if any, for the adjacent network. If it does not agree, session setup requests fail.

ELEMENT = element address|1

is the element portion of the alias address for the CDRM in the VTAM network. The alias address is an address in the associated gateway NCP.

The gateway SSCP uses this value only if it does not have a session with the associated gateway NCP when it activates the CDRM for the other network. *element address* may be 1 – 32767.

If the ELEMENT defaults to 1, or if ELEMENT and SUBAREA was coded, VTAM assigns the network address to the CDRM if it is active. The network address must be unique in the network. The element address must match the element address predefined in the GWNAU definition statement for the CDRM.

GWN = gateway NCP name

is the 1 – 8 character name of the gateway NCP that may be used to access the CDRM. If PUNAME is specified in the NCP BUILD macroinstruction, *gateway NCP name* must match the PUNAME. If PUNAME is not coded, *gateway NCP name* is the name used to file the gateway NCP definition statements.

If you do not code this operand, VTAM uses the SUBAREA operand value to determine which gateway NCP it uses to access the CDRM. It is to your advantage to omit GWN if you use different node names, but the same subarea number, for a gateway NCP. (For example, the NCP might have one name in a test system and another name in a production system.) In this case, VTAM uses the subarea number when it accesses the CDRM, without regard to the node name.

SUBAREA = subarea address

is the subarea portion of the alias address for the CDRM in the network of the gateway SSCP. The alias address is an address in the associated gateway NCP. SUBAREA may be 1 – 255.

For a gateway SSCP, you must code SUBAREA if you do not code GWN. You may wish to use SUBAREA instead of GWN when the gateway NCP has different node names but always has the same subarea number. (Refer to the description of GWN above.)

The gateway SSCP uses this value if you do not code GWN, or if it does not have a session with the associated gateway NCP when VTAM activates the other-network CDRM.

Defining Cross-Domain Resources

For SNA network interconnection, a CDRSC major node consists of:

- A VBUILD statement
- Optional NETWORK definition statements
- One or more CDRSC definition statements.

For coding information, see “Defining Cross-Domain Resources” on page 267.

There are no SNA network interconnection considerations for the VBUILD statement. Considerations for the remaining statements are described below.

The NETWORK Definition Statement

The NETWORK definition statement names the network in which the logical units, represented by the CDRSC statements, reside. One or more NETWORK statements may appear anywhere after the VBUILD statement. If consecutive NETWORK statements are coded (without intervening CDRSC statements), only the last one is used.

If no NETWORK statement exists before a CDRSC definition statement, the resource is considered valid for any network. Such CDRSCs may be resources within VTAM's network or alias names for resources in another network.

Name	Definition Statement	Operands
[name]	NETWORK	[NETID = network ID]

name

identifies this statement in error messages from the VTAM system definition processor. To avoid confusion, use the same value for both *name* and the NETID operand. This operand is optional.

NETID = network ID

is an optional 1 – 8 character name that identifies the network in which the CDRSC or set of CDRSCs resides. This NETID pertains to the CDRSC or set of CDRSCs defined following the NETWORK statement and before any other NETWORK statement in the same set of definitions.

Note: In V3R2, if a CDRSC is defined with a *network ID* of the host network then the resource is considered real. (Previously, if a CDRSC was defined with the *network ID* of the host, the resource was treated as an alias.) In V3R2, a CDRSC defined with a *network ID* of the host network must reside in the host network.

Note: If VTAM is started without NETID specified (pre-V3R2), NETWORK statements are ignored.

The CDRSC Definition Statement

Name	Definition Statement	Operands
cdrsname	CDRSC	[CDRM = cdrmname] [, ISTATUS = ACTIVE INACTIVE] [, SPAN = spanname] [, VFYOWNER = YES NO] (V3R2 only)

Although no additional operands are needed on the CDRSC statement for SNA network interconnection, additional considerations do apply to the *cdrsname*.

cdrsname

The name fields of all CDRSC definition statements that are active at one time must be unique and must not conflict with other resource names in the same network.

Note: See “Defining Cross-Domain Resources” on page 267 for information on coding the other parameters.

You can define cross-domain resources in three ways:

1. You can predefine a resource using its real name and network. This is done by coding a CDRSC statement after the NETWORK statement identifying the network where the resource resides. The resource must reside in the specified network, but the session may still be established via a cross-network session using a different intermediate network.

If the CDRM operand is not coded, VTAM uses the list of default SSCPS defined in the default or network-specific adjacent SSCP table to find the next SSCP to which this request should be routed. Once the owning SSCP name is known, the CDRSC is updated with the information.

If the CDRM operand is coded, two different things happen, depending upon the level of VTAM.

- Pre-V3R2, when the CDRM is defined and the CDRSC is defined as a real logical unit residing in this network, but the CDRM does not actually own the destination LU, an attempt is made to route to the owning SSCP first. The CDRSC will be treated as a CDRSC that was predefined without network ID. After the owning SSCP is tried, the default adjacent SSCP table is used to send session setup requests until the owner is found, or the end of the list is reached.
- For V3R2, or for CDRSCS in pre-V3R2 defined for cross network resources, the CDRM operand names the SSCP that owns the resource, VTAM uses the owning SSCP name, and network ID to select the adjacent SSCP table for the session. If the CDRM operand is coded for a CDRSC in which the NETWORK statement was coded, the name in the CDRM operand **must** own the resource it is defined for. If the CDRM does not own the resource, the session will fail to set up.

Note: If this method results in a conflict because a resource in this host network and a cross-network resource have the same name, you will have to use one of the following two methods to define the CDRSC.

2. You can predefine the CDRSC so that it will satisfy either the real or alias name of another resource. In this case, if the CDRM operand is not coded, alias trans-

lation facility, or adjacent SSCP routing will be tried to find the owning SSCP name. Once the owning SSCP name is found, the CDRSC will be merged with the network ID and owning SSCP name. If the CDRSC is predefined with the name as known by the alias name translation facility, and this SSCP is not translating the name, the next SSCP must be gateway-capable in order to reroute or translate the name itself.

If the CDRSC is predefined, and the CDRM operand is coded, the SSCP name by the operand is not necessarily the SSCP that owns the resource. VTAM does not use this SSCP name to select the adjacent SSCP table. Instead, this SSCP is added to the internal adjacent SSCP list, and it becomes the first SSCP to which the session request is routed if a CDRM-CDRM session exists.

Note: This type of CDRSC is created by defining a CDRSC without NETID specified.

3. You can allow dynamic definition of a resource by coding CDRDYN=YES on the CDRM statement for this host, and CDRSC=OPT on the CDRM statement for the SSCPs adjacent to this SSCP. After the dynamic resource is built, it is treated as predefined without NETID. The network ID of the resource, and the owning SSCP name will be merged in the CDRSC when the information is learned.

Defining VTAM Requirements for the NCP

The PCCU Definition Statement

Two of the operands listed in “The PCCU Definition Statement” on page 217 apply specifically to SNA network interconnection:

- `GWCTL=ONLY|SHR`
- `NETID=host network ID.`

GWCTL = ONLY|SHR

determines whether the host's SSCP is designated to do all the gateway control functions during LU-LU session setup. `GWCTL` determines the SSCP's role only for the gateway NCP being defined, and applies only if the SSCP is on the session setup path.

Notes:

1. You may code `GWCTL=ONLY` for only one SSCP activating a particular gateway NCP. It is possible to have several `GWSSCPs` activate the same `GWNCP` with `GWCTL=ONLY` just as long as they are not along the SNI session setup path, where both `GWSSCPs` are in different networks and have SSCP-SSCP sessions with each other.
2. If the session setup path crosses two gateway SSCP's within a single gateway, either gateway SSCP may be designated to do all the gateway functions. Code `GWCTL=ONLY` on the PCCU definition statement for the gateway SSCP you choose to do all the gateway functions.
3. If the session setup path crosses three gateway SSCP's within a single gateway, only the center gateway SSCP can be designated to do all the gateway functions. Code `GWCTL=ONLY` on the PCCU definition statement for the center gateway SSCP.
4. If the session setup path crosses more than three gateway SSCP's within a single gateway, none can be designated to do all the gateway functions. You must code `GWCTL=SHR` on the PCCU definition statement for each gateway SSCP in the session setup path.
5. For pre-V3R2, if multiple SSCP's are sharing a gateway, and each is coded `GWCTL=SHR`, the session setup fails if the destination-side SSCP is not in session with the `GWNCP`.
6. For V3R2, if `GWCTL=SHR` and the destination side SSCP is not in session with the `GWNCP`, the origin side performs all gateway functions.

Gateway Control Functions: The gateway control functions, designated by the `GWCTL` operand, apply to LU-LU session setup processing.

For V3R2:

If you code `GWCTL=SHR` or let it default, control of the gateway NCP is shared. If one gateway SSCP cannot perform the gateway control function, the other SSCP will perform the function. The gateway SSCP on the destination logical unit's side of the gateway NCP does most of the gateway control function if it is in session with the gateway NCP. However, if it is not in session with the gateway NCP, the request is rejected, and the gateway SSCP on the origin logical unit's side of the gateway NCP will perform all the gateway control function. If one of the gateway SSCP's is not in session with the gateway NCP, all the gateway

control function will be done by the gateway SSCP that is in session with the NCP.

NETID = host network ID

is the 1 – 8 character name of the network of the host represented by this PCCU definition statement. It is used along with the SUBAREA operand to determine which PCCU definition statement the VTAM host should process. This operand is optional.

VTAM uses the following rules to determine which PCCU definition statement to process:

Note: For V3R2, VTAM ignores PCCU statements on which NETID is specified unless GWSSCP=YES was also specified.

1. The VTAM host processes the first PCCU definition statement whose NETID and SUBAREA operands match VTAM's.
2. If no such PCCU definition statement exists, the VTAM host processes the first one that has the same NETID as VTAM and that does not have a SUBAREA.
3. If a PCCU definition statement as described in step 1 or 2 does not exist, the VTAM host processes the first PCCU definition statement without a NETID operand but with a SUBAREA value equal to VTAM's.
4. Finally, if a PCCU definition statement as described in step 1, 2, or 3 does not exist, the VTAM host processes the first PCCU statement for which neither NETID nor SUBAREA is coded.

Considerations for VTAM Releases that Do Not Support Interconnection: More than one PCCU statement in the NCP definition may have the same SUBAREA value (but different NETID values). If the SUBAREA value is the same as that of the host, the first PCCU statement VTAM finds (without NETID specified) with that SUBAREA value is processed for that host. For this reason, be careful when providing an NCP definition to one of these releases of VTAM.

If more than one such host (each in a different network) with the same SUBAREA value processes the same set of NCP definitions, you must change the definitions in at least one of the hosts. Delete PCCU statements with matching subareas that do not apply to the host, or change their sequence so that they come after the PCCU statements that do apply.

These releases also ignore the GWCTL operand. (However, VTAM issues an informational message when it encounters GWCTL.) SSCP-SSCP sessions between one or two such VTAMs resolve shared control rules independent of the GWCTL operand.

For complete coding information for PCCU, see "The PCCU Definition Statement" on page 217.

The BUILD Definition Statement

The BUILD definition statement is described in *NCP Resource Definition Guide*. The VTAM-only operands and operands having VTAM restrictions for SNA network interconnection are described as follows:

COSTAB = class-of-service table name

This operand is an optional VTAM-only operand. It names a class-of-service table for the network identified by the NETID operand. The COS table name matches the name of the class-of-service table in the VTAM load module library. VTAM loads the table from the library, associates it with the network identified

VTAM Requirements for the NCP: BUILD

by the NETID operand, and uses it to resolve class-of-service names for cross-network sessions when the primary logical unit is represented by an alias address in the gateway NCP.

This table is also used to resolve a class-of-service name to a VR list when the operator issues the command

```
DISPLAY ROUTE,ORIGIN=ncp subarea node,COSNAME=cos name
```

NETID = network ID

If the BUILD definition statement defines a gateway NCP, and the NETID operand is the same as the gateway SSCP's NETID START option, the gateway SSCP is in the NCP's native network. The BUILD definition statement and the definition statements that follow it up until the first NETWORK definition statement define resources to the native network and are processed by this VTAM. In addition, the SUBAREA operand on the BUILD definition statement is the correct subarea address of the NCP in the gateway SSCP's network. The MAXSUBA operand also applies to the gateway SSCP's network and is consistent with the MAXSUBA value for VTAM.

If NETID is not coded on the BUILD definition statement, the NCP is not a gateway NCP, and all NETWORK definition statements in the NCP definition are ignored.

For releases prior to V3R2, if VTAM is started without a NETID, or for V3R2, if GWSSCP=NO, it is assumed that the NETID on the BUILD definition statement is the same as VTAM's network ID. Therefore, all the resources defined in the NCP definition are assumed owned by this host. If the NCP resources are not to be owned by this host, this NCP should be activated with a SCOPE=ONLY request. If only connectivity is desired to a channel-attached gateway NCP, define and activate the channel explicitly with a channel-attached data host channel definition.

If GWSSCP=YES but the NETID operand (required for V3R2) does not match the gateway SSCP's NETID (that is, if the gateway SSCP is not in the native network), the SUBAREA is processed for the given NETID when it does not match the gateway SSCP's NETID. The only BUILD definition statement operands that VTAM uses in this case are:

- SUBAREA
- LOADLIB and NEWNAME (the operands needed to load the resource resolution table)
- COSTAB (the operand needed to control the gateway NCP)
- MAXSUBA (applies only to pre-ENA communications).

In addition, since resources attached to the NCP can only be controlled by an SSCP in another network (since NETIDs do not match), everything following the BUILD definition statement is ignored by VTAM **except**:

- The SYSCNTRL definition statement
- The HOST definition statement
- The NETWORK definition statement.

Considerations for VTAM Releases that Do Not Support Interconnection: Such a VTAM in a non-native network can activate an NCP if its MAXSUBA and SUBAREA values are compatible with those used within the native network. If the MAXSUBA and SUBAREA values for the non-native network are not compatible with those in the native network, VTAM cannot activate the NCP.

If the values do not match, when the NCP is link-attached to the host, you can delete the NCP major node member from that host's VTAMLST file (or SYS1.VTAMLST data set). The network can still be accessed.

If the NCP is channel-attached to the host, change the SUBAREA and MAXSUBA values in the BUILD definition statement filed in the host to values that are appropriate for its network, if possible. In addition, for a channel-attached NCP, the operands that exist on the first HOST definition statement with a SUBAREA value corresponding to the host's SUBAREA (without NETID specified) are used. If necessary, also change the operands on the HOST definition statement. If the NCP resources are not to be owned by the host, this NCP should be activated only with a SCOPE=ONLY request, and only to activate the NCP major node.

The HOST Definition Statement

The HOST definition statement is described in *NCP Resource Definition Guide*. It describes the operands that have VTAM restrictions for SNA network interconnection.

More than one HOST definition statement may exist in the NCP major node. VTAM determines which HOST definition statement applies to the VTAM host.

NETID = network ID

is the 1–8 character name of the network of the host represented by this HOST definition statement. It is used along with the SUBAREA operand to determine which HOST statement the VTAM host should process. This operand is optional.

VTAM uses the following rules to determine which HOST definition statement to process:

1. The VTAM host processes the first HOST definition statement whose SUBAREA operand matches VTAM's and whose NETID matches VTAM's.

Note: For V3R2, VTAM ignores HOST statements on which NETID is specified unless GWSSCP=YES was also specified.

2. If HOST definition statements as described in step 1 do not exist, the VTAM host processes the first HOST definition statement that has the same SUBAREA value as VTAM and that does not have a NETID specified.

Note: A match is made on the SUBAREA when the value coded for the SUBAREA matches the value of VTAM's SUBAREA or when the SUBAREA is not coded and VTAM's subarea is 1 because the default for SUBAREA is 1.

Defining a Cross-Network Controlling Primary Logical Unit: Using the LOGAPPL operand, you can define a cross-network controlling primary logical unit for any LU in a PU type 1.0, type 2.0, or type 2.1, either local or remote, switched or non-switched.

The effect is the same as if a same-network CDRSC were the controlling primary logical unit, except that the resulting session is cross-network rather than same-network.

For coding information, see the appropriate section in Chapter 5, "Defining the Network to VTAM" on page 59, for defining major nodes and *NCP Resource Definition Reference*.

For information on deferred session setup, see "Deferred Session Setup" on page 320.

VTAM Requirements for the NCP: HOST

vse Considerations for VTAM Releases that Do Not Support Interconnection: For a channel-attached NCP, the operands on the first HOST statement with a SUBAREA value corresponding to the host's subarea (without NETID specified) are used. If necessary, change the operands on the HOST definition statement.

This restriction applies only to hosts that are running VSE releases of VTAM.

The NETWORK Definition Statement

The NETWORK definition statement is described in *NCP Resource Definition Guide*. The VTAM-only operands and the operands that have VTAM restrictions for SNA network interconnection are described here.

You may include more than one NETWORK definition statement in the NCP major node to identify each network attached to a gateway NCP. The native network of the NCP, however, is identified by the NETID operand on the BUILD definition statement. If VTAM is started without a network ID³ or if NETID is not coded on the BUILD definition statement, NETWORK definition statements within the NCP definition are ignored. Otherwise, VTAM uses the following operands:

COSTAB = class-of-service table name

names a class-of-service table for the network identified by NETID. This VTAM-only operand is optional and is processed regardless of which network corresponds to the NETWORK definition statement

If this operand is omitted, the default COS table is ISTSDCOS.

In V3R2, the MODIFY TABLE operator command lets you dynamically replace a class-of-service table. See *VTAM Operation*.

MAXSUBA = n (for communication with pre-Version 3 nodes only)

is the MAXSUBA start option value used for the network identified by NETID. *n* is the highest subarea value (in decimal) that can be assigned to any pre-Version 3 node in this network. A pre-Version 3 node is either a host processor running a version of VTAM, **or** a communication controller running a version of NCP, for which extended network addressing is not supported. *n* is an integer 1 – 255. If you code MAXSUBA, the range of its values must be the same for all nodes in the same network. That is, the MAXSUBA values must all use the same number of bits. In networks where there are no pre-Version 3 nodes, you do not need to code this option.

See *Network Program Products Planning* for considerations when coding this operand.

SUBAREA = subarea address

is the subarea address that represents the gateway NCP to the network being defined. This subarea is unique only in the network being defined by this NETWORK definition statement.

NETID = network ID

is the 1 – 8 character network identifier of the non-native network in which the gateway SSCP resides. If the value for NETID matches the value of VTAM's NETID START option, then VTAM uses the MAXSUBA value on this statement as the maximum subarea value, and the SUBAREA value is the actual subarea for the gateway NCP representation in the VTAM network.

The GWNAU Definition Statement

The GWNAU definition statement is an NCP-only definition statement. It is described in *NCP Resource Definition Guide*. However, appropriate coding of this statement determines whether VTAM can activate SSCP-SSCP sessions in some configurations.

³ For V3R2, a network ID is required.

VTAM Requirements for the NCP: GWNAU

In the following cases, the SSCP that establishes a cross-network session with another SSCP must know that SSCP's alias address within the gateway NCP before it can send any session setup requests for the SSCP-SSCP session:

1. An SSCP can neither send nor receive a request to establish a session with another SSCP unless it knows both that SSCP's subarea and element addresses. A nongateway SSCP cannot get the address from the gateway NCP; thus, the nongateway SSCP depends on the GWNAU definition statement corresponding to the other-network SSCP to supply the alias address. You can code this address on the SUBAREA and ELEMENT operands of the CDRM definition statement that defines the other-network SSCP to the nongateway host.
2. In a back-to-back gateway configuration, a gateway SSCP must be able to tell its gateway NCP what address represents the other-network SSCP in the second gateway NCP. The address in the GWNAU definition statement for the other-network SSCP in the second gateway NCP is the same as that in the ADJNETSA and ADJNETEL operands of the GWPATH definition statement following the CDRM statement that defines the other-network SSCP to the gateway host.

Sometimes a request may arrive at a gateway NCP before VTAM has determined the address. In this case, the gateway NCP rejects the request. At the same time, the NCP signals the destination SSCP to set up the session. The NCP knows the address of the destination SSCP only if the SSCP name in the GWNAU definition statement for the alias address to which the ACTCDRM request is sent matches an SSCP name that the NCP received in an ACTPU request. This SSCP name sent in an ACTPU request from a VTAM gateway SSCP is determined by the SSCPNAME start option.

Defining VTAM Start Options

The SSCPID Start Option

SSCPID = n

is a decimal integer 0–65535. It is part of an SSCP identifier used when a PU or external CDRM establishes contact with VTAM. This parameter is required.

It is advisable, but not required, for the SSCPID in each network and each connecting network to be unique. If the SSCPs within a network do not have cross-network sessions, then the SSCPIDs are not required to be unique. If the SSCPs do have cross-network sessions, then the SSCP for each end of the cross-network sessions must have a different SSCPID. If multiple SSCPs in one network have the same SSCPID, they cannot all have a session with the same SSCP in another network.

VTAM uses the SSCPID value to construct an identification sequence that is sent to a PU when a session is established using the SNA ACTPU command. In a multiple-domain network, it is also sent to another CDRM when a session is established by the SNA ACTCDRM command. The PU or cross-domain resource manager can thereby identify the SSCP with which it is in session.

The GWSSCP Start Option (V3R2 Only)

GWSSCP = YES|NO

tells VTAM whether the SSCP is a gateway-capable SSCP.

YES

is the default. GWSSCP=YES allows the SSCP to:

- Use the alias name translation facility
- Reroute initiation requests
- Perform gateway functions in a session setup path.

NO

this SSCP:

- Cannot use the alias name translation facility
- Cannot reroute initiation requests; hence, it cannot be an intermediate SSCP in the session setup path
- Cannot perform the main gateway functions.

Note: For V3R2, the SSCP can still accept CDRSCS defined with NETID.

The NETID Start Option (Required for V3R2)

NETID = network ID

is the 1–8 character name of the network containing the host. NETID should be unique within a set of interconnected networks.

The network ID allows VTAM to determine which gateway NCP definition statements apply to the gateway host. The gateway SSCP also uses the network ID when sending and receiving cross-network requests.

Both NETID and SSCPNAME are required in a gateway configuration. If you code one without the other you will receive a reminder at initialization that you must code the missing operand if VTAM is to serve as a gateway SSCP. For V3R2 gateway SSCPs, GWSSCP=YES is also required.

Start Options: SSCPNAME

For pre-V3R2:

Code NETID whenever VTAM is participating in cross-network sessions, regardless of whether the SSCP is to be a gateway SSCP. If you do not code NETID, VTAM uses only the subarea value to determine which NCP definition statements apply to the gateway host and considers its network ID to be 8 blanks. If you do not code NETID, VTAM processing of the NCP, adjacent SSCP tables, and the CDRM and CDRSC major nodes is affected. (For details see the sections about defining these major nodes in this chapter and in Chapter 5, "Defining the Network to VTAM" on page 59.) In addition, display output includes NETID information only if you specify NETID when you start VTAM.

The SSCPDYN Start Option

SSCPDYN = YES|NO

determines whether VTAM is to add entries dynamically to the adjacent SSCP table.

If SSCPDYN=YES, which is the default, VTAM adds a new entry to a cross-domain resource's adjacent SSCP table whenever it receives a session initiation request from the resource through an SSCP that is not already in the table.

If SSCPDYN=NO, VTAM does not add new entries **unless** it is the owner of the resource. In this case, VTAM adds the name of the owner to the table. Ownership is determined by the CDRM operand of the CDRSC definition statement, or by session initiation.

Note that, if you set SSCPDYN=NO, you may have to define additional adjacent SSCP tables yourself. When an application issues a CLSDST PASS macroinstruction during session setup, VTAM does **not** build an adjacent SSCP table in the application's network. (When SSCPDYN=YES in the application's network, VTAM builds such a table automatically.)

This START option is closely related to SSCPORD. "Using SSCPDYN and SSCPORD to Improve Performance" on page 338 contains information on how you can use them together to get optimum performance.

The SSCPNAME Start Option (Required for V3R2)

SSCPNAME = name

is the 1–8 character name of the VTAM SSCP. For pre-V3R2, this option is required if VTAM is to be a gateway SSCP although it is recommended for all SSCPS. For V3R2, this START option is required.

Both NETID and SSCPNAME are required in a gateway configuration. If you code one without the other, you will receive a reminder at initialization that you must code the missing operand if VTAM is to serve as a gateway SSCP. For V3R2 gateway SSCPS, GWSSCP=YES is also required.

Below are three items to consider when coding the SSCPNAME START option. The first and third items are **requirements**. The second item is a suggestion to improve usability and ease network management.

1. The SSCPNAME **must** be the same as the name on the NAME operand of the corresponding GWNAU definition statement, if one is coded. (The GWNAU definition statement is used in the gateway NCP generation to predefine the gateway SSCP's alias network address within the gateway NCP.)
2. The SSCPNAME should match the name on the host CDRM statement.

3. The SSCPNAMES and CDRM names must be unique among SSCPS that will participate in cross-domain or cross-network sessions.

The SSCPNAME is sent to the gateway NCP in the ACTPU request that establishes the SSCP-NCP session and in the request to translate the network address for the SSCP-SSCP session. The gateway NCP uses the name to select the correct GWNAU definition to represent the SSCP.

For more information on the GWNAU definition statement, see *NCP Resource Definition Guide*.

The SSCPORD Start Option

SSCPORD = PRIORITY|DEFINED

determines whether VTAM is to search an adjacent SSCP table in priority order (the default) or in the order in which the table is defined.

Priority order means that VTAM gives preference to SSCPS for which the most recent session initiation attempt succeeded, or for which no sessions have been tried. Note that when a CDRM-CDRM session fails, the entry for that CDRM in the table is marked "failed" and cannot be used until all other entries have been tried or the CDRSC is deactivated.

Defined order means that VTAM scans the table in the same order that SSCPS are listed, regardless of whether past session initiation attempts were successful, with the exception that the owner, if known, is tried first.

This START option is closely related to SSCPDYN. "Using SSCPDYN and SSCPORD to Improve Performance" on page 338 contains information on how you can use them together to get optimum performance.

Start Options: SSCPORD

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Chapter 8. Verifying the Installation

Overview of the Process

This chapter contains procedures to verify that VTAM is installed properly. You do not need to do every step in the procedures; they are only suggestions of things you can do to “exercise” your newly installed system.

The command syntax and some of the terminology are oriented toward MVS systems; some of the material does not apply if you have a VSE or VM system.

When you follow the procedures in this chapter, be sure that ISTATUS=INACTIVE for all resources. Lowercase names in commands are placeholders; you should substitute the actual names of resources in your system.

If these procedures do not yield the expected results, double-check the definition statements for the resources that are affected. If this does not solve the problem, refer to *VTAM Diagnosis Guide (V3R1 and V3R1.1)* or *VTAM Diagnosis (V3R2)* for help.

Verifying Single-Domain Systems

Now that you have entered all statements coded during the installation phase, you can exercise the components together as a network.

To verify a single-domain system, follow these steps:

1. Start VTAM and start the appropriate trace facility (such as MVS GTF or VM CPTRAP).
2. Activate a channel-attachment major node, begin tracing, and activate lines and peripheral physical units.
3. Activate an NCP, begin tracing and intensive mode error recording, and verify that you can dump the NCP.
4. Start the NetView program (or start NCCF, NLDM, and NPDA) if it is installed.
5. Activate a switched major node and begin tracing for the physical units.
6. Transmit the SNA terminal subsystem program from the host to a peripheral physical unit.
7. Start the SNA terminal subsystem program at the physical unit.
8. Start the VTAM or host subsystem application programs.
9. Start VTAM traces and activate the logical units at the peripheral physical unit.
10. Verify peripheral terminals and links.
11. Verify the route structure.
12. Verify sessions between application programs and logical units.
13. Activate and verify additional physical units and NCPs.
14. Simulate normal operation with all physical units.

15. Try backup and recovery procedures.
16. Halt VTAM.

Step 1: Start VTAM and Start the Trace Facility

For example, enter S NET at the VTAM operator's console where NET is a cataloged procedure defined for starting VTAM. For a sample start procedure, see Figure 14 on page 26.

If you have placed PROMPT in the ATCSTR00 start parameter list, VTAM prompts the operator to give any overriding parameters.

If there is an initial configuration list, all the major nodes listed are activated. This can include any VTAM application program. If any major nodes in this list define NCP major nodes or channel-attachment major nodes, the beginning of the list must have the sets of path definition statements that define the routes to these subarea nodes.

MVS VTAM uses the generalized trace facility (GTF) to record VTAM trace records. To start GTF, enter:

```
S gtfprocname
```

Refer to:

- *VTAM Operation*
- *OS/VS2 System Programming Library: Service Aids.*

VM VTAM uses CPTRAP to externally record VTAM trace records. Refer to *VTAM Diagnosis Guide (V3R1 and V3R1.1)* or *VTAM Diagnosis (V3R2)* for information on how to start traces in a VM environment.

Note: If you plan to interconnect networks, specify the following VTAM host start options:

- For pre-V3R2; NETID and SSCPNAME
- For V3R2; NETID, SSCPNAME, and GWSSCP=YES.

This is required for SSCPs that act as gateway SSCPs.

Step 2: Activate a Channel-Attachment Major Node, Begin Tracing, and Activate Lines and Peripheral PUs

To activate the major node, enter:

```
V NET,ACT,ID=major node name
```

To activate the I/O trace to all nodes defined under the channel-attachment major node, enter:

```
F NET,TRACE,ID=major node name,E,TYPE=IO
```

After you initiate the trace, enter the following to activate each nonswitched line and PU:

```
V NET,ACT,ID=linename
```

```
V NET,ACT,ID=puname
```

Step 3: Activate an NCP, Begin Tracing and Intensive Mode Recording, and Verify that You Can Dump the NCP

You should detect errors as early as possible when you verify the elements of the network. VTAM traces and the intensive mode error recording facility are useful now. (The intensive mode error recording facility records both temporary and permanent errors from a physical unit.)

You can use the following sequence to begin the VTAM internal and buffer traces:

```
F NET,TRACE,TYPE=VTAM,OPTION=ALL,MODE=EXT
```

```
F NET,TRACE,ID=VTAM,TYPE=BUF
```

```
F NET,TRACE,ID=ISTPUS,TYPE=BUF
```

You should also verify, for future debugging, that you can dump the NCP. You can, if you wish, dump the NCP now. Refer to “Step 2: Dump the NCP and Print the Dump” on page 379.

To verify that you can dump the NCP, make sure that you have correctly coded the following operands on the NCP PCCU definition statement:

- DUMPDS should name a file to receive the dump records. For more information about defining an NCP dump data set, see “NCP Dump Data Set” on page 25.
- DUMPSTA should name an adjacent link station through which you dump the NCP.

For information on coding these operands, see “Defining Network Control Program (NCP) Major Nodes” on page 216.

To activate path definition statements that define routes to NCPs, enter:

```
V NET,ACT,ID=path set name
```

To activate a channel-attached NCP, enter:

```
V NET,ACT,ID=ncpname
```

To start tracing of I/O by the NCP, enter:

```
F NET,TRACE,ID=ncpname,TYPE=IO
```

To activate the I/O trace to the physical unit, enter:

```
F NET,TRACE,ID=puname,TYPE=IO
```

To activate the nonswitched line and the physical unit, enter:

```
V NET,ACT,ID=linename
```

```
V NET,ACT,ID=puname
```

To begin intensive mode error recording for the physical unit, enter:

```
F NET,IMR,ID=puname,OPT=ACT,RECLIM=m
```

where *m* is the maximum number of temporary errors to be recorded.

Step 4: Activate the NetView Program (or NCCF, NLDM, and NPDA)

If you have the NetView program (or the NCCF, NLDM, and NPDA licensed programs) installed, activate them. The manuals for those programs contain verification procedures.

Step 5: Activate a Switched Major Node and Begin Tracing for the PUs

To activate a switched major node, defining switched resources to VTAM, enter:

```
V NET,ACT,ID=switched major node name
```

To begin VTAM tracing of I/O to the physical unit, enter:

```
F NET,TRACE,ID=puname,TYPE=IO
```

To activate a dial-in line and put it in answer mode, enter:

```
V NET,ACT,ANS=ON,ID=linename
```

To activate the physical unit, allowing VTAM to accept a dial-in request, enter:

```
V NET,ACT,ID=puname
```

When the device dials in, its connection to VTAM is established.

For a physical unit with dial-out capability, VTAM dials out when a request is made to establish a session with one of its logical units. Refer to *VTAM Operation* for more information.

Step 6: Transmit the SNA Terminal Subsystem Program from the Host to a Peripheral PU

Before verifying communication between the host and the SNA terminal subsystem program, you may prefer to verify communication between an existing application program in the host and a nonprogrammable device, like a 3270 or 3767. Refer to *VTAM Operation* and the SNA terminal subsystem publications for details.

Step 7: Start the SNA Terminal Subsystem Program at the PU

The SNA terminal subsystem publications contain instructions for this step.

Step 8: Start the VTAM or Host Subsystem Application Programs

For each application program, enter:

```
START app1name
```

Step 9: Start VTAM Traces and Activate the LUs at the Peripheral PU

To begin tracing, enter:

```
F NET,TRACE,ID=luname,TYPE=IO
```

```
F NET,TRACE,ID=luname,TYPE=BUF
```

To activate each logical unit, enter:

```
V NET,ACT,ID=luname
```

Step 10: Verify Peripheral Terminals and Links

As you activate resources of the network, you can apply the logical unit connection and link level 2 verification procedures.

Verifying Logical Unit Connection

To verify the session between the logical unit and its owning SSCP, from the terminal logical unit enter:

```
IBMTEST n,data
```

Where *n* is a number 1–255 (with a default of 10), and *data* is a string of up to 255 EBCDIC characters. The SSCP returns the data *n* times, each time preceded by the word IBMECHO.

The IBMTEST command does not verify that the logical unit can establish a session with an application program; it verifies only that the SSCP-LU session is working properly.

Verifying a Nonswitched SDLC Link

You can verify a nonswitched SDLC link between:

- A communication controller and a cluster controller
- Two communication controllers.

To verify the link, first deactivate the link station or physical unit through the SSCP that owns the link, then enter:

```
F NET,LL2,ID=station-name,...
```

You can also add data to send over the link and decide how often it should be sent. You receive:

- The number of test frames transmitted by the host or communication controller
- The total number of test frames returned to the host or communication controller
- The number of test frames returned that were without error.

Step 11: Verify the Route Structure

Enter:

```
D NET,ROUTE,DESTSUB=n,TEST=YES
```

This identifies and verifies available routes going to destination subarea *n*. You can display and verify:

- All explicit routes (ERS) to the destination subarea (ER=ALL)
- All ERS to the destination subarea that have a specific number (ER=*n*)
- All virtual routes (VRs) to the subarea that are named in a COS table entry (COSNAME=*n*)
- All VRs that have a specific number (VR=*n*)
- All the ERS that are associated with the VR you name.

Step 12: Verify Sessions between Application Programs and LUs

Once a logical unit is activated, you should verify it in session with an application program. You should verify:

- Session-initiation procedures, using different logons (if any)
- Message transfer between the application program and the logical unit, including all types of data traffic
- Session termination, using different logoffs (if any)
- Normal error handling, such as conditions that require operator intervention.

Step 13: Activate and Verify Additional PUs and NCPs

Do “Step 2: Activate a Channel-Attachment Major Node, Begin Tracing, and Activate Lines and Peripheral PUs” on page 370 through “Step 9: Start VTAM Traces and Activate the LUs at the Peripheral PU” on page 372 for additional physical units and logical units in the system. Verify one physical unit at a time.

To activate a local SNA major node, enter:

```
V NET,ACT,ID=local SNA major node name
```

To begin tracing, enter:

```
F NET,TRACE,ID=puname,TYPE=IO
```

To activate the physical unit, enter:

```
V NET,ACT,ID=puname,U=channel device address
```

Note: The U operand is not needed if there is a CUADDR operand in the PU statement in the local definition.

To activate a local non-SNA 3270 major node, enter:

```
V NET,ACT,ID=major node name
```

To begin tracing, enter:

```
F NET,TRACE,TYPE=IO,ID=terminal name
```

To activate the 3270 Controller, enter:

```
V NET,ACT,ID=terminal name
```

Step 14: Simulate Normal Operation with All PUs

Do the previous step, using all or several physical units at the same time. In other words, simulate normal operation.

Step 15: Try Backup and Recovery Procedures

Simulate error conditions in the domain. Try all planned backup and recovery procedures to verify their effectiveness.

Try each of the methods for switched network backup. You can find information about line backup using dynamic reconfiguration, and switched network backup with switched major nodes, in *Network Program Products Planning*.

Step 16: Halt VTAM

Using the VARY INACT operator command, deactivate each major and minor node in the network. Halt VTAM with the HALT command.

It is good idea to try all the different options in each command, and all the possible situations. For example, in deactivating an NCP, you might:

- Deactivate any link-attached NCP alone.
- Deactivate any link-attached NCPs and then the channel-attached NCPs to which they are attached.
- Deactivate each channel-attached NCP. Verify that the operator receives route failure notification for routes to NCPs that are link-attached to the channel-attached NCPs. (If you activate a channel-attached NCP, its link-attached NCPs should be active.)
- Issue VARY INACT commands using the I, F, R, U, or G parameter, and the CDLINK=ACT operand.

Note: The G parameter is valid for VTAM V3R2 only.

Verifying Multiple-Domain Systems

After you finish the steps in “Verifying Single-Domain Systems” on page 369 for each domain in the network, do the steps in this section. You can make a list of the most important normal and backup operations in your system, and verify each of them one at a time. Then verify the system over a length of time, as in normal operation.

To verify a multiple-domain system, follow these steps:

1. Activate cross-domain paths, links, cross-domain resource managers (CDRMs), and cross-domain resources (CDRSCs).
2. Verify cross-domain sessions by exchanging requests across domains between terminals and hosts and between application programs.
3. Verify the NetView program (or NCCF, NLDM, and NPDA) if it is installed.
4. Verify host backup using a channel-attached shared NCP.
5. Verify host backup over a cross-domain link.
6. Verify automatic SSCP-SSCP session restart.
7. Halt VTAM in each domain.

Step 1: Activate Cross-Domain Paths, Links, CDRMs, and CDRSCs

Besides the resource activation you did in “Verifying Single-Domain Systems” on page 369, you must activate at each host:

- Cross-domain links (LINE and PU link station minor nodes) in the NCP and channel-attachment major nodes
- The VTAM path tables
- CDRM and CDRSC major and minor nodes.

Activate PATH statements in the VTAM hosts first. To do so, enter:

```
V NET,ACT,ID=path set name
```

For an SSCP-SSCP session to be established:

- The host CDRMs in both domains must be active.
- Routes between the SSCPs must be active.
- In one host, the minor node CDRM name for the other host must be activated.

A message at each host confirms that the session is established.

Step 2: Verify Cross-Domain Sessions

Having activated cross-domain definitions, try to establish a session between a terminal in one domain and an application program in another domain.

Verify cross-domain sessions between application programs by starting an application program in each host and having one establish a session with the other.

Step 3: Verify the NetView Program (or NCCF, NLDM, and NPDA)

If you have the NetView program (or the NCCF, NLDM, and NPDA licensed programs) in your system, it should already be active. The manuals for those products contain procedures for verifying them in a multiple-domain network.

Step 4: Verify Host Backup Using a Channel-Attached Shared NCP

If you want one host to back up another host that shares a channel-attached NCP, simulate the failure of the main host. (Resources to be backed up must already be defined in the NCP definition major node for the backup host.)

You can do this by having the main host issue:

```
VARY NET,INACT,ID=cua-L
```

(where *cua-L* is the name of a channel-link station leading to the shared NCP) for the NCP. The backup host should issue the required activation commands and then communicate successfully with the acquired resources.

Step 5: Verify Host Backup over a Cross-Domain Link

Do the previous step from a backup host attached by an SDLC link to the NCP owned by the main host. To simulate a host failure, deactivate all channel link stations at the main host that are in routes leading to the NCP.

Step 6: Verify Automatic SSCP-SSCP Session Restart

Ensure that each SSCP-SSCP session restarts automatically after a failure when both SSCPs have RECOVERY=YES coded (or defaulted) in their CDRM major node definitions.

Step 7: Halt VTAM in Each Domain

Using HALT commands, ensure that each domain halts successfully.

MVS VM **Verifying Interconnected SNA Networks**

This section is for verifying SNA interconnected networks only.

After you finish the steps in “Verifying Single-Domain Systems” on page 369 and “Verifying Multiple-Domain Systems” on page 375 for each network, do the steps in this section.

To verify SNA interconnected networks, follow these steps:

1. Activate each gateway SSCP and gateway NCP.
2. Activate major nodes required for cross-network sessions.
3. Establish required cross-network SSCP-SSCP sessions.
4. Verify cross-network sessions by exchanging requests across networks between terminals and hosts and between application programs.
5. Verify termination processing when an SSCP-SSCP or SSCP-gateway NCP session is deactivated.
6. Try backup and recovery procedures.
7. Verify the NetView program (or NCCF, NLDM, and NPDA) if it is installed.
8. Halt VTAM in each domain in each network.

Most operational functions done in this section are very similar to the ones you did in “Verifying Multiple-Domain Systems” on page 375.

Step 1: Activate Each Gateway SSCP and Gateway NCP

Start each gateway SSCP that is used exclusively for interconnecting networks. (All other SSCPs should already be started.) The procedure is the same as for starting any other SSCP except that:

- For pre-V3R2, the NETID and SSCPNAME
- For V3R2, the NETID, SSCPNAME, and GWSSCP= YES

start options are required.

At each gateway SSCP that controls a gateway NCP, activate the gateway NCP if it is not already active. This will give the gateway SSCP information about the networks sharing that gateway NCP.

Step 2: Activate Major Nodes Required for Cross-Network Sessions

At each host that contains an SSCP that will have a session with an SSCP in another network, activate CDRM major nodes that contain CDRM statements for cross-network SSCPS.

If you have predefined cross-network resources at a host, activate the CDRSC major nodes that define cross-network resources.

If needed, activate adjacent SSCP tables in the gateway hosts.

If name translation is required, you must activate the alias name translation facility defined in the ALIASAPL APPL definition statement (or a user-written name translation facility).

All these activations are done in addition to the ones you did in the single-domain and multiple-domain procedures.

Step 3: Establish Required Cross-Network SSCP-SSCP Sessions

For each host that contains an SSCP that will have a session with an SSCP in another network, activate the CDRM minor nodes (within the CDRM major nodes) that represent cross-network or additional cross-domain SSCPs with which the host requires a session. These SSCP-SSCP sessions are necessary for cross-network LU-LU sessions to be established.

Step 4: Verify Cross-Network Sessions

Establish an LU-LU session between a terminal or application program in one network and an application program in another network.

Since a session may cross several networks, more than two SSCPs may be needed to establish the session. Therefore, you should be familiar with the configuration and establish LU-LU sessions that represent various session possibilities.

Consider using a large number of LU-LU sessions. You can determine that number by estimating the average number of cross-network sessions through a specific gateway NCP. This is done to assure the system programmer that the gateway NCPs are able to handle the expected number of cross-network sessions.

If you have alternate gateway paths defined, establish LU-LU sessions on them.

If you have alternate paths to other networks, issue a series of activate and deactivate commands for the CDRMs named in the ADJSSCP statements in the adjacent SSCP tables that represent gateway SSCPs. This procedure forces LU-LU sessions to use alternate paths for session setup and shows you which adjacent SSCP provides the most efficient session setup.

Step 5: Verify Termination Processing

Terminate various cross-network SSCP-SSCP sessions and SSCP-gateway NCP sessions. Ensure that active cross-network LU-LU sessions continue without the cross-network SSCP-SSCP session. Ensure, also, that cross-network LU-LU sessions that use an alternate gateway NCP (not the gateway NCP whose session with the owning SSCP has been deactivated) continue.

Step 6: Try Backup and Recovery Procedures

Simulate error conditions in the interconnected networks. Verify all cross-network backup and recovery procedures.

Step 7: Verify the NetView Program (or NCCF, NLDM, and NPDA)

If you have the NetView program (or the NCCF, NLDM, and NPDA licensed programs) in your system, ensure that all necessary monitor sessions can be established. Ensure that correct session monitor definitions are provided for cross-network sessions. Determine that your domain's session monitor has defined proper authorization for viewing configuration data from session monitors in other domains.

Verify that the session monitor display panels contain accurate information about the cross-network LU-LU sessions that are activated.

Exercise the trace functions of the session monitor. See *NetView Diagnosis* or *NLDM Installation and Operation* for a discussion of these functions.

Step 8: Halt VTAM in Each Domain in Each Network

Using HALT commands, make sure that each VTAM halts successfully.

Note: If you issue the HALT command at a gateway host that is currently controlling a gateway NCP, that gateway NCP is deactivated. Any cross-network SSCP sessions with the gateway SSCP are also terminated, and cross-network LU-LU sessions supported by the gateway SSCP are ended.

Verifying Diagnostic Procedures

Even if you complete all the procedures without encountering errors, it is a good idea to print the trace and error records that have been gathered. It is also useful at the end of the installation process to dump an NCP and print the dump.

Step 1: Print Trace and Error Records

Follow the instructions in *VTAM Diagnosis Guide* (v3R1 and v3R1.1) or *VTAM Diagnosis* (v3R2) to print trace and error records.

Step 2: Dump the NCP and Print the Dump

By dumping the NCP and printing it, you can see how the dump is formatted and what information it contains. This helps you make better use of it during subsequent debugging. You can dump the NCP and print it any time during the procedure in "Verifying Single-Domain Systems" on page 369. (You cannot, however, dump an NCP attached by a channel to a data host.)

To dump the NCP, enter:

```
MODIFY NET,DUMP,ID=ncpname
```

This puts the NCP dump records in the file named in the DUMPDS operand in the PCCU definition statement.

If the NCP fails during any of the procedures and AUTODMP is coded in the PCCU definition statement, you are asked whether you want to dump the NCP. Reply YES or NO to the message and, if YES, print the dump.

For more information on how to dump the NCP, refer to *NCP Diagnosis Guide*.

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Appendix A. Quick Reference for VTAM Definition Statements

The following quick reference chart lists VTAM definition statements and their operands.

This list does not include any NCP definition statements.

Name	Definition Statement	Operands	Restrictions
name	ADD	TO = resource name	For dynamic reconfiguration only.
cdmname	ADJCDRM		
name	APPL	[ACBNAME = acbname] [,APPC = (YES NO)] (V3R2) [,AUTH = ([ACQ NOACQ] [,CNM NOCNM] [,PASS NOPASS] [,PPO SPO NOPO] [,TSO NOTSO] mvs [, VSPACE NVPACE]]) [,AUTHEXIT = (YES NO)] vm [,AUTOSES = n 0] (V3R2) [,DDRAINL = ALLOW NALLOW] (V3R2) [,DLOGMOD = default logmode entry name] [,DMINWNL = n 1] (V3R2) [,DMINWNR = n 1] (V3R2) [,DRESPL = ALLOW NALLOW] (V3R2) [,DSESLIM = n 2] (V3R2) [,EAS = n 509 (V3R2) 491 (pre-V3R2)] [,ENCR = SEL REQD OPT NONE] mvs [,HAVAIL = YES NO] mvs/XA [,LMDENT = n 19] (V3R2) [,MAXPVT = 0 n nK nM] mvs VM [,MODETAB = logon mode table name] [,PARSESS = YES NO] [,PRTCT = password] [,SECACPT = NONE CONV] (V3R2) [,SONSCIP = YES NO] [,SPAN = spanname] [,SRBEXIT = YES NO] mvs [,SSCPFM = USSNOP USSPOI] [,USSTAB = USS definition table name] [,VPACING = n 0] [,VTAMFRR = YES NO] mvs	<ol style="list-style-type: none"> APPC is for V3R2 only. The following are used only if APPC=YES <ol style="list-style-type: none"> AUTOSES DDRAINL DMINWNL DMINWNR DRESPL DSESLIM SECACPT. For V3R2, EAS can include APPC sessions. For V3R2, PARESS defaults to YES if APPC=YES.

Name	Definition Statement	Operands	Restrictions
cdrmname or sscpname	CDRM	[CDRDYN = YES NO] [,CDRSC = OPT REQ] [,ELEMENT = n 1] [,ISTATUS = ACTIVE INACTIVE] [,RECOVERY = YES NO] [,SPAN = spanname] [,SUBAREA = n] [,VPACING = n 0 63]	sscpname is for SNA network interconnection only.
cdrscname	CDRSC	[CDRM = cdrmname] [,ISTATUS = ACTIVE INACTIVE] [,SPAN = spanname] [,VFYOWNER = YES NO] (V3R2 only)	
name	CLUSTER (ICA BSC line)	GPOLL = char [,CUTYPE = 3271 3275] [,DLOGMOD = default logmode entry name] [,FEATUR2 = ((MODEL1 MODEL2) [,PRINTR NOPRINTR]))] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,SPAN = spanname] [,SSCPFM = USS3275 USS3270] [,TERM = 3275 3277 3284 3286] [,USSTAB = USS definition table name]	VSE VM
[name]	DELETE	FROM = resource name	For dynamic reconfiguration only.
name	GROUP (ICA BSC line)	LNCTL = BSC [,CUTYPE = 3271 3275] [,DLOGMOD = default logmode entry name] [,FEATUR2 = ((MODEL1 MODEL2) [,PRINTR NOPRINTR]))] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,RETRIES = n 7] [,SERVLIM = n 4] [,SPAN = spanname] [,TERM = 3275 3277 3284 3286] [,USSTAB = USS definition table name]	VSE VM

Name	Definition Statement	Operands	Restrictions
name	GROUP (CTCA)	LNCTL = CTCA [, DELAY = time .100] [, ISTATUS = ACTIVE INACTIVE] [, MAXBFRU = (npage 1)] ¹ [, MAXBFRU = ([norm 10][,max norm])] ² [, MIH = YES NO] [, PUTYPE = 4] [, REPLYTO = time 3.0] [, SPAN = spanname]	1. V3R2 2. MVS VM V3R1.1, V3R1.2 VSE V3R1, V3R1.2
name	GROUP (channel- adapter NCP)	LNCTL = NCP [, CHANCON = COND UNCOND] [, ISTATUS = ACTIVE INACTIVE] [, MAXBFRU = n] [, MAXDATA = size 65535] [, PUTYPE = 4] [, SPAN = spanname]	
name	GROUP (for LAN major node: 9370/LAN)	LNCTL = SDLC [, DIAL = NO] [, ISTATUS = ACTIVE INACTIVE] [, LANACK = ([t2 0] [,n3 0])] [, LANCON = ([ct1] [,cn2])] [, LANINACT = ti 4.8] [, LANRESP = ([t1] [,n2])] [, LANSDDWDW = ([k 2] [,nw 1])] [, PUTYPE = 5] [, SPAN = (spanname)]	VSE VM
name	GROUP (for LAN major node: station)	DIAL = YES ,LNCTL = SDLC [, ANSWER = ON OFF] [, CALL = IN OUT INOUT] [, ISTATUS = ACTIVE INACTIVE] [, MAXLU = n 2] [, SPAN = (spanname)]	VSE VM

Name	Definition Statement	Operands	Restrictions
name	GROUP (nonswitched CA SDLC line)	LNCTL = SDLC [,ACTIVTO = t] [,DIAL = NO] [,DISCNT = ([YES NO][,F NF])] [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MAXBFRTU = ([norm 1 2][,max 2 8])] [,MAXDATA = size 261 265] [,MAXOUT = n 1] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PASSLIM = n maxout] [,PAUSE = t 0.1] [,PUTYPE = 1 2 4 5] [,REPLYTO = n 1] [,RETRIES = n 7] [,SERVLIM = n 4] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	
name	GROUP (nonswitched packet major node)	DIAL = NO [,DISCNT = ([YES NO] [,F NF])] [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LNCTL = SDLC] [,LOGAPPL = application program name] [,LOGTAB = interpret table name] [,MAXDATA = size 261 265] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PUTYPE = 1 2 4 5] [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM

Name	Definition Statement	Operands	Restrictions
name	GROUP (switched CA SDLC line)	LNCTL = SDLC ,DIAL = YES [,ACTIVTO = t] [,ANSWER = ON OFF] [,AUTODL = YES NO] vse [,CALL = IN OUT INOUT] [,DIALNO = telephone number] vse [,ISTATUS = ACTIVE INACTIVE] [,MAXBFRU = ((norm 1 2) [,max 2 8])] [,MAXLU = n 2] [,PAUSE = t 0.1] [,REPLYTO = t 1] [,RETRIES = n 7] [,RETRYTO = t 12] vse [,SERVLIM = n 4] [,SHOLD = NO (free,npoll)] vse [,SPAN = spanname] [,SUBADIAL = YES NO] (V3R1.2 and later) [,X21SW = YES NO]	VSE VM
name	GROUP (switched packet major node)	DIAL = YES [,ANSWER = ON OFF] [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] [,LNCTL = SDLC] [,MAXLU = n 2] [,SPAN = (spanname)] [,SUBADIAL = YES NO] (V3R1.2 and later)	VSE VM
[name]	GWPATH	[ADJNET = adjacent network ID] [,ADJNETEL = adjacent network element 1] [,ADJNETSA = adjacent network subarea] [,ELEMENT = element address 1] [,GWN = gateway NCP name] [,SUBAREA = subarea address]	SNA network inter-connection only.
[name]	LBUILD	[CONFIGDS = name] MVS VSE [,CONFGPW = password] MVS VSE	CONFGPW is valid only if CONFIGDS is specified.

Name	Definition Statement	Operands	Restrictions
name	LINE (ICA BSC line)	[ADDRESS = channel unit address 030] [,CUTYPE = 3271 3275] [,DLOGMOD = default logmode entry name] [,FEATUR2 = (MODEL1 MODEL2 [,PRINTR NOPRINTR])] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,RETRIES = n 7] [,SERVLIM = n 4] [,SPAN = spanname] [,TERM = 3275 3277 3284 3286] [,USSTAB = USS definition table name]	VSE VM
name	LINE (CTCA)	[ADDRESS = channel unit address] [,DELAY = time .100] [,ISTATUS = ACTIVE INACTIVE] [,MAXBFRU = (npage 1)] ¹ [,MAXBFRU = ((norm 10)[,max norm])] ² [,MIH = YES NO] [,PUTYPE = 4] [,SPAN = spanname]	1. V3R2 2. MVS VM V3R1.1 V3R1.2 VSE V3R1 V3R1.2
name	LINE (LAN major node: 9370/LAN)	[ISTATUS = ACTIVE INACTIVE] [,LANACK = ((t2 0) [,n3 0])] [,LANCON = ((ct1) [,cn2])] [,LANINACT = ti 4.8] [,LANRESP = ((t1) [,n2])] [,LANSDDWDW = ((k 2) [,nw 1])] [,PUTYPE = 5] [,SPAN = (spanname)]	VSE VM
name	LINE (LAN major node: station)	[ANSWER = ON OFF] [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] [,MAXLU = n 2] [,SPAN = (spanname)]	VSE VM
name	LINE (link to a channel- adapter NCP)	MAXBFRU = n [,ADDRESS = channel unit address] [,CHANCON = COND UNCOND] [,ISTATUS = ACTIVE INACTIVE] [,MAXDATA = n 65535] [,PUTYPE = 4] [,SPAN = spanname]	

Name	Definition Statement	Operands	Restrictions
name	LINE (nonswitched CA SDLC line)	[ADDRESS = channel unit address 030] [,ACTIVTO = t] [,DISCNT = ([YES NO] [,F NF])] [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MAXBFRU = ([norm 1 2] [,max 2 8])] [,MAXDATA = size 261 265] [,MAXOUT = n 1] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PASSLIM = n maxout] [,PAUSE = t 0.1] [,PUTYPE = 1 2 4 5] [,REPLYTO = n 1] [,RETRIES = n 7] [,SERVLIM = n 4] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM
name	LINE (nonswitched packet major node)	ADDRESS = logical channel identifier [,DISCNT = ([YES NO] [,F NF])] [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = application program name] [,LOGTAB = interpret table name] [,MAXDATA = size 261 265] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PUTYPE = 1 2 4 5] [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM

Name	Definition Statement	Operands	Restrictions
name	LINE (switched CA SDLC line)	[ACTIVTO = t] [,ADDRESS = channel unit address 030] [,ANSWER = ON OFF] [,AUTO = address] [,AUTODL = YES NO] vSE [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] [,MAXBFRU = ([norm 1 2],[,max 2 8)]) [,MAXLU = n 2] [,PAUSE = t 0.1] [,REPLYTO = t 1] [,RETRIES = n 7] [,RETRYTO = t 12] vSE [,SERVLIM = n 4] [,SPAN = spanname]	VSE VM
name	LINE (switched packet major node)	[,ADDRESS = address] [,ANSWER = ON OFF] [,AUTO = address] [,CALL = IN OUT INOUT] [,ISTATUS = ACTIVE INACTIVE] [,MAXLU = n 2] [,SPAN = (spanname)]	VSE VM
name	LOCAL	CUADDR = channel device address ,TERM = 3277 3284 3286 [,DLOGMOD = default logmode entry name] [,FEATUR2 = ([EDATS NOEDATS] [, MODEL1 MODEL2] [,PRINTR NOPRINTR])] (V3R1.1 & V3R2) [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,SPAN = spanname] [,USSTAB = USS definition table name]	
name	LU (local)	LOCADDR = n [,DLOGMOD = default logmode entry name] [,ENCR = REQD SEL OPT NONE] mvs [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 1]	

Name	Definition Statement	Operands	Restrictions
name	LU (nonswitched CA SDLC line)	LOCADDR = n [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM
name	LU (nonswitched packet major node)	LOCADDR = n [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] ¹ [,LOGAPPL = application program name] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM
name	LU (switched major node)	LOCADDR = 0 n [,BATCH = YES NO] [,DLOGMOD = default logon mode table entry] [,ENCR = REQD SEL OPT NONE] mvs [,FEATUR2 = LOWERCSE DUALCSE] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,RESSCB = 0 n] [,SPAN = spanname] [,SSCPFM = FSS USSSCS USSNTO USS3780 USS3270 USS3275] [,TERM = terminal type] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	1. BATCH is for pre-V3R2. 2. RESSCB is for V3R2 only.
[name]	MOVE	TO = linename, FROM = linename	V3R2; for dynamic reconfiguration only.
ncpname	NCPPATH (NCP dynamic path update)	NETID = network ID	V3R2 only.

Name	Definition Statement	Operands	Restrictions
[name]	NETWORK	[NETID = network ID]	SNA network inter-connection only.
[name]	PATH (switched major node)	DIALNO = telephone number LINENM = linename [,GID = n] [,GRPNM = groupname] [,PID = n] [,REDIAL = n 3] [,SHOLD = YES] vse [,USE = YES NO]	
name	PATH (NCP dynamic path update)	DESTSA = n (n1,n2,n3,...) [,DELETER = er# (er0,er1,er2,...,er7)] [,ER0 = (adjsub[,tg#] [,lo 5000] [,med 5000] [,hi 5000] [,tot 20000])] [,ER1 = (adjsub[,tg#] [,lo 5000] [,med 5000] [,hi 5000] [,tot 20000])] . . . [,ER7 = (adjsub[,tg#] [,lo 5000] [,med 5000] [,hi 5000] [,tot 20000])] [,VR0 = er#] [,VR1 = er#] . . . [,VR7 = er#] [,VRPWS00 = (min#,max#)] [,VRPWS01 = (min#,max#)] [,VRPWS02 = (min#,max#)] [,VRPWS10 = (min#,max#)] [,VRPWS11 = (min#,max#)] [,VRPWS12 = (min#,max#)] [,VRPWS20 = (min#,max#)] . . . [,VRPWS72 = (min#,max#)]	V3R2 only.

Name	Definition Statement	Operands	Restrictions
[name]	PATH (VTAM route) or (VTAM dynamic path update)	DESTSA = n (n1,n2,n3,...) [,DELETER = er# (er1,er2,er3,...,er7)] [,ER0 = (adjsub[,tg#])] [,ER1 = (adjsub[,tg#])] . . . [,ER7 = (adjsub[,tg#])] [,VR0 = er#] [,VR1 = er#] . . . [,VR7 = er#] [,VRPWS00 = (min#,max#)] [,VRPWS01 = (min#,max#)] [,VRPWS02 = (min#,max#)] [,VRPWS10 = (min#,max#)] [,VRPWS11 = (min#,max#)] [,VRPWS12 = (min#,max#)] [,VRPWS20 = (min#,max#)] . . . [,VRPWS72 = (min#,max#)]	1. DELETER is for V3R2 only.

Name	Definition Statement	Operands	Restrictions
[name]	PCCU (NCP major node)	NCPLUB = lubname vse [,AUTODMP = YES NO] [,AUTOIPL = YES NO] [,AUTOSYN = YES NO] [,BACKUP = YES NO] [,CDUMPDS = dumpname] [,CHANCON = COND UNCOND] [,CONFGDS = name] [,CONFGPW = password] [,CUADDR = channel device address] [,DUMPDS = dumpname] [,DUMPSTA = link station name] [,GWCTL = ONLY SHR] [,INITEST = YES NO] [,LOADSTA = link station name] [,MAXDATA = size 65535] [,MDUMPDS = dumpname] [,NEWPATH = name (name1,...,name3)] (v3R2) [,NETID = host network ID] [,OWNER = ownername] [,RNAME = link station name (name, . . . ,name)] [,SUBAREA = n] [,VFYLM = YES NO]	
[name]	PORT (LAN major node: 9370/LAN)	CUADDR = cua [,LANCON = ([ct1],[,cn2 5)] [,MACADDR = macaddr] [,MAXDATA = n 2000] [,MAXSTN = n] [,SAPADDR = n 4]	VSE VM
[name]	PORT (packet major node)	CUADDR = (cualo,cuahi) ,NETTYPE = n [,CHARGACC = YES NO] [,CHARGE = YES NO] [,DIALNO = DTE address] [,MAXOUT = Z n] [,NETLEVEL = 80 84] (v3R1.2 or later) [,PLENGTH = 16 32 64 128 256 512 1024 2048 4096] [,PMOD = 8 128] [,PWINDOW = 2 n] [,REPLYTO = 3 n] [,RETRIES = Z n] [,VCALLS = (lic,hic,ltc,htc,loc,hoc)]	VSE VM
puname	PU	[,ACTIVATE = NO YES] [,ADDR = char]	For v3R2 dynamic reconfiguration "MOVE" only.

Name	Definition Statement	Operands	Restrictions
name	PU (CTCA)	[,DELAY = time .100] [,ISTATUS = ACTIVE INACTIVE] [,PUTYPE = 4] [,SPAN = spanname]	
name	PU (LAN major node: 9370/LAN)	MACADDR = macaddr [,ISTATUS = ACTIVE INACTIVE] [,LANACK = ([t2 0] [,n3 0])] [,LANCON = ([ct1] [,cn2])] [,LANINACT = ti 4.8] [,LANRESP = ([t1] [,n2])] [,LANSDDW = ([k 2] [,nw 1])] [,PUTYPE = 5] [,SAPADDR = n 4] [,SPAN = (spanname)]	VSE VM
name	PU (LAN major node: station)	[,ISTATUS = ACTIVE INACTIVE] [,MAXLU = n 2] [,SPAN = (spanname)]	VSE VM
name	PU (local)	[,CUADDR = channel device address] [,DISCNT = ([YES NO],[,F NF])] [,DLOGMOD = default logmode entry name] [,ENCR = REQD SEL OPT NONE] mvs [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MAXBFRU = n 1] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PUTYPE = 2] [,SECTNET = YES NO] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,USSTAB = USS definition table name] [,VPACING = n 0 1]	SECTNET is for V3R1.1 and later releases only.
name	PU (for an NCP)	[,CHANCON = COND UNCOND] [,ISTATUS = ACTIVE INACTIVE] [,MAXDATA = n 65535] [,PUTYPE = 4] [,SPAN = spanname]	

Name	Definition Statement	Operands	Restrictions
name	PU (nonswitched CA SDLC line)	ADDR = char [,DISCNT = ([YES NO][,F NF])] [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MAXDATA = size 261 265] [,MAXOUT = n 1] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PASSLIM = n maxout] [,PUTYPE = 1 2 4 5] [,RETRIES = n 7] [,SPAN = spanname] [,SSCPFM = FSS USSSCS] [,SUBAREA = n] [,TADDR = chars C1] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM
name	PU (nonswitched packet major node)	ADDR = char [,DISCNT = ([YES NO] [,F NF])] [,DLOGMOD = default logmode entry name] [,ISTATUS = ACTIVE INACTIVE] [,LOGAPPL = application program name] [,LOGTAB = interpret table name] [,MAXDATA = size 261 (PUTYPE = 1) 265 (PUTYPE = 2)] [,MODETAB = logon mode table name] [,PACING = n 0 1] [,PUTYPE = 1 2 4 5] [,SPAN = (spanname)] [,SSCPFM = FSS USSSCS] [,SUBAREA = n] [,USSTAB = USS definition table name] [,VPACING = n 0 2]	VSE VM

Name	Definition Statement	Operands	Restrictions
name	PU (switched major node)	ADDR = station address {,IDBLK = identification block, IDNUM = identification number ,CPNAME = cp name (V3R2)} [,ANS = CONT[INUE] STOP](V3R1.2 and later) [,BATCH = YES NO] (pre-V3R2) [,DATMODE = HALF FULL] (V3R2) [,DISCNT = (YES NO), F NF)] [,DLOGMOD = default logmode entry name] [,ENCR = REQD SEL OPT NONE] mvs [,FEATUR2 = LOWERCSE DUALCSE] [,IRETRY = YES NO] [,ISTATUS = ACTIVE INACTIVE] [,LANACK = ([t2 0] [,n3 0])] VSE VM 9370 (V3R1.2 and later) [,LANCON = ([ct1] [,cn2])] VSE VM 9370 (V3R1.2 and later) [,LANINACT = ti 4,8] VSE VM 9370 (V3R1.2 and later) [,LANRESP = ([t1] [,n2])] VSE VM 9370 (V3R1.2 and later) [,LANSDDWD = ([k 2] [,nw 1])] VSE VM 9370 (V3R1.2 and later) [,LANSW = YES NO] VSE VM 9370 (V3R1.2 and later) [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MACADDR = macaddr] VSE VM 9370 (V3R1.2 and later) [,MAXDATA = size 261 265] [,MAXOUT = n 1] [,MAXPATH = n 0] [,MODETAB = logon mode table name] [,NETID = name] (V3R1.2 and later) [,PACING = n 0 1] [,PASSLIM = n 1]. [,PUTYPE = n 2 4 5] [,SAPADDR = n 4] VSE VM 9370 (V3R1.2 and later) [,SECNET = YES NO] [,SPAN = spanname] [,SSCPFM = FSS USSSCS USSNTO USS3780 USS3270 USS3275] [,SUBAREA = n] (V3R1.2 and later) [,TERM = terminal type] [,TGN = n 1 ANY] (V3R1.2 and later) [,USSTAB = USS definition table name] [,VPACING = n 0 2]	

Name	Definition Statement	Operands	Restrictions
name	PU (switched CA SDLC line)	[I STATUS = ACTIVE INACTIVE] [,MAXLU = n 2] [,SPAN = spanname]	VSE VM
name	PU (switched packet major node)	[I STATUS = ACTIVE INACTIVE] [,MAXLU = n 2] [,SPAN = (spanname)]	VSE VM
name	TERMINAL (ICA BSC line)	ADDR = char ,TERM = 3275 3277 3284 3286 [,DLOGMOD = default logmode entry name] [,FEATUR2 = ([MODEL1 MODEL2] [,PRINTR NOPINTR])] [,I STATUS = ACTIVE INACTIVE] [,LOGAPPL = controlling primary LU] [,LOGTAB = interpret table name] [,MODETAB = logon mode table name] [,SPAN = spanname] [,SSCPFM = USS3275 USS3270] [,USSTAB = USS definition table name]	VSE VM
[name]	VBUILD	TYPE = ADJSSCP	
[name]	VBUILD	TYPE = APPL	
[name]	VBUILD	TYPE = CA [,CONFIGDS = name] mvs vse [,CONFGPW = password] mvs vse	CONFGPW is valid only if CONFIGDS is specified.
[name]	VBUILD	TYPE = CDRM [,CONFIGDS = name] mvs vse [,CONFGPW = password] mvs vse	CONFGPW is valid only if CONFIGDS is specified.
[name]	VBUILD	TYPE = CDRSC [,CONFIGDS = name] mvs vse [,CONFGPW = password] mvs vse	CONFGPW is valid only if CONFIGDS is specified.
[name]	VBUILD	TYPE = DR	
[name]	VBUILD	TYPE = LAN	VSE VM
[name]	VBUILD	TYPE = LOCAL [,CONFIGDS = name] mvs vse [,CONFGPW = password] mvs vse	CONFGPW is valid only if CONFIGDS is specified.
[name]	VBUILD	TYPE = PACKET [,CONFIGDS = name] vse [,CONFGPW = password] vse	1. VSE VM 2. CONFGPW is valid only if CONFIGDS is specified.

Name	Definition Statement	Operands	Restrictions
[name]	VBUILD	TYPE = SWNET [,CONFIGDS = name] MVS VSE [,CONFIGPW = password] MVS VSE [,MAXGRP = n] [,MAXNO = n]	CONFIGPW is valid only if CONFIGDS is specified.
[name]	VCPARMS (packet major node)	LC = (lcn,hcn) [,PLENGTH = 16 32 64 <u>128</u> 256 512 1024 2048 4096] [,PWINDOW = <u>2</u> n]	VSE VM
sscpname	VPATH (VTAM dynamic path update)	NETID = network ID	V3R2 only.

Appendix B. Quick Reference for VTAM Start Options

Start Option	Restrictions
,SSCPID = n	
[,poolname = (baseno,bufsize,slowpt,F,xpanno,xpanpt,xpanlim)]	F applies to MVS VM only.
[,ASYDE = TERM KEEP]	Applies to V3R2.
[,CDRSCTI = n 480]	
[, COLD WARM]	MVS
[,CONFIG = x 00 name]	
[,CSALIMIT = 0 n nK nM]	MVS VM
[,CSA24 = 0 n nK nM]	MVS/XA
[,DLRTCB = n 32]	MVS VM
[,GWSSCP = YES NO]	Applies to MVS VM V3R2 only.
[,HOSTPU = host-subarea-puname ISTPUS]	
[,HOSTSA = n 1]	
[,JOINT = n 180]	
[,ITLIM = n 0]	Pre-V3R2 only
[,LIST = x 00]	
[,MAXSUBA = n 15]	
[,MSGMOD = YES NO]	
[,NETID = network ID]	V3R2 required; pre-V3R2 MVS VM SNA network interconnection only.
[,NODELST = name]	MVS
[,PPOLOG = YES NO]	
[, PROMPT NOPROMPT]	Start list 0 only
[,SONLIM = [m 60][,n 30]	
[,SSCPDYN = YES NO]	
[,SSCPNAME = name]	V3R2 required; pre-V3R2 MVS VM SNA network interconnection only.
[,SSCPORD = PRIORITY DEFINED]	
[,SUPP = NOSUP INFO WARN NORM SER]	
[,TNSTAT NOTNSTAT [,CNLSL NOCNSL][,TIME = n 60]	

Start Option	Restrictions
[,TRACE NOTRACE ,TYPE = BUF,ID = nodename[,EVERY]]	
[,TRACE NOTRACE ,TYPE = IO,ID = nodename[,EVERY]]	
[,TRACE NOTRACE ,TYPE = LINE,ID = linename[,COUNT = n ALL]]	
[,TRACE NOTRACE ,TYPE = SIT,ID = linename[COUNT = n ALL]]	
[,TRACE NOTRACE ,TYPE = SMS,ID = VTAMBUF]	
[,TRACE,TYPE = VTAM[,MODE = INT EXT] [,OPTION = (options) ALL] [,SIZE = size 2]]	
[, NOTRACE ,TYPE = VTAM]	
[,USSTAB = name]	

Appendix C. MVS TSO/VTAM System Programmer Information

TSO/VTAM provides the capability of using TSO through VTAM. TSO, formerly an option of the control program (hence the name time sharing option), is a standard feature in MVS that provides conversational time sharing.

TSO/VTAM supports the following terminals:

- IBM 3270 Information Display System
- IBM 3290 Information Display System
- IBM 3767 Communication Terminal
- IBM 3770 Data Communication System
- IBM 8775 Display Terminal
- IBM Displaywriter
- IBM 5550 (as 3270) single-byte character set (SBCS) and double-byte character set (DBCS) modes.

TSO/VTAM can also support the following non-SNA terminals in conjunction with the IBM Network Terminal Option licensed program:

- IBM 2741 Communication Terminal
- CPT-TWX Terminal
- World Trade Telegraph (WTTY).

The basic elements of TSO/VTAM are the terminal control address space (TCAS) and the VTAM terminal I/O coordinator (VTIOC). TCAS accepts logons from TSO/VTAM users and creates an address space for each user. VTIOC is the interface between TSO and VTAM; it coordinates data flow. TCAS and VTIOC, together with existing TSO components such as the LOGON scheduler, the application programs, the terminal monitor program, and the TSO service routines, make up a TSO/VTAM time-sharing system.

TSO/VTAM uses the VTAM application program interface (API). TSO/VTAM can reside with TSO/TCAM in the same host processor.

Information for system programmers about TSO/VTAM is found in the following sections:

- "VTAM Considerations" on page 404
- "MVS Considerations" on page 411
- "TSO/VTAM Considerations" on page 411
- "TSO Considerations" on page 413
- "How TSO/VTAM Differs from TSO through TCAM" on page 413.

VTAM Considerations

To use TSO/VTAM with VTAM, you must define the following to VTAM:

- TCAS and each TSO user
- TSO/VTAM session parameters.

For compatible logons, you must also create and define to VTAM an interpret table.

Defining TCAS and Each TSO User

As described in “Defining Application Program Major Nodes” on page 69, an APPL definition statement defines an application program to VTAM. Because TCAS and each TSO user are VTAM application programs, you must code APPL definition statements for them and put the statements in SYS1.VTAMLST.

Note: To avoid obtaining unnecessary CSA storage for TSO users, you should define TSO applications to VTAM with EAS=1. Do not use the default (EAS=491). TSO/VTAM obtains CSA storage independently of CSALIMIT.

Single-Domain Network

In a single-domain network in which there are no overriding network naming conventions, you can use the following technique to code the APPL statements for TCAS and for the TSO users:

Code the following APPL statement for TCAS:

```
TSO      APPL  PRTCT=password,AUTH=(NOACQ,PASS,          C
          NVPACE,TSO,NOPO),EAS=1
```

Code as many APPL statements, in the following format, as there will be users logged on to TSO/VTAM at one time:

```
TSOnnnn APPL  PRTCT=password,AUTH=(NOACQ,PASS,          C
          NVPACE,TSO,NOPO),EAS=1
```

If network naming conventions prevent the use of TSO and TSO`nnnn` as the name on the APPL statement, you may use any label name. In this case, you **must** use the ACBNAME operand to supply the ACBNAME for TCAS and for the TSO users as follows:

Code the following APPL statement for TCAS:

```
anytso  APPL  ACBNAME=TSO,PRTCT=password,              C
          AUTH=(NOACQ,PASS,NVPACE,TSO,NOPO),EAS=1
```

Code as many APPL statements, in the following format, as there will be users logged on to TSO/VTAM at one time:

```
anyuser APPL  ACBNAME=TSOnnnn,PRTCT=password,         C
          AUTH=(NOACQ,PASS,NVPACE,TSO,NOPO),EAS=1
```

You must use the same *password* for TCAS and each TSO/VTAM user. You must code a different application program name, in the form TSO`nnnn`, for each session. `nnnn` is a decimal integer; the numbering must start with 0001 and must be sequential. Note that NOACQ and NOPO need not be coded; they are default values. See “The APPL Definition Statement” on page 71 for more information about application program names.

Multiple-Domain Network

For TSO sessions to be established in a cross-domain network, you must code CDRSC statements for each TSO/VTAM application program unless you specify SSCPDYN=YES. Code the CDRSC statements in every VTAM host owning logical units that will log on to the application.

In the VTAM host containing the TSO subsystem, it is not necessary to define the LUS in the other domains that issue logons to TSO/VTAM if dynamic CDRSC definition is authorized. Also, the manager in the domain of the SLU may be authorized to create CDRSCs for the TSO application program associated with the TSO user. For information on coding CDRSCs, see "Defining Cross-Domain Resources" on page 267.

Code the following CDRM statements in each domain to avoid defining both the SLUS that log on to TSO/VTAM as CDRSCs in the TSO/VTAM domain, and the TSO user application programs as CDRSCs in the SLU's domain.

```
name1    CDRM  CDRDYN=YES,CDRSC=OPT,...
```

```
name2    CDRM  CDRDYN=YES,CDRSC=OPT,...
```

The CDRDYN operand determines whether a CDRM is authorized to dynamically create a CDRSC representing a cross-domain LU when a logon request is received from the LU (via an initiate from the CDRM managing the LU).

The CDRSC operand determines whether the dynamic creation of CDRSC definitions is permissible when a logon request is received from this manager.

In a multiple-domain network where TSO/VTAM is run in more than one domain, you must have special definition statements with unique names for TCAS and the terminals in your domain and interacting domains. Code the following APPL statement for TCAS in your domain:

```
tsoa     APPL  ACBNAME=TSO,PRCT=password,           C
          AUTH=(NOACQ,PASS,NVPACE,                C
          TSO,NOPO),EAS=1
```

Code as many APPL statements in the following format as the maximum number of sessions that will be established with TSO/VTAM in your domain at one time:

```
tsoannnn APPL  ACBNAME=TSOnnnn,PRCT=password,      C
          AUTH=(NOACQ,PASS,NVPACE,                C
          TSO,NOPO),EAS=1
```

tsoa is a unique prefix that must be included on all APPL statements for your domain. The name, *tsoa*, must be unique in the network. You must use the same prefix (that is, *tsoa*) when coding APPL statements for each terminal logged on to the TSO/VTAM in this VTAM host concurrently. The *nnnn* suffix is a decimal integer that must start with 0001 and be sequential. The remaining operands are described above.

Code the following statement for each TCAS in another domain with which an LU in your domain communicates:

```
tsob     CDRSC  CDRM=name of VTAM manager for tsob
```


If dynamic cross-domain resource definition is not authorized, code the following CDRSC statements in each domain that contains an SLU that can communicate with your domain:

```
tsobnnnn CDRSC CDRM=name of VTAM manager for tsobnnnn
```

and code a CDRSC statement in the domain of TSO/VTAM for each cross-domain SLU that can log on to TSO/VTAM.

tsob identifies the owning CDRM for each domain and must be included on each TCAS and CDRSC definition statement. The *nnnn* suffix is a decimal integer that must be sequential starting with 0001.

Defining TSO/VTAM Session Parameters

VTAM needs to know the session protocols required by the terminals from which individual TSO users log on. This information is provided through logon mode tables, VTAM definition statements, and NCP generation definition statements.

Logon mode tables associate session protocols with device types. IBM provides a default logon mode table that describes session protocols for common devices and situations. However, you may need to replace or supplement the default table. *VTAM Customization* describes how to write your own logon mode tables and include them in VTAM. It also describes how to code VTAM definition statements and NCP generation definition statements to associate terminals with the appropriate logon mode tables.

In addition, a specific class-of-service name can be chosen. The class-of-service name used for the session is selected from the logon mode entry. If you omit the COS operand on the MODEENT macroinstruction, the default COS is chosen. To choose a specific COS, you must include the COS name on the MODEENT macroinstruction as follows:

```
MODEENT COS=cos name,logon mode parameters
```

3270 Characteristics

TSO/VTAM supports two types of 3270 devices: non-SNA devices attached locally or via a bisynchronous line protocol, and SNA devices attached by SDLC links. If no logmode table entry exists for a 3270 device, TSO/VTAM assumes non-SNA (LU0) and assumes the buffer size in the SCRFSIZE parameter of the TSOKEY00 member of PARMLIB (either 480 [12×40] or 1920 [24×80]). For non-SNA devices with different screen sizes, or special features, and for SNA devices (LU2), you must provide a logmode table entry.

Use the MODETAB and MODEENT macroinstructions to define 3270 characteristics in logmode tables and their entries. The PSERVIC parameter of the MODEENT macroinstruction defines device LU type, buffer sizes, single-byte language, and QUERY capability (that is, programmed symbol sets, extended color, extended data stream, or extended highlight support). The LANG parameter of the MODEENT macroinstruction defines the single-byte language of the device and whether it should be queried for double-byte capability.

Following are examples of definitions of MODEENT table entries. For further information on coding logon mode tables, see *VTAM Customization*.

The MODEENT Macroinstruction for Non-SNA 3270 Devices: Note that the FMPROF, TSPROF, PRIPROT, SECPROT, and COMPROT values shown here are the same as those used in the IBM-supplied logon mode table, ISTINCLM.

```

name      MODEENT FMPROF=X'02',          C
           TSPROF=X'02',                C
           PRIPROT=X'71',                C
           SECPROT=X'40',                C
           COMPROT=X'2000',              C
           PSERVIC=X'.....see below.....'

```

The MODEENT Macroinstruction for SNA 3270 Devices: The RUSIZES parameter below defines a 256-byte maximum secondary logical unit RU send size and a 1024-byte maximum primary logical unit RU send size. If the maximum primary logical unit RU size is 0, TSO/VTAM defaults to 1024 bytes.

```

name      MODEENT FMPROF=X'03',          C
           TSPROF=X'03',                C
           PRIPROT=X'B1',                C
           SECPROT=X'90',                C
           COMPROT=X'3080',              C
           RUSIZES=X'8587',              C
           PSERVIC=X'.....see below.....'

```

The PSERVIC Operand of the MODEENT Macroinstruction: The PSERVIC operand of the MODEENT macroinstruction defines device LU type, buffer sizes, and QUERY capability (programmed symbol sets, extended color, or extended highlight support).

Code the 12 bytes of device-specific hexadecimal data of the PSERVIC operand as described here:

```

PSERVIC=
X'00..00000000.....00'   For non-SNA (LU0)
X'02..00000000.....00'   For SNA (LU2)
X'..00.....'             Device without extended data stream capability
X'..80.....'             Device with extended data stream capability
X'.....0000000001..'     Buffer size 480 only (12x40)
X'.....0000000002..'     Buffer size 1920 only (24x80)
X'.....0C280C507F..'     Buffer sizes 480 or 960 (12x40 or 12x80)
X'.....185020507F..'     Buffer sizes 1920 or 2560 (24x80 or 32x80)
X'.....18502B507F..'     For buffer sizes 1920,3440 (24x80 or 43x80)
X'.....18501B847F..'     For buffer sizes 1920,3564
X'.....18501B847F..'     For buffer sizes 1920,3564 (24x80 or 27x132)
X'.....18503EA07F..'     Buffer size 9920 only (62x160)
X'.....18503EA07F..'     Buffer size 9920 only (62x160)
X'.....0000000003..'     Primary buffer size 1920 only (24x80). If a device is
                           extended data stream capable (see above),
                           TSO/VTAM queries the device to determine the alter-
                           nate size.

```

To prevent switching of screen sizes on a device that has more than one size possible, code the screen size you want in the primary area of PSERVIC and a X'7E', which means no switching. For example:

```

PSERVIC=
X'.....1B8400007E..' For 3564 buffer only.

```

For details on coding the PSERVIC operand for your particular device, see your component description.

See *VTAM Programming* for details of the bit settings in the PSERVIC parameter, representing bytes 13–24 of the session parameters.

The LANG Operand of the MODEENT Macroinstruction: This operand has two functions. The high order bit, when on, indicates that devices with extended data stream capability should be queried for double-byte capability. If the query reply indicates that the device is double-byte capable, TSO/VTAM allows mixed DBCS strings to be sent to and received from the device.

The low order 7 bits indicate the single-byte language to be used. TSO/VTAM uses this value in TPUT data validation and translation. If a query is issued to determine double-byte capability, any supported single-byte language value returned in the query reply overrides the value specified in the LANG parameter. See Figure 60 for a list of the supported single-byte languages.

Note: If an invalid LANG parameter is specified, or the parameter is not specified at all, the single-byte language is defaulted to U.S. English.

Bit	Description
0123 4567	
0...	The language is identified from the code specified in bits 1–7. The device is assumed incapable of double-byte character set (DBCS) processing.
1...	A query command is sent to the device to determine the language and DBCS capability. If the language cannot be determined from the input received from the query, the language is identified from the code specified in bits 1–7.
.000 0000	
or	
.000 0001	The language is U.S. English or any single-byte character set (SBCS) in which the valid character codes are compatible with the English codes.
.001 0001	The language is Katakana, or any SBCS in which the valid character codes are compatible with Katakana.

Figure 60. Values for LANG Operand of MODEENT Macroinstruction

Some examples of the LANG operand are:

- ,LANG=X'11' Means that the single-byte language is Katakana. TSO/VTAM will not issue a query to the device.
- ,LANG=X'91' Means that the single-byte language is Katakana. TSO/VTAM will issue a query to the device if the PSERVIC operand indicates that the device supports extended data streams. If the query reply returns a valid single-byte language other than Katakana, TSO/VTAM will use the returned value.
- ,LANG=X'FF' Specifies an invalid single-byte language. TSO/VTAM will use U.S. English as the default. TSO/VTAM will issue a query to the device if the PSERVIC operand indicates that the device supports

extended data streams. If the query reply returns a valid single-byte language other than U.S. English, TSO/VTAM will use the returned value.

The connection between a logmode entry and a device is made via VTAM operands on the LU, LOCAL, or TERMINAL definition statements during VTAM and NCP definition. Code the DLOGMOD operand to identify the name of a logmode table entry containing the session parameters used for the 3270 device being defined. Code the optional MODETAB operand to identify the logmode table containing the entry. If you do not code MODETAB, the IBM-supplied logmode table (ISTINCLM) is used.

You can also code the MODETAB and DLOGMOD operands on the GROUP, LINE, and CLUSTER definition statements. For details on planning the MODETAB, MODEENT, LU, LOCAL, and TERMINAL statements, see *Network Program Products Planning*. For information on coding the resource definitions and logon mode table macroinstructions, see Chapter 5, "Defining the Network to VTAM" on page 59 and *VTAM Customization*.

Defining the 3790/3270 Configuration to TSO/VTAM

The 3270 attached to a 3790 (Version 7) uses the LU type 2 protocol. You must give session parameters to TSO/VTAM via a logmode table entry to properly identify the model number or screen sizes of the device being used. The 3270 operator selects FPID 932 when logging on to the 3790 to activate the 3270 data stream compatibility function. During the logon procedure, the operator is prompted for the application program ID and the logmode table entry containing the session parameters to be used for that session. The information is transmitted to VTAM by the Initiate Self request generated by the 3790. If the operator does not supply a logon mode table entry, the 3790 uses the standard logmode entry name EMU3790.

So the terminal operator does not have to know what logmode entry name to supply, create a separate logmode table for each 3270 model attached to the 3790 and include the default entry name EMU3790 in each table with the correct session parameters for that device.

Use the MODETAB and MODEENT macroinstructions to define the logmode table and its entry. The PSERVIC operand on the MODEENT macroinstruction carries the model number or screen sizes in row and column form. An example is given below for defining a logmode entry for a 3270 attached to a 3790 with a screen size of 1920 bytes (Model 2).

The MODETAB macroinstruction:

```
LU2TABLE MODETAB
```

The MODEENT macroinstruction:

```
EMU3790  MODEENT LOGMODE=EMU3790,           C
          FMPROF=X'03',                       C
          TSPROF=X'03',                       C
          PRIPROT=X'B1',                      C
          SECPROT=X'90',                      C
          COMPROT=X'3080',                    C
          PSERVIC=X'02000000000000000000200'
```

See "The PSERVIC Operand of the MODEENT Macroinstruction" on page 407 for a description of the PSERVIC values.

The association between the logmode entry and the device is made on the LU definition statement during network definition to VTAM. Use the optional MODETAB parameter to identify the logmode table containing the entry. If MODETAB is not coded, the IBM-supplied logmode table (ISTINCLM) is used.

Defining 2741, TWX, or WTTY Terminals to TSO/VTAM

A 2741, TWX, or WTTY device attached to a communication controller can be used with TSO/VTAM through its LU type 1 protocol managers. These devices are identified to VTAM during the NCP generation process. (See *Network Terminal Option Migration and Resource Definition* and *NCP Resource Definition Guide* for details.) Since the NCP translates ASCII line code to EBCDIC for these devices, make sure that any logmode entry named by the DLOGMOD and MODETAB operands on the PU or LU definition statements identifies the device to VTAM as EBCDIC. Below is an example of an ASCII TWX logmode table entry definition that has the alternate code indicator in the COMPROT field set off (to indicate EBCDIC to TSO/VTAM).

The MODETAB macroinstruction:

```
TWXTABLE MODETAB
```

The MODEENT macroinstruction:

```
TWXDEVIC MODEENT LOGMODE=TWXDEVIC,          C
                  FMPROF=X'03',              C
                  TSPROF=X'03',              C
                  PRIPROT=X'B1',             C
                  SECPROT=X'90',             C
                  COMPROT=X'3040'            C
                  DCODE=X'00'
```

Defining an Interpret Table for Compatible Logons

Because TSO/VTAM uses VTAM's logon facilities, the TSO LOGON command is not supported. This fact can be made transparent to terminal users if the system programmer defines an interpret table to allow logon requests to have the same format as that used by the TSO LOGON command. The following interpret table definition may be used:

```
INTBL    INTAB
          LOGCHAR APPLID=(APPLICID,TSO),SEQNCE='LOGON'
          LOGCHAR APPLID=(APPLICID,TSO),SEQNCE='logon'
          ENDINTAB
          END
```

This interpret table allows a user to enter a logon command in uppercase or lowercase letters. The definition requires the characters *logon* to be coded in lowercase letters. This can be done by multipunching with a card punch.

MVS Considerations

You must also consider the mvs system requirements described below.

Writing a Procedure for Starting TSO/VTAM Time Sharing

You must write a cataloged procedure for starting TSO/VTAM time sharing and include it in either SYS1.PROCLIB or your own procedure library.

Refer to *OS/VS2 System Programming Library: TSO* or to *MVS/XA System Programming Library: TSO*.

Creating a TSOKEY00 SYS1.PARMLIB Member

TSO/VTAM time sharing parameters determine how time sharing buffers should be controlled, the maximum number of users, and other options. Unless you want the IBM default parameters to apply, you must provide a SYS1.PARMLIB member containing the desired parameters. The parameters you may code, how to code them, and the IBM defaults are described in *Initialization and Tuning* for your operating system.

TSO/VTAM Considerations

Within TSO/VTAM itself, you should consider the following:

- Translation tables
- Coding TSO/VTAM exit routines
- Security
- Performance
- 3270 large screens.

Translation Tables

Translation tables allow TSO/VTAM users to replace internally those characters that are not available on a keyboard. If you call for character translation, translation tables—either your own or those supplied by IBM—are used.

Refer to *OS/VS2 System Programming Library: TSO* or to *MVS/XA System Programming Library: TSO*.

Coding TSO/VTAM Exit Routines

For information on coding TSO/VTAM exit routines, see *VTAM Customization*.

Security

The TSO subsystem is considered a **secure** application. That is, confidential data is handled on behalf of the user in ways that prevent unauthorized disclosure of the data. The CONFTEXT parameter in the TSOKEY00 member of PARMLIB determines whether output data is considered confidential text. The default is that the data is considered confidential. TSO/VTAM protects tracing of user data by setting the CONFTEXT indicator in the NIB at the time the user logs on.

If CONFTEXT=NO, VTAM can perform buffer or IO traces on the data. If CONFTEXT=YES (the default), the data is considered confidential and no data is recorded. The CONFTEXT

parameter, however, does not apply to the TSO type VTAM trace for TPUT/TPG/TGET buffers; these are always traceable. See *Initialization and Tuning* for details.

Performance

The following list contains suggestions for improving TSO/VTAM performance:

- Terminal users should stack input data whenever possible. This means using the multiple-line input technique on 3270 terminals and buffered SDLC transmission on 3767 and 3770 terminals. Stacking input results in a decreased number of data transmissions to TSO. Users of 3270 terminals can stack up to a full screen of data; 3767 and 3770 terminal users can stack from 256 bytes to 2,000 bytes of data, depending on the terminal's buffer size.
- Users of 3767 and 3770 terminals can reduce idle time by "typing ahead." This means that whenever the terminal is not receiving data or is transmitting data, the user can enter input.
- Use BREAK mode with 3276 and 3278 terminals to expedite unlocking the keyboard. BREAK mode reduces idle time by allowing typing ahead.
- Use automatic line numbering on 3270 terminals to shorten the TSO/VTAM processing path when handling input; this reduces system overhead and expedites unlocking the keyboard.

3270 Large Screen Considerations

The following information describes screen management techniques for IBM 3270 terminals that have default and alternate screen sizes determined by the logon mode table entries used for them at logon. The default size is accessed by sending an erase-write (EW) command to the terminal, and the alternate size is accessed by sending an erase-write-alternate (EWA) command.

TSO/VTAM Screen Management

TSO/VTAM can manage the screen for TSO application programs that use line-oriented I/O. In this case, TSO/VTAM uses the maximum screen size for the device, whether it is the default or the alternate in the logon mode table entry. When screen erasure is necessary, TSO/VTAM uses either the EW or the EWA command, as required to access the larger screen size.

Full-Screen Application Program Screen Management

An IBM-supplied or user-supplied application program that uses full-screen I/O in TSO full-screen mode can be used to manage the screen (see *TSO Guide to Writing a Terminal Monitor Program* manual for your operating system). TSO/VTAM uses the screen size used by the application program. If the CLEAR key is pressed, TSO/VTAM erases the screen with either an Erase Write or Erase Write Alternate command depending on which was last used by the application program.

TSO Considerations

Information about the TSO-related steps that must be performed before a TSO/VTAM terminal user logs on can be found in *System Programming Library: TSO and Initialization and Tuning* manuals for your operating system. (Make sure you have updated these manuals with TSO/VTAM supplements before referring to them.) The following list outlines the steps and refers the reader to the appropriate publication:

- Write LOGON cataloged procedures and include them in SYS1.PROCLIB. Refer to *System Programming Library: TSO* for your operating system.
- Construct the TSOKEY00 member or an alternate member of SYS1.PARMLIB (or an alternate data set) to set VTIOC parameters. Refer to *MVS Initialization and Tuning* or to *MVS/XA Initialization and Tuning*.
- Include SYS1.CMDLIB in a LNKLST_{xx} member of SYS1.PARMLIB or in a LOGON cataloged procedure. Refer to *Initialization and Tuning* guide for your operating system.
- Create or convert the user attribute data set (UADS) and the broadcast data set. Refer to *System Programming Library: TSO* for your operating system.
- Build translation tables if character translation is desired. Refer to *System Programming Library: TSO* for your operating system.
- Write the procedure that starts TSO/VTAM time sharing. Refer to *System Programming Library: TSO* for your operating system.
- Write any command exit routines you plan to use. Refer to *System Programming Library: TSO* for your operating system.

Note: You should be aware that when you VARY LOGON to TSO, a new logon attempt is made when the user session ends, even if it ends in error. This is because it is not the session with TSO failing. TSO message IKT024I is repeatedly issued with sense 0821 indicated. To stop this, you must break the auto logon relationship.

How TSO/VTAM Differs from TSO through TCAM

The following list describes differences between TSO/VTAM and TSO through TCAM. It is intended for system programmers who are familiar with TSO through TCAM. The differences are:

- TSO/VTAM does not use the TCAM message control program (MCP).
- VTIOC replaces TIOC (terminal I/O coordinator) as the means for controlling data movement between TSO and the access method.
- TSOKEY00 replaces IKJPRM00 as the SYS1.PARMLIB member that contains time-sharing parameters.
- The system START command starts TSO/VTAM time sharing. The MODIFY command controls the number of users that may be logged on and terminates user address space. The STOP command stops TSO/VTAM time sharing.
- TSO/VTAM user address spaces are totally independent of each other. Each address space is an individual TSO/VTAM application program, with ownership of its terminal. A noncontiguous terminal status block (TSB) is allocated dynamically when each user logs on. Users do not share buffers; VTIOC allocates buffers as needed.

- TSO/VTAM uses VTAM's logon facilities. The existing TSO LOGON command, which provides a logon to the TSO terminal monitor program (TMP), is supported only for re-logons. The existing TSO LOGOFF command is supported only if HOLD is not coded.
- TSO/VTAM support for the PROFILE and TERMINAL commands differs from that provided through TCAM. You can define character-delete and line-delete control characters (PROFILE command) only for the LU type 1 devices supported by TSO/VTAM, because of editing capabilities of TSO/VTAM-supported terminals. (Refer to the list of supported devices in *Network Program Products General Information*.) Definition of attention interruption characteristics (TERMINAL command), including the simulated attention interruption, is not supported, because attention interruptions are always accepted on TSO/VTAM-supported terminals. Character translation (TERMINAL command) is provided for TSO/VTAM-supported terminals.
- There are some considerations for terminal control macroinstructions. STTRAN sets character translation. STFSMODE turns 3270 full-screen mode on or off. STLINENO is the number of a 3270 screen line on which the next non-full-screen message should appear and optionally turns full-screen mode on or off. STTMPMD determines whether the terminal control routine is active for the terminal and whether the ATTN and CLEAR keys are to be passed to the application program as data. GTTERM obtains the primary or alternate screen sizes and places them in a user-provided area. The STATTN macroinstruction is not supported by TSO/VTAM. The STCC macroinstruction is supported for NTO-attached devices.
- No data is lost when a user logs on again (reconnects) after his line is disconnected.
- TSO/VTAM takes advantage of multiprocessing because it is multitask structured; TCAM executes in one host processor at a time.

Appendix D. MVS Filing Cryptographic Keys

If you use the VTAM data encryption facility, you must file cryptographic keys on the cryptographic key data set at each host processor before activating any LUS that are used in cryptographic sessions.

Filing Secondary Logical Unit Keys for Single-Domain Cryptographic Sessions

To allow cryptographic sessions to be established within a single domain:

- Install the IBM Programmed Cryptographic Facility. Refer to *IBM Programmed Cryptographic Facility Installation Reference Manual*.
- Use the IBM Programmed Cryptographic Facility to file secondary logical unit (SLU) keys on the cryptographic key data set (CKDS) as follows:

For each device-type LU that is to be used as the secondary end of a cryptographic session, code:

LOCAL *name*

Where *name* is the name of the LU. This LOCAL statement generates an SLU key for the LU and adds it to the CKDS enciphered under the first variant of the host master key. It also returns a clear SLU key. Enter the clear SLU key into the device.

For each VTAM application program that is to be the secondary end of a cryptographic session, code:

REMOTE *name*

Where *name* is the name of the application program. This REMOTE statement generates an SLU key for the application program and adds it to the CKDS enciphered under the second variant of the host master key.

Filing CDRM Keys for Cross-Domain Cryptographic Sessions

To allow cross-domain cryptographic sessions to be established, file SLU keys for each domain as described above. Then use the IBM Programmed Cryptographic Facility to file cross-domain keys on the cryptographic key data set (CKDS) at each host processor as follows:

- For each pair of host processors (HOST1 and HOST2) that are to have cross-domain cryptographic sessions between their domains, at HOST1 code:

CROSS *name*

Where *name* is the name of HOST2's CDRM. This CROSS statement generates two cross-domain keys, one defined as local and the other defined as remote. It stores the local cross-domain key in the CKDS enciphered under the first variant of HOST1's host master key and stores the remote cross-domain key in the CKDS enciphered under the second variant of HOST1's host master key. Both of these keys are associated with the name of HOST2's CDRM. This CROSS statement also returns clear copies of the two keys.

- The cross-domain keys generated at HOST1 must be taken to HOST2 and supplied as input to the IBM Programmed Cryptographic Facility in a CROSS statement as follows:

```
CROSS name,KEYLOC=x,KEYREM=y,ADD
```

Where:

- *name* is the name of HOST1's CDRM.
- *x* is the clear remote cross-domain key from HOST1.
- *y* is the clear local cross-domain key from HOST1.
- This CROSS statement adds the two cross-domain keys to HOST2's CKDS, associates them with the name of HOST1's CDRM, reverses the local/remote relationship of the two keys, and enciphers key *x* and key *y* under the first and second variants of HOST2's host master key respectively.

Note: The terms local and remote in reference to the keys used by the CROSS statement do not mean the same as the same terms used in other contexts in this manual. Refer to:

- *OS/VS1 and OS/VS2 MVS Programmed Cryptographic Facility Installation Reference Manual*
- *OS/VS1 and OS/VS2 MVS Programmed Cryptographic Facility General Information Manual.*

Appendix E. VM/SNA Console Support (VSCS)

VM/SNA Console Support (vscs) is an application program that acts as an intermediary between VTAM and a VM system. If an end user in a VTAM network wants to log on to VM, he must first log on to the vscs application running in the VM host. vscs, however, can be made completely transparent to end users.

See *VTAM Operation* for a detailed description of LOGON and LOGOFF procedures in a system that has vscs.

See *Network Program Products General Information* for a list of the devices supported by vscs as virtual machine consoles and a list of the output devices supported by vscs.

To provide SNA console support, vscs uses:

- SNA Console Communications Services (CCS), a part of VM, which provides full VM console interface capabilities for SNA terminal users
- The Inter-User Communication Vehicle (IUCV), which transfers messages between vscs and CCS.

Refer to *VTAM Installation Memo to Users* for an example of a VM directory entry that is coded so that vscs can use CCS and IUCV.

Note that if vscs runs in a separate virtual machine from VTAM, it must be in an authorized machine.

Refer to *VM/SP Planning Guide and Reference* for instructions on how to authorize a virtual machine.

The DTIGEN Macroinstruction

vscs has its own set of start options. You code them on a DTIGEN macroinstruction and place the macroinstruction in a CMS file called DTIUSER n ASSEMBLE (where n is a number 0–9) on the VTM191 disk. Assemble this file using VTAMAC MACLIB.

DTIGEN is an assembler macroinstruction, so code it in a format like this (the value 5 is only an example):

```
[symbol] DTIGEN DTIUSER=5,PRTSHR=N,CSTRACE=N, . . .  
                END
```

The operands are “stacked” in the following description to make them easier to read, but in practice you can code them on one line. (You can put a nonblank character in column 72 if the list of operands continues onto another line. The continuation line must begin in column 16.)

All the operands on the DTIGEN macroinstruction are optional. They are divided into categories according to their purpose.

The format of the DTIGEN macroinstruction is:

Name	Macro	Operands
[symbol]	DTIGEN	[IDENT = identifier yyddd] [,DTIUSER = n 0] [,APPLID = name VM] [,PASSWRD = password] [,DPXMTL = n 1948] V3R2 [,DPXMTL = n 1724] pre-V3R2 [,KPXMTL = n 284] V3R2 [,KPXMTL = n 256] pre-V3R2 [,PRNTNUM = n 16] [,RCVBFRL = n 284] V3R2 [,RCVBFRL = n 256] pre-V3R2 [,RPLNUM = n 8] [,PRTSHR = Y N] [,TIMECPY = n 3] [,TIMEREL = n 120] [,BFRFIFO = Y N] [,CSTRACE = Y N] [,DPTRACE = Y N] [,EXTRACE = Y N] [,FRTRACE = Y N] V3R2 [,GETRACE = Y N] V3R2 [,VTTRACE = Y N] V3R1.2 and later [,VTTRACE = Y N] pre-V3R1.2 [,TRASIZE = n 1000] V3R1.2 and later [,TRASIZE = n 250] pre-V3R1.2 [,LGNCMDS = pre-logon command table] [,RDSPTMR = n 10] [,W3767L = n 129] [,W2741L = n 129] [,WTWXL = n 72] [,VSAMLM = n 10] [,DPAGE = n screen depth] [,KPAGE = n 10] [,LURTRY = n 5] [,SCIPCNT = n 2] V3R1.2 [,TSKRTRY = n 10] [,ACBLOOP = n 3] [,DUMP = Y N] [,BLKMULT = n 1] [,FSREAD = Y N] V3R1.2 and later [,SCHED = Y N] V3R1.2 and later [,SPEC = Y N] V3R1.2 and later [,STCHKTM = n 0] V3R2 [,STRELTM = n 0] V3R2 [,DEXIT = Y N] [,KEXIT = Y N]

symbol

is optional. If you assign a symbol, it must be from 1 – 8 alphanumeric characters, beginning with a character other than the dollar sign.

IDENT = identifier|yyddd

is a 1–5 character EBCDIC identifier. Used only for debugging, it identifies parameters being used by VSCS when a dump is taken. The default is the Julian date (*yyddd*) on which the DTIGEN macroinstruction is assembled. DTIUSER operand.

DTIUSER = n|0

determines the name of the ASSEMBLE file that contains this DTIGEN macroinstruction. Its value, *n*, should appear in the filename: DTIUSER*n* ASSEMBLE. *n* can be any number 0–9.

Using this operand, you can maintain more than one module, each containing a different set of startup parameters; each time you start VSCS you can select the module that contains the parameters you need.

VTAM-Related Operands**APPLID = name|VM**

is the VTAM application program identifier. VSCS uses this operand for the VTAM OPEN ACB macroinstruction. It is also used as the IUCV application program identifier. *name* can be 1–8 alphanumeric characters. The first character must be alphabetic. This value must match the name given for VSCS on the VTAM APPL statement. The default is VM. See “Defining the VSCS Application to VTAM” on page 427 for more information.

You can also customize this name with an interpret table or a USS table. See *VTAM Customization* for details.

PASSWRD = password

identifies the VTAM application password in 1–8 EBCDIC characters. If you code a PRTCT operand on the APPL definition statement for VSCS, this password must match it. (“Defining the VSCS Application to VTAM” on page 427 describes how to code the APPL statement.) If you omit PRTCT on the APPL statement, VTAM does no password checking.

The default is the value you coded for APPLID.

DPXMTL = n|1948 v3R2**DPXMTL = n|1724 pre-v3R2**

is the buffer size, in bytes, for data being sent to display terminals in line mode. (For terminals operating in full-screen mode, VSCS uses an internal mechanism to allocate buffers that are large enough to accommodate the full screen of data being sent.)

In general, this value should be the average size of the data stream transmitted to a display terminal operating in line mode. This is usually the average number of lines of output sent to the terminal before a RECEIVE or READ is requested.

To find the best value for your system, calculate the average buffer size by using the VSCS accounting records for a representative sample of users. Each VSCS accounting record contains the number of console output lines transmitted and the number of output requests; use these values to calculate the average number of console lines for each VTAM SEND request. (Refer to *VTAM Customization* for the format of the VSCS accounting record.)

The range is 256–32600. The default is 1984 for v3R2 and 1724 for pre-v3R2. This is the size of a 24×80 screen, minus the input area and the status area.

KPXMTL = n|284 v3R2

KPXMTL = n|256 pre-v3R2

is the buffer size, in bytes, for data being sent to keyboard terminals and printers.

In general, this value should be the average size of the data stream transmitted to the device.

Note: For TWX-compatible display terminals (such as an IBM Personal Computer emulating a 3101), you should determine whether any application programs send large blocks of data. If so, you might need a larger value for KPXMTL.

The range is 138 – 32600. The default is 284 bytes for v3R2 and 256 bytes for pre-v3R2.

PRNTNUM = n|16

is the maximum number of printers allowed to be logged on for PF-key copy requests. Choose a number that will accommodate a normal increase in the number of printers in the network; since PRNTNUM requires 32 bytes for each printer, however, choosing a number that is unnecessarily high wastes storage.

The range is 1 – 32600. The default is 16.

RCVBFRL = n|284 v3R2

RCVBFRL = n|256 pre-v3R2

is the buffer length, in bytes, for VTAM RECEIVE requests issued by VSCS. In general, this should be set to the average size of the data stream that VSCS receives from a VTAM logical unit. If the RECEIVE data exceeds this buffer size, VSCS dynamically allocates additional buffer space to receive the remaining data from VTAM.

To find the best value for your system, calculate the average buffer size by using the vscs accounting records for a representative sample of users. Each vscs accounting record contains the number of bytes received and the number of input requests; use these values to calculate the average buffer size. Refer to *VTAM Customization* for the format of the vscs accounting record.

The range is 80 – 32600. The default is 284 bytes for v3R2 and 256 bytes for pre-v3R2.

RPLNUM = n|8

is the number of VTAM RECEIVE operations that VSCS continually has outstanding. The storage used by VSCS for such operations, on a continuous basis, is the RCVBFRL size times the value of RPLNUM. (VSCS may also be using additional buffer storage obtained, by an internal mechanism, for RECEIVE operations that exceed the RCVBFRL value and for full-screen output operations.)

The range is 1 – 16; the default, 8, is the recommended value. However, if you are running more than 40 terminals, the maximum value of 16 is recommended.

PRTSHR = Y|N

Y enables VSCS dynamic printer reallocation and sharing. If the VSCS RELREQ exit is driven, and the time designated by TIMEREL has elapsed since its last use, it immediately releases the associated printer. Otherwise, VSCS waits until the interval has elapsed before it releases the printer. Also, when VSCS receives a PF-key copy request for a printer previously known to it, it attempts to reacquire the printer. The default is Y.

Note: The PF-key copy request refers to the hard-copy support for printers supported by VSCS. The VSCS user can issue a COPY command to obtain a hard copy of the display screen contents on the appropriate printer. To request a copy, you must:

1. Enter SET PFnn COPY(*luname*).
2. Press the PFnn key.

For more information on this function, refer to *VM/VCNA Installation and Terminal Use*.

TIMECPY = n|3

defines the printer allocation time limit in seconds. *n* is the maximum time that VSCS waits to reacquire a printer it previously released, before causing a PF-key copy request to fail. A PF-key copy request is rejected if the time required to allocate a printer exceeds this limit.

The range is 0–30 seconds. The default is 3 seconds. This operand is ignored if PRTSHR=N.

TIMEREL = n|120

defines the printer deallocation time limit in seconds. *n* is the minimum time that VSCS keeps a printer after its last use. VSCS does not release a printer to another application until this interval has elapsed.

The range is 0–86400 seconds (24 hours). The default is 120 seconds (2 minutes). This operand is ignored if PRTSHR=N.

Trace-Related Operands

Note: For more information on the traces mentioned below, see *VTAM Diagnosis Guide* (v3R1 and v3R1.1) or *VTAM Diagnosis* (v3R2).

BFRFIFO = Y|N

tells whether dynamic buffers are selected from the dynamic buffer storage queues on a FIFO (first-in first-out) basis. The default is N, meaning that the buffers are selected on a LIFO (last-in first-out) basis.

See the descriptions of the trace operands below for additional information. Also, see the description of the BLKMULT operand on page 425 for information on expanding the number of buffers.

Note: Code BFRFIFO=Y only when it is required for problem determination; if you want to see information in the last-used control block, for example, BFRFIFO=Y prevents VSCS from immediately reusing that area of storage. Using this option may affect system performance, and it should normally be initiated by an operator command when necessary (see the description of VSCS trace commands below).

CSTRACE = Y|N

CSTRACE=N turns off the console communications services (CCS) trace. This option traces the data flow between VSCS and CCS, within VSCS. There is another trace facility in CP to trace data flow within CCS. The default is Y, which leaves the CCS trace on.

DPTRACE = Y|N

DPTRACE=Y turns on the VSCS dispatcher trace. This option records information about VSCS before it dispatches control to the routines that process the various tasks. The default is N, which leaves the VSCS dispatcher trace turned off.

FRTRACE = Y|N

FRTRACE=Y turns on the VSCS free block trace. This option traces requests to the VSCS storage manager to release a block of storage. The default is N, which leaves the VSCS free block trace turned off.

GETRACE = Y|N

GETRACE=Y turns on the VSCS get block trace. This option traces requests to the VSCS storage manager for a block of storage. The default is N, which leaves the VSCS get block trace turned off.

VTTRACE = Y|N v3R1.2 and later**VTTRACE = Y|N pre-v3R1.2**

VTTRACE=Y turns on the VSCS VTAM exit trace. This option traces the incoming requests or responses from VTAM at the application program interface (API). This option includes dispatcher trace entries for VTAM services only. The default for v3R2 is Y, which turns the VTAM exit trace on. The default for pre-v3R2 is N, which leaves the VTAM exit trace turned off.

Note: Using the above trace options may affect performance; they should normally be initiated by operator command (VSCS TRACEON (option)) when necessary. The defaults have been chosen to provide diagnostic information and minimal impact on performance.

EXTRACE = Y|N

EXTRACE=Y allows external tracing to occur during VSCS initialization, if CPTRAP has been previously activated. The default is N, internal tracing only.

TRASIZE = n|1000 v3R1.2 and later**TRASIZE = n|250 pre-v3R1.2**

is the number of 32-byte entries in the trace table. This number should be large enough to record data from all the VSCS traces (CSTRACE, DPTRACE, and VTTRACE) that are active concurrently. (Alternatively, the operator, when issuing the VSCS TRACEON command, can request that trace data be recorded on an external medium.)

The trace entries are preceded by a 64-byte trace table header that contains table control information. The trace table is positioned on a 32-byte boundary for readability in a storage dump. The total size of the trace table in bytes is:

$$(TRASIZE + 3) \times 32$$

This storage is allocated when the first trace entry is made and is freed only when VSCS is terminated.

The range is 125 – 32600 entries. The default is 1000 entries for v3R1.2 and after and 250 entries for pre-v3R1.2.

CCS-Related Operands

LGNCMDS = pre-logon command table

lists the commands a user can issue before logging on. When VSCS receives data from a terminal that is not logged on, it compares the data with the commands in this table. If a match occurs, VSCS simply passes the command to CP. If no match occurs, VSCS assumes the data is a user ID (followed by options, if any) and appends it to the first command in the table before passing it to CP. Therefore, the first command in the table must be LOGON or some other command that allows access to the system.

You must code the basic list of commands shown in the table below, plus any others you wish to add. (The largest number of commands you can have is 64.) The basic command table is:

(LOGON,L,LOGIN,SL,SLEEP,LOG,LOGOFF,M,MSG,MESSAGE,D,DIAL,*)

RDSPTMR = n|10

is the redisplay timer value, in tenths of a second. It sets the time that elapses before input is redisplayed on the screen. This is done to reduce the number of writes to the terminal. If output comes back during this time, it is displayed immediately; otherwise the input is redisplayed, and the output is displayed when it arrives.

The range is 0–255. The default is 10 (1 second), which is the recommended value. If you set the value higher than about 30 (3 seconds), users may believe their terminals are hung, or complain of slow response time, when they do complex operations.

W3767L = n|129

is the default line size for 3767 and 3777 terminals. This is the initial setting of the terminal output line length for a 3767 or a 3777. The user can change this by issuing the CP TERMINAL LINESIZE command and supplying a new line length.

The range is 1–255 characters. The default is 129.

W2741L = n|129

is the default line size for 2741 terminals. This is the initial setting of the terminal output line length for a 2741. The user can change this by issuing the CP TERMINAL LINESIZE command and supplying a new line length. The range is 1–255 characters. The default is 129.

WTWXL = n|72

is the line length for TWX keyboard printers. This is the initial setting of the terminal output line length for a TWX device. The user can change this by issuing the CP TERMINAL LINESIZE command and supplying a new line length.

The range is 1–255 characters. The default is 72.

VSAMLM = n|10

is the maximum number of concurrent messages that can be transferred between VSCS and CCS using IUCV. VSCS transfers data to and from CCS using IUCV CONNECT and IUCV ACCEPT. The value of this operand defines the largest number of concurrent paths **per user** between VSCS and CCS for sending and receiving messages.

The range is 4–255. The default is 10.

DPACE = n|screen depth

is the pacing value between CCS and VSCS to be used with display terminals. The value of this operand determines how many messages CCS sends to VSCS before waiting for a response.

The range is 1–255. The default is the number of rows on the display terminal (the screen depth), and is device-dependent. It is strongly recommended that you use the default.

Note: This pacing option is not related to the PACING and VPACING options available in VTAM and NCP.

KPACE = n|10

is the pacing value between CCS and VSCS to be used with keyboard terminals and printers. The value of this operand determines how many console mode messages CCS sends to VSCS before waiting for a response. Note that CP may

not respond to any of the attention keys until this number of messages has been sent to the device.

The range is 1–255. The default is 10. It is strongly recommended that you use the default.

Note: This pacing option is not related to the PACING and VPACING options available in VTAM and NCP.

Performance-Related Operands (V3R1.2 and later)

FSREAD = Y|N

specifies whether the internal full-screen read buffer is issued when a switch from full-screen mode is required to process a CP message.

The default is Y, which allows vscs to issue a full-screen read buffer when forced to switch to console mode.

FSREAD=N prevents that action.

This operand is valid only for displays.

Note: Prevention of the internal full-screen read buffer can lead to loss of user data.

SCHED = Y|N

specifies whether exception response mode or definite response mode is to be used for all devices except printers.

The default is N, which requests definite response mode for DISPLAY LUS and keyboard printer devices.

SCHED=Y means exception response mode is to be used, except for requests for synchronization, protocol requirements, and error recovery.

Note: Additional storage is required for a limited error recovery process.

SPEC = Y|N

specifies whether LU processing will be in ANY or SPECIFIC modes, or just in SPECIFIC mode. Processing just in SPECIFIC mode requires additional storage for a RECEIVE RPL and data area (set by DPXMTL and KPXMTL) for each LU.

The default is N, which requests LU processing in ANY and SPECIFIC modes.

SPEC=Y requests LU processing in SPECIFIC mode.

This operand is valid for all devices.

Note: Use of this operand requires additional storage for a RECEIVE SPECIFIC RPL and data area.

Recovery-Related Operands

SCIPCNT = n|2 (V3R1.2 and later)

tells the number of times an attempt should be made to reacquire an LU after a network failure. The default is 2; the valid range is 1–10.

You should specify here a value determined by your network setup. If there are multiple routes to LU resources, then a small number of attempts should be adequate. If multiple routes do not exist, then a larger number of allowed attempts gives a greater likelihood of the LU being reacquired after the network recovers.

Notes:

1. If the network fails, a large number of attempts with a large number of LUS can adversely affect VSCS performance, until the network recovers or the limit is reached for all LUS.
2. In order for VSCS SCIP recovery to properly recover devices, the appropriate logmode table and entry must be coded for each LU. Otherwise, VTAM will use the default logmode entry, which may not be valid for the recovering LU.

LURTRY = n|5

is the logical-unit retry count. If a specific LU causes repeated ABENDS (abnormal ends), this retry count tells how many times it should be reactivated. When the count is exceeded, VSCS disconnects the LU from VM and then releases it back to the SNA network. This number should be less than the TSKRTRY count so that one user cannot cause VSCS to terminate.

The range is 1 to the value of TSKRTRY. The default is 5 or the TSKRTRY value, whichever is smaller.

TSKRTRY = n|10

is the task retry count (maximum number of retries of a task that ABENDS) before VSCS termination is invoked. Task retry occurs only for data being sent to a logical unit after VSCS initiates logical unit purge for the affected logical unit. This number should be greater than the LURTRY count.

The range is 1 – 255. The default is 10.

ACBLOOP = n|3

is the amount of time, in minutes, that VSCS retries opening its VTAM ACB for certain error conditions. VSCS retries every 30 seconds until one of the following is true:

- OPEN is successful.
- OPEN fails with a condition that cannot be retried.
- The retry limit is exceeded.
- VSCS is terminated by the VSCS operator command HALT, QUIT, or CANCEL.

The range is 0 – 32767. 0 means that VTAM will not retry the operation. The default value is 3.

DUMP = Y|N

Y causes VSCS to take dumps in certain internal error situations.

The default is N, which means VSCS does not take dumps.

Note: VSCS always takes dumps when an ABEND occurs, regardless of how you set this operand.

Storage-Related Operands

BLKMULT = n|1

is the decimal number used as a multiplier in determining the number of blocks in a segment.

VSCS maintains a number of fixed-length storage pools. VSCS allocates an area from a pool that has blocks equal to or greater than the size of the request. Storage is obtained in amounts called segments, which are divided into fixed-length blocks.

The range is 1 – 8 for V3R2, and 1 – 4 for pre-V3R2. The default, and recommended value, is 1. A higher value results in fewer storage requests but

requires more storage. For example, if `BLKMULT=4`, then `VSCS` obtains four times as much storage for each request; each request for 4K would obtain 16K of storage.

STCHKTM = n|0 (V3R2)

specifies the time interval between checking the `VSCS` storage pool for available segments (segments in which all blocks are on the free queue). The range is 0–734400 tenths of a second.

The default is 0, which means no checking is done.

For additional information on the use of this operand, see *VTAM Customization*.

STRELTM = n|0 V3R2

specifies the time interval between releasing available segments of storage. The range is 0–734400 tenths of a second.

The default is 0, which means no checking is done.

For additional information on the use of this operand, see *VTAM Customization*.

Operands to Activate User Exits

DEXIT = Y|N

tells whether exit routines that translate data being sent to and from display terminals, are active. `VTAM` provides two such user exits: `DTIPDDSO` for data sent to the terminal, and `DTIPDDSI` for data received from the terminal. If you wish to code your own user exits for data translation, they must have these same names and must follow the rules listed in “Coding Exit Routines for Translating Data” on page 428.

The default is `N`, which means that the user exits are not activated.

KEXIT = Y|N

tells whether exit routines that translate data being sent to and from keyboard terminals and printers, are active. `VTAM` provides two such user exits: `DTIPDNTO` for data sent to the device, and `DTIPDNTI` for data received from the device. If you wish to code your own user exits for data translation, they must have these same names and must follow the rules listed in “Coding Exit Routines for Translating Data” on page 428.

The default is `N`, which means that the user exits are not activated.

VTAM Considerations

When you install `VTAM`, you must take some additional steps before you can run `VSCS`. You must define the `VSCS` application to `VTAM`. You may also want to:

- Code logon mode tables for `VSCS` devices
- Code `USS` tables to tailor the `USS LOGON` and `LOGOFF` commands to the needs of your installation.

Note: When you first install `VTAM` and `VSCS`, there are default logon mode tables and `USS LOGON` and `LOGOFF` commands for `VSCS` devices. For most uses, they will meet your needs.

The following sections explain what you have to do to define the `VSCS` application to `VTAM`, code logon mode tables, and code `USS` tables.

Defining the VSCS Application to VTAM

VSCS is a VTAM application program and must be defined to VTAM as an application program major node. As described in “Defining Application Program Major Nodes” on page 69, an application program major node is defined by filing one VBUILD statement for the major node and an APPL statement for each application in the major node. “Filing Network Definition Statements” on page 64 explains how to file network definition statements.

The following example shows the definition statements required to define the vscs application to VTAM:

```
ISTAPPLS VBUILD TYPE=APPL
VM      APPL AUTH=(PASS,ACQ),ACBNAME=VM,PRCT=VM,AUTHEXIT=YES,      C
        SONSCIP=YES
```

Notes:

1. ISTAPPLS VTAMLST is the name of the file containing the definition statements for the vscs application major node. You may use a different name if you choose.
2. If you code an ACBNAME, it must match the name you use on the APPLID operand of all DTIGEN macroinstructions you code. (See “The DTIGEN Macroinstruction” on page 417 for more information on DTIGEN.) If you do not code an ACBNAME, the default name is VM.
3. AUTHEXIT=YES is required.
4. Do not code any operands on the APPL statement other than those shown in the example.
5. For VTAM V3R1, SONSCIP=NO.

Coding Logon Mode Tables for VSCS Devices

Logon mode tables are necessary to define session parameters for devices supported by VSCS. The default logon mode table is named ISTINCLM.

VSCS supports WSF QUERY to dynamically determine screen sizes for 3290 displays.

See *VTAM Customization* for additional information about coding logon mode tables in VTAM.

Coding USS Tables for Logging On and Off

You may code USS tables to tailor the USS LOGON and LOGOFF commands to the needs of your terminal operators. When you first install VTAM and VSCS, there are default USS mode tables for the USS LOGON and LOGOFF commands. They are described in *VTAM Customization*.

VTAM Customization contains sample USS tables that you can code, should you wish to code your own USS table for a VSCS terminal.

Defining Printers

You can define a list of printers to VSCS without establishing sessions between VSCS and the printers. This is useful when users on different VM systems share the same printer for PF-key copy functions. You can do this by issuing the VSCS command PRINTER:

- From the console of the VTAM and VSCS virtual machine, or

- From the PROFILE GCS for the VTAM and VSCS virtual machine.

The syntax of the PRINTER command is:

```
PRINTER printer-name printer-name printer-name....
```

For details, refer to *VTAM Operation*.

Notes:

1. Once a printer is defined to VSCS with the PRINTER command, you cannot delete the definition without restarting VSCS.
2. The number of printers you define cannot exceed the value of the PRNTNUM operand on the DTIGEN macroinstruction.
3. If you want these printers to become active as soon as VTAM is started, include the major node name in which the printer resides in an ATCCONxx VTAMLST file. "Creating Start Option and Configuration Lists" on page 283 contains a detailed discussion of ATCCONxx VTAMLST files.

Coding Exit Routines for Translating Data

You can code exit routines to modify a data stream before VSCS translates it or to bypass VSCS translation altogether. VTAM provides four exit routines: DTIPDDSO for data being sent to a display device, DTIPDDSI for data being received from a display device, DTIPDNTD for data being sent to a keyboard device, and DTIPDNTI for data being received from a keyboard device. They do nothing except set a return code of 0, which allows VSCS to translate the data.

All such exit routines must conform to the following rules:

- The exit routine cannot change the size of the data stream. (For this reason, APL and TEXT data translation are not allowed.)
- A return code of 0 allows VSCS to translate the data; a return code of 8 prevents VSCS from translating the data.
- On exiting, register 13 must have the same contents—the address of a save area—as it had on entry.
- The exit routine is responsible for handling any responses from VM/SP or from the logical unit as a result of the data change.

Offset	Description
+00	Address of data
+04	Length of data stream
+08	Device attributes:
	X'80' Alternate size available
	X'40' New APL/TEXT (3278 or 3279)
	X'1C' Color/highlight functions:
	X'10' Extended data stream available
	X'08' Extended color available
	X'04' Extended highlighting available
+09	Character set being used:
	X'00' EBCDIC
	X'01' APL
	X'02' TEXT
+0A	State of the device:
	X'00' No MORE or HOLDING condition
	X'01' No MORE or HOLDING condition (CMS edit mode)
	X'02'-X'03' MORE condition, 50 second timer set
	X'04'-X'05' MORE condition, 10 second timer set
	X'06'-X'07' HOLDING condition
	X'08'-X'0F' NOT ACCEPTED logic applies
	X'10'-X'1F' PF key copy in progress
	X'20' Full-screen support mode
	X'40' Full-screen support mode
	X'60' Full-screen support mode
	Note: X'80' – X'88' are vscs internal modes.
	X'80' Initial logon in progress
	X'81' Logon on device
	X'82' CP connect in progress
	X'83' Logging on, awaiting initial console request
	X'84' LU severed from CP, but in session with VSCS
	X'85' Logoff in progress, awaiting CPBRK
	X'86' Conditional logoff in progress, awaiting final send completion
	X'87' Sever required at message complete
	X'88' LU purged; VSBK scheduled to VTAM services
+0B	Reserved
+0C	Screen width
+0E	Screen depth

Note: The screen width and depth give the physical size of the screen.

Figure 61. Register 1 Contents Passed to Exit Routines (for Display Devices)

Exit routines for *display devices* receive control with the following information:

Register 1	Parameter list (see Figure 61 on page 429)
Register 13	Save area for the caller
Register 14	Return address
Register 15	Entry point of the exit routine.

Exit routines for *keyboard devices* receive control with the following information:

Register 1	Parameter list: +00 Address of data +04 Length of data stream +08 Model of terminal or printer (01 – 05)
Register 13	Save area, in DTISWB, for use by the exit routine
Register 14	Return address
Register 15	Entry point of the exit routine.

You can activate these exit routines by setting the operands DEXIT (for display devices) and KEXIT (for keyboard devices) on the DTIGEN macroinstruction. See “Operands to Activate User Exits” on page 426 for details.

Defining Your Own Set of VSCS Start Options

You should code your own set of start options for vscs if the default start options do not meet your needs. You may code up to ten different sets of start options for vscs. Each set must be in a unique DTIUSER*n* ASSEMBLE file: each file must contain exactly one DTIGEN macroinstruction, and each file must be assembled separately, using VTAMAC MACLIB. Link-edit resulting text files into VSCSUSER LOADLIB on the VTM191 minidisk using the CMS VMFLKED command.

When you code the DTIGEN macroinstruction, code values only for those start options you wish to change. The default value is assumed for each start option that you do not code.

Note: If running multiple vscs under the same GCS group, each must have a unique VTAM APPL definition and only one vscs can be active per virtual machine.

Follow these steps to code, assemble, and link-edit a set of start options for vscs. Label the set of start options DTIUSER*n*, where the value of *n* depends on what you code for the DTIUSER operand; see the description of the on page 419. (*n* is also the value you assign to the PARM operand of the VSCS START command when you start vscs.) In this example, the set of start options is labeled DTIUSER5.

1. Access the VTM191 disk as the A-disk.
2. Create a CMS file named DTIUSER5 ASSEMBLE on the A-disk. In this file, code one DTIGEN macroinstruction with operands for the start options that you wish to change. See “The DTIGEN Macroinstruction” on page 417 for the format of the DTIGEN macroinstruction.
3. Identify the macro definition library to the assembler by issuing the command GLOBAL MACLIB VTAMAC.
4. Issue the CMS ASSEMBLE command to assemble the DTIUSER5 ASSEMBLE source code. The output of the assembler is a file named DTIUSER5 TEXT A.

5. Code a link-edit script in a CMS file named VSCSUSER LKEDCTRL on the A-disk. The link-edit script must contain the following statements:

```
%LIBRARY VSCSUSER
INCLUDE DTIUSER5
NAME DTIUSER5(R)
```

The purpose of the statements is:

Command	Purpose
INCLUDE	Tells VMFLKED EXEC to use the file named DTIUSER5 TEXT as input to the linkage editor.
NAME	Tells the linkage editor to name the output load module DTIUSER5.

6. Link-edit the DTIUSER5 TEXT deck by issuing the command:

```
VMFLKED VSCSUSER
```

This command uses the VSCSUSER LKEDCTRL file to build the DTIUSER5 load module in VSCSUSER LOADLIB on the VTM191 disk.

7. With the "RUN" minidisk accessed, issue:

```
LOADCMD VSCS DTISLCMD
```

8. Issue the GLOBAL LOADLIB command with the name VSCSUSER after the word LOADLIB. For example the GLOBAL command might look like:

```
GLOBAL LOADLIB VSCSUSER VTAM VSCS NCP
```

9. Issue the command:

```
CP ENABLE SNA
```

10. Start vscs with the command:

```
VSCS START PARM=5
```

The VSCS START Command

To set up the environment in which vscs operates, follow the instructions in "Defining Your Own Set of VSCS Start Options" on page 430 and "VTAM Considerations" on page 426.

After you have set up its operating environment, you can start vscs with the vscs START command.

Its format is:

```
VSCS START [PARM=x]
```

where x is a single digit 0–9 that corresponds to a DTIUSERN load module in the VSCSUSER LOADLIB. If you leave out PARM=x, VSCS is started with the IBM-supplied set of default start options.

You can issue the VSCS START command:

- From the console of the VTAM and vscs virtual machine
- From the PROFILE GCS for the VTAM and vscs virtual machine.

If you use the VM autolog facility in conjunction with the PROFILE GCS, you can start vscs without operator intervention, when an IPL is done for the VM system.

Normally the vscs START command completes with a zero return code when vscs is ready to accept additional commands. At this point you are free to issue vscs and GCS commands from the console of the VTAM and vscs virtual machine while initialization and execution are still going on. If vscs initialization fails before reaching this point, you get a nonzero return code.

You can start vscs independently of VTAM. You can even start vscs before VTAM. vscs initialization periodically retries start-up until VTAM is initialized, and the vscs application name is activated. Retries occur every 30 seconds, and you can determine how long they continue with the ACBLOOP operand on the DTIGEN macroinstruction.

Appendix F. MVS Logon Manager

Description

The logon manager provides logon access to a Transaction Processing Facility (TPF) application from a dependent SLU (secondary logical unit).

It provides support for SLU initiation with independent LUS and multitask attachments for peripheral nodes through subarea networks. A TPF is a host processor dedicated to high-speed transaction processing. It is designed to handle a large volume of transactions submitted from many remote terminals.

The logon manager resides on a network SSCP and runs as an application under VTAM. It is defined to VTAM by an APPL definition statement. The logon manager requires MVS and NCP V4R3.

TPF is defined to VTAM as a type 2.1 peripheral node. TPF requires LNCTL=CA on the NCP GROUP definition statement and uses independent, channel-attached control-point LUS (CLUS) to manage its associated subarea nodes. TPF applications are defined to VTAM as type 2.1 independent LUS. As independent LUS, they can initiate sessions with other LUS.

Interactions between logon manager and TPF occur in the form of CLU-CLU sessions.

Typical Configuration

Figure 62 on page 434 shows a typical configuration consisting of a TPF with independent CLUS, VTAM with the logon manager, and dependent SLUS.

**TPF System
(Type 2.1 Peripheral Node)**

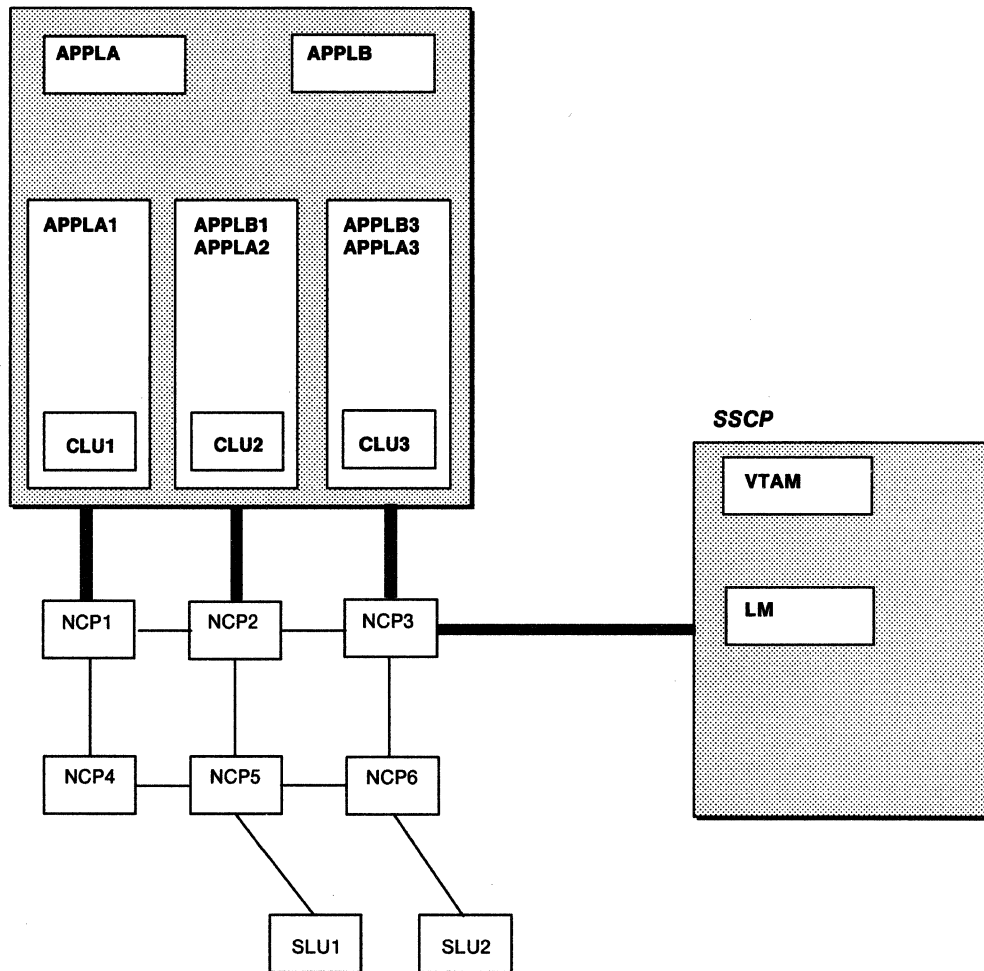


Figure 62. Sample Logon Manager Configuration

NCP1 through NCP3 are NCP V4R3 subarea nodes, which are channel-attached to TPF. NCP3 is also channel-attached to VTAM. NCP1 through NCP6 may be either link- or channel-attached to each other. NCP4 through NCP6 do not require NCP V4R3.

CLU1 through CLU3 are control point logical units. They manage the flow of transactions from their associated subarea nodes. The TPF system itself is defined to VTAM as a type 2.1 peripheral node.

APPLA and APPLB are TPF applications. They are defined to VTAM as independent LUS. As independent LUS, they can initiate sessions with other LUS and can engage in such sessions independently of the VTAM SSCP.

In order to take advantage of multiple channel-attachments into the subarea network, each application (for example, APPLA) will need at least one LU per channel-attachment. In this configuration, each application requires three or more LUS (for example, APPLA1, APPLA2, APPLA3) to utilize all channels into the network.

SLU1 and SLU2 are defined to VTAM as dependent SLUS. They are link-connected to their associated subarea nodes and represent the remote terminal users of the TPF applications.

Operation

The logon manager operates by intercepting a logon request from a dependent SLU and sending the request to the appropriate application on the TPF.

The steps in this operation are:

1. A terminal user on a dependent SLU issues a logon request for a TPF application.
2. The logon request is received by VTAM and passed to the logon manager.
3. The logon manager passes the request to a TPF CLU that has registered support for the TPF application.
4. The CLU passes the request to the appropriate TPF application.
5. The TPF application sends a session BIND to the dependent SLU.
6. The LU-LU session between the TPF application and the dependent SLU is initiated and carried on over the high-speed TPF network, independently of VTAM and the SSCP.

Starting the Logon Manager

This appendix describes installing and running the logon manager as a started task. It will also run as a job if you want. If you want to run the logon manager as a job, modify the logon manager JCL and the start procedure to conform to your installation's standards for such jobs.

To start the logon manager as a started task, issue the START command `START procname`, where *procname* is the name of the logon manager JCL procedure that is described in "JCL for the Logon Manager" on page 436.

Installation

Logon manager installation consists of four steps:

- Define the logon manager and TPF applications to VTAM.
- Copy logon manager load modules to your system. See "Installing Logon Manager Modules on Your System" on page 436.
- Create JCL for the logon manager. See "JCL for the Logon Manager" on page 436.
- Create the logon manager configuration definition to describe your network environment to the logon manager. See "Logon Manager Configuration Definition" on page 437.

These steps are described next.

Defining the Logon Manager and TPF Applications to VTAM

You must define the logon manager and each TPF application to VTAM using APPL definition statements. The following operands are required:

name	APPL	ACBNAME=acbname,	C
		AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO),	C
		PARSESS=NO,	C
		SRBEXIT=NO,	C
		SONSCIP=YES,	C
		ENCR=NONE,	C
		VTAMFRR=NO	

If *acbname* differs from the name *procname* of the logon manager JCL, you must code the LMPROC definition in the logon manager configuration definition. See "Starting the Logon Manager" on page 435 and "Logon Manager Procedure" on page 438.

You can optionally specify the following operands on the APPL statement:

PRTCT
USSTAB
VPACING

To use password protection for the logon manager, include the PRTCT operand on the APPL statement for the logon manager and specify the same password as on the LMPROC definition statement in the logon manager configuration definition. To use password protection for a TPF application, include the PRTCT operand on the APPL statement for the TPF application and specify the same password as on the LMAPPL definition statement in the logon manager configuration definition. See "Application Passwords and Minimum Channel Links" on page 438.

For additional information on the APPL definition statement, see "The APPL Definition Statement" on page 71.

Installing Logon Manager Modules on Your System

The VTAM installation process places the logon manager load modules in SYS1.LINKLIB.

You can choose to install the logon manager in some other load library by modifying the installation process. If you install the logon manager in a load library different from SYS1.LINKLIB, you must either add this library to your system's link list or point the logon manager JCL to this library by using a STEPLIB DD statement. The logon manager does not require APF authorization.

JCL for the Logon Manager

You must place JCL for the logon manager in SYS1.PROCLIB or an equivalent library with a member name *procname* of your choice. Following is a sample of the required JCL:

```
//name PROC MEMBER=partition data set member name,  
MAXSUBA=value  
//GO EXEC PGM=ELMNGR, PARM='MEMBER=&MEMBER,MAXSUBA=&MAXSUBA' .  
//ELMDEFDS DD DSN=partitioned dataset name,DISP=SHR
```

Note: The quotes are required around the PARM field of the EXEC statement.

name

is optional. If specified, it is usually the same as the member name *procname* of this JCL procedure.

ELMNGR

is the name of the logon manager load module.

ELMDEFDS

is the required DD name of the DD statement for the partitioned data set that contains the logon manager configuration definition.

MEMBER

is the 1–8 character name of the member of the ELMDEFDS partitioned data set that contains the logon manager configuration definition. See “Logon Manager Configuration Definition.”

MAXSUBA

specifies the maximum number of network subareas that can be defined to the logon manager. Valid values are 1–255. The default is 1.

Note: The number specified here must be at least as great as the number of network subareas defined in the logon manager configuration definition.

Logon Manager Configuration Definition

The logon manager configuration is defined by a sequence of source statements stored in a member of a partitioned data set with the member name that is specified in the logon manager JCL. You can write different types of source statements in any order in the configuration definition. Additional logon manager configuration definitions can be stored in members with other member names.

A logon manager configuration definition always contains one SA statement identifying each network subarea. Other logon manager configuration definition statements are optional. An example of the contents of a logon manager configuration definition follows:

```
SA=x
SA=x,ADJSA=a
SA=x,ADJSA=(a,a,a,...)
LMAPPL=application name[,PASSWD=password][,MINLINK=value]
LMPROC=procname[,PASSWD=password]
MAXAPLC=value
MAXBUF=value
CHANATT=value
```

Subarea Configuration

The system programmer responsible for identifying the network subareas and their adjacent subareas must provide a configuration of the network subareas. Each network subarea must be defined in the logon manager configuration definition using one of the following formats:

```
SA=x
SA=x,ADJSA=a
SA=x,ADJSA=(a,a,a,...)
```

x

is the address for a subarea (SA).

a

is the address for an adjacent subarea (ADJSA). The subarea must be adjacent to subarea *x*.

You can specify multiple adjacent subarea addresses by enclosing them within parentheses and separating them with a comma.

All network subareas you want defined to the logon manager must have their addresses appear in SA statements as either *x* or *a*.

Note: The value of MAXSUBA specified in the logon manager JCL must be at least as great as the number of different network subareas addressed as *x* or *a* in the SA statements in the logon manager configuration definition.

The SAs supplied by the system programmer are used by the logon manager to build a *HOP table*. The HOP table contains the minimum distance between subareas. It is used for multitask support.

Application Passwords and Minimum Channel Links

To define password protection for a TPF application, include the following statement in the logon manager configuration definition. You can also use this statement to define the number of active channel links required before the application is supported by the logon manager.

```
LMAPPL=application name[,PASSWD=password][,MINLINK=value]
```

application name

is the name of the TPF application. It must be the name of a real application.

password

is the 1–8 character password for the TPF application. Passwords are optional.

If password protection is required for a TPF application, the password must be specified for the PASSWD operand on both the LMAPPL statement and the VTAM APPL statement. There is no default password.

value

defines the minimum number of channel links that must be active before the application can engage in a session. Valid values are 1–255. The default is 1. This definition is optional.

If all applications on the TPF have the same password and the same required number of active channel links, you can use the following statement:

```
LMAPPL=ALL[,PASSWD=password][,MINLINK=value]
```

Logon Manager Procedure

If the logon manager requires password protection, or if the logon manager ACBNAME on the APPL statement differs from the MVS procname or jobname, include the following statement in the logon manager configuration definition:

```
LMPROC=acbname[,PASSWD=password]
```

acbname

is the 1–8 character name of the logon manager's ACB. If you do not supply the LMPROC statement, the MVS procname or jobname is used.

password

is the 1–8 character password for the logon manager. The logon manager uses this password when opening the ACB for the procname or jobname. The logon manager password is optional.

If password protection is required for the logon manager, the password must be specified for the `PASSWD` operand on the `LMPROC` statement and for the `PRTCT` operand on the `VTAM APPL` statement. There is no default password.

Number of TPF Applications

To specify the number of TPF applications that can be defined, include the following statement in the logon manager configuration definition:

```
MAXAPLC=value
```

value

is the number of defined TPF applications. Valid values are 1–4095. The default is 4. This definition is optional.

Maximum Number of Buffers

To specify the maximum number of buffers to allocate for each channel-attached control point LU (CLU), include the following statement in the logon manager configuration definition:

```
MAXBUF=value
```

value

is the maximum number of buffers to allocate for each CLU. Valid values are 2–65535. The default is 30. This definition is optional.

Maximum Number of Subareas

To specify the maximum number of channel-attached subareas, include the following statement in the logon manager configuration definition:

```
CHANATT=value
```

value

is the maximum number of channel-attached subareas. This number is used to determine the maximum number of channel-attached CLUs. Valid values are 1–255. The default is 4. This definition is optional.

Reserved Words

The following keywords are reserved for use with the TPF logon manager:

- ADJSA
- ALL
- APPL
- CHANATT
- CLU
- HELP
- ID
- INFO
- LMAPPL
- LMPROC
- MAXAPLC
- MAXSUBA
- MEMBER

- MINLINK
- PASSWD
- PEND
- SA
- STOP.

Appendix G. VM VSE Example of Using VTAM X.25 Support

This section contains an example of defining VTAM to provide x.25 support. The example shows:

- The network definitions required for host processors and terminals connected over an X.25 PSDN to VTAM.
- How to convert network definitions for host processors and terminals from SDLC-based connections to X.25-based connections.

The products used in both examples are IBM 4361 host processors, an IBM 3274 Control Unit, Model 31C, with IBM 3278 terminals, and an IBM 3276 Control Unit Display Station.

It is assumed that a CICS/VS-based application is installed at Location A. In addition, POWER/PNET is used to send short outputs from jobs at Location A to Location B. CICS/VS terminal tables and POWER tables are not shown.

VM VSE Coding an X.25 Configuration

Figure 63 on page 442 shows the projected x.25-based configuration. The IBM 3274 attached to the X.25 PSDN must be customized with the proper configuration support. The IBM 3276 is attached through the remote IBM 3174.

In the figure, the physical access lines to the network are represented by solid lines, the virtual circuits by dotted lines. The virtual circuit connecting the 3274 Control Unit with the IBM 4361 at Location A is a permanent virtual circuit and the virtual circuit connecting the 3276 with the host processor will be a switched virtual circuit. It is assumed that the access line speed of the port is sufficient to accommodate the required virtual circuits.

For Location A, two permanent virtual circuits and one switched virtual circuit (two-way call) have been subscribed to. (More switched virtual circuits could be subscribed to when more connections are planned in the near future.) For Location B, one permanent virtual circuit has been subscribed to. Location X subscribes to a permanent virtual circuit and Location Y to a switched virtual circuit (two-way call).

The standard window size is used. Reverse charging is available with the network and will be used by Location Y. Location A also subscribes to Reverse Charging Acceptance to allow the terminal at Location Y to have charges accumulated at the host end.

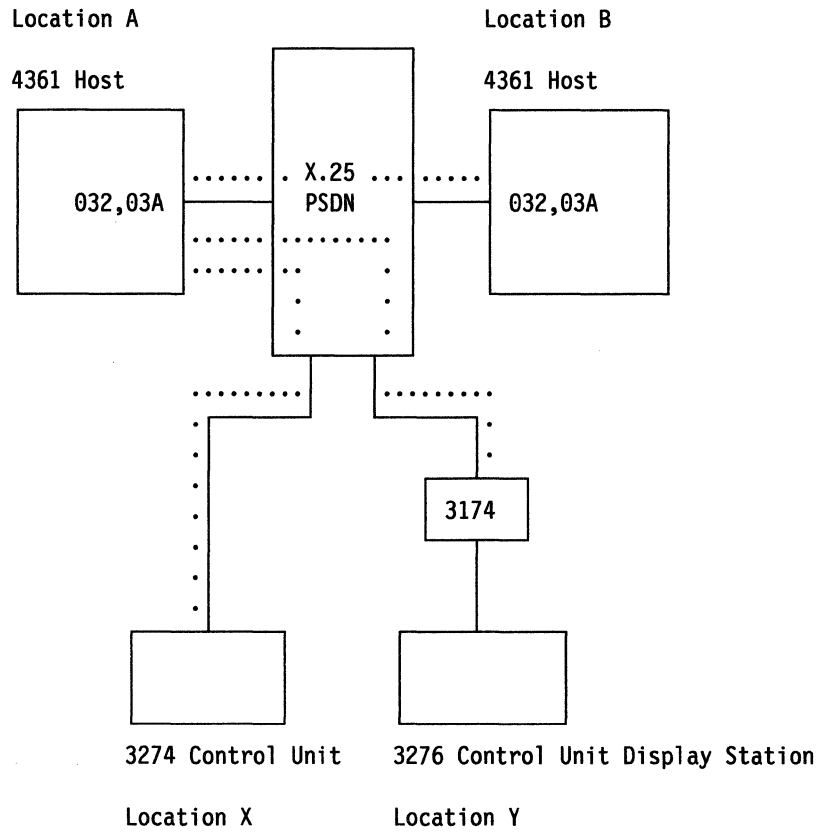


Figure 63. VM VSE The X.25-Based Configuration

VM VSE Network Description at Location A

All lines used at Location A must appear under one packet major node definition.

```

* ***** *
* ATCSTRAA - VTAM START UP OPTIONS ON 4361 AT LOCATION A *
* ***** *

VFBUF=16000, *
VPBUF=60000, *
CONFIG=AA, *
SSCPID=1, *
HOSTSA=1, *
MAXAPPL=7, *
MAXSUBA=15, *
TRACE,TYPE=VTAM,OPT=CIO,SIZE=32,MODE=INT

* ***** *
* ATCCONAA - VTAM CONFIG LIST FOR 4361 AT LOCATION A *
* ***** *

CALOCA25, DEFINITION BOOK FOR LINES AND PUS TO BE REACHED *
PALOCA01, DEFINITION BOOK FOR PATHS *
CMLOCA01, BOOK SUMMARIZING ALL CROSS-DOMAIN RESOURCE MANAGERS *
CRLOCA01, BOOK NAMING ALL X-DOM. APPLICATIONS ON OTHER DOMAINS *
SWLOCA01, DEFINITION BOOK FOR SWITCHED MAJOR NODE *
APLOCA01 BOOK NAMING ALL X-DOM. APPLICATIONS ON OWN DOMAIN

* ***** *
* CALOCA25 - PACKET MAJOR NODE DEFINITION AT LOCATION A *
* ***** *

CALOCA25 VBUILD TYPE=PACKET
        PORT CUADDR=(032,03A), *
        NETTYPE=3, *
        VCALLS=(,003,003,,), *
        CHARGACC=YES

GROUP1 GROUP LNCTL=SDLC,DIAL=NO,ISTATUS=INACTIVE
LINE001 LINE ADDRESS=001 USED FOR 4361 AT LOCATION B
PU001 PU PUTYPE=5,SUBAREA=2
LINE002 LINE ADDRESS=002 USED FOR 3274 AT LOCATION X
PU002 PU PUTYPE=2,ADDR=C1
LU32741 LU LOCADDR=2,DLOGMOD=D4C32782,LOGAPPL=CICS
LU32742 LU LOCADDR=3,DLOGMOD=D4C32782,LOGAPPL=CICS
GROUP2 GROUP LNCTL=SDLC,DIAL=YES,ANSWER=ON
LINE003 LINE ADDRESS=003,AUTO=003 USED FOR 3276 AT LOCATION Y
PU003 PU

* ***** *
* CMLOCA01 - VTAM CROSS-DOMAIN RESOURCE MANAGERS DEFINITION *
* FOR ALL DOMAINS IN USE *
* ***** *

CMLOCA01 VBUILD TYPE=CDRM
LOCACDRM CDRM SUBAREA=1,ISTATUS=ACTIVE,VPACING=0
LOCBCDRM CDRM SUBAREA=2,ISTATUS=INACTIVE,VPACING=0

* ***** *
* CRLOCA01 - VTAM CROSS-DOMAIN RESOURCES DEFINITION *
* ***** *

CRLOCA01 VBUILD TYPE=CDRSC
LOCB CDRSC CDRM=LOCBCDRM,ISTATUS=ACTIVE

```

```

* ***** *
* SWLOCA01 - SWITCHED MAJOR NODE FOR 3276 CALL *
* ***** *
SWLOCA01 VBUILD TYPE=SWNET,MAXGRP=3,MAXNO=3
SWPU003 PU ADDR=C1,PUTYPE=2,MAXPATH=1,MAXDATA=262, *
          IDBLK=017,IDNUM=70933
          PATH DIALNO=(47031205),GRPNM=GROUP2
SW32762 LU LOCADDR=2,DLOGMOD=D4C32762,LOGAPPL=CICS, *
          PACING=1,VPACING=2

* ***** *
* APLOCA01 - VTAM APPLICATIONS USED ON 4361 AT LOCATION A *
* (VTAM APPLICATIONS ON LOCAL DOMAIN) *
* ***** *
          VBUILD TYPE=APPL
PWRPNET APPL AUTH=(PASS,ACQ),VPACING=3,MODETAB=PNETTAB, *
          DLOGMOD=PNETMOD
CICS APPL AUTH=(PASS,ACQ)

* ***** *
* PALOCA01 - VTAM PATH DEFINITIONS USED TO OTHER SUBAREAS *
* ***** *
PATOLOCB PATH DESTSA=2,ER0=(2,1),VR0=0

```

VM VSE **Network Description at Location B**

```

* *****
* ATCSTRBB - VTAM START UP OPTIONS ON 4361 AT LOCATION B
* *****
VFBUF=28000,
CONFIG=BB,
SSCPID=2,
HOSTSA=2,
MAXSUBA=15,
TRACE,TYPE=VTAM,OPT=ALL,SIZE=32,MODE=INT

* *****
* ATCCONBB - VTAM CONFIG LIST FOR 4361 AT LOCATION B
* *****
CALOCB25,
PALOCB01,
CMLOCB01,
CRLOCB01,
APLOCB01

* *****
* CALOCB25 - PACKET MAJOR NODE DEFINITION AT LOCATION B
* *****
CALOCB25 VBUILD TYPE=PACKET
          PORT CUADDR=(032,03A),
          NETTYPE=3
GROUP1   GROUP LNCTL=SDLC,DIAL=NO,ISTATUS=INACTIVE
LINE001  LINE  ADDRESS=001
PU001   PU    PUTYPE=5,SUBAREA=1

* *****
* CMLOCB01 - VTAM CROSS-DOMAIN RESOURCE MANAGERS DEFINITION
*           FOR ALL DOMAINS IN USE
* *****
CMLOCB01 VBUILD TYPE=CDRM
LOCACDRM CDRM  SUBAREA=1,ISTATUS=INACTIVE,VPACING=0
LOCBCDRM CDRM  SUBAREA=2,ISTATUS=ACTIVE,VPACING=0

* *****
* CRLOCB01 - VTAM CROSS-DOMAIN RESOURCES DEFINITION
* *****
CRLOCB01 VBUILD TYPE=CDRSC
LOCA     CDRSC CDRM=LOCACDRM,ISTATUS=ACTIVE

* *****
* APLOCB01 - VTAM APPLICATIONS LIST USED ON 4361-LOCB
*           (VTAM APPLICATIONS ON LOCAL DOMAIN)
* *****
          VBUILD TYPE=APPL
LOCBPNET APPL AUTH=(PASS,ACQ),VPACING=3,MODETAB=PNETTAB,
          DLOGMOD=PNETMOD

* *****
* PALOCB01 - VTAM PATH DEFINITIONS TO OTHER SUBAREAS
* *****
PATLOCA  PATH  DESTSA=1,ER0=(1,1),VR0=0

```


VM VSE Converting an SDLC-Based Configuration to an X.25-Based Configuration

This section contains the network definitions for an SDLC-based configuration and highlights the changes required to convert to an x.25-based configuration.

In this example, assume that the network nodes in Figure 64 have been connected by SDLC links. Also assume that a traffic analysis indicates that using X.25 PSDN is an efficient and economical method for transporting information.

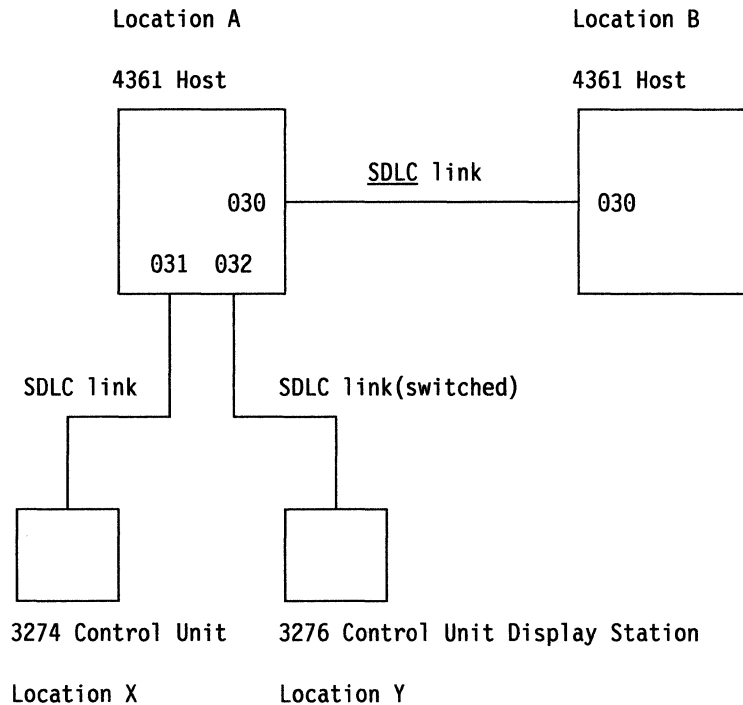


Figure 64. VM VSE SDLC-Based Network Configuration

The representation of the network definition for the SDLC-based configuration as filed at Location A and Location B follows. After the definitions is a list of changes for converting these definitions to an X.25-based network.

VM VSE Network Description at Location A in an SDLC-Based Configuration

```

* ***** *
* ATCSTRAA - VTAM START UP OPTIONS ON 4361 AT LOCATION A *
* ***** *
VFBUF=14000, *
VPBUF=56000, *
CONFIG=AA, *
SSCPID=1, *
HOSTSA=1, *
MAXSUBA=15, *
TRACE,TYPE=VTAM,OPT=CIO,SIZE=32,MODE=INT

* ***** *
* ATCCONAA - VTAM CONFIG LIST FOR 4361 AT LOCATION A *
* ***** *
CALOCA01, DEFINITION BOOK FOR LINES AND PUS TO BE REACHED *
CALOCA02, DEFINITION BOOK FOR LINES AND PUS VIA SWITCHED LINK *
PALOCA01, DEFINITION BOOK FOR PATHS *
CMLOCA01, BOOK SUMMARIZING ALL CROSS-DOMAIN RESOURCE MANAGERS *
CRLOCA01, BOOK NAMING ALL X-DOM. APPLICATIONS ON OTHER DOMAINS *
SWLOCA01, DEFINITION BOOK FOR SWITCHED MAJOR NODE *
APLOCA01 BOOK NAMING ALL X-DOM. APPLICATIONS ON OWN DOMAIN

* ***** *
* CALOCA01 - NONSWITCHED ICA LINES FOR 4361 AT LOCATION A *
* ***** *
CALOCA01 VBUILD TYPE=CA
GROUP1 GROUP LNCTL=SDLC,DIAL=NO,ISTATUS=INACTIVE
LINE30 LINE ADDRESS=030 TO 4361 AT LOCATION B
PU30 PU PUTYPE=5,SUBAREA=2
LINE31 LINE ADDRESS=031,PAUSE=0.2,RETRIES=10 TO 3274 AT LOCATION X
PU31 PU PUTYPE=2,ADDR=C1
LU32741 LU LOCADDR=2,DLOGMOD=D4C32782,LOGAPPL=CICS
LU32742 LU LOCADDR=3,DLOGMOD=D4C32782,LOGAPPL=CICS

* ***** *
* CALOCA02 - SWITCHED ICA LINES FOR 4361 AT LOCATION A *
* ***** *
CALOCA02 VBUILD TYPE=CA
GROUP2 GROUP LNCTL=SDLC,DIAL=YES,ISTATUS=INACTIVE
LINE32 LINE ADDRESS=032,PAUSE=0.2,RETRIES=10, *
MAXBFRTU=(1,2),ISTATUS=INACTIVE TO 3276 AT LOCATION Y
PU32 PU

* ***** *
* CMLOCA01 - VTAM CROSS-DOMAIN RESOURCE MANAGERS DEFINITION *
* FOR ALL DOMAINS IN USE *
* ***** *
CMLOCA01 VBUILD TYPE=CDRM
LOCACDRM CDRM SUBAREA=1,ISTATUS=ACTIVE,VPACING=0
LOCBCDRM CDRM SUBAREA=2,ISTATUS=INACTIVE,VPACING=0

* ***** *
* CRLOCA01 - VTAM CROSS-DOMAIN RESOURCES DEFINITION *
* ***** *
CRLOCA01 VBUILD TYPE=CDRSC
LOCB CDRSC CDRM=LOCBCDRM,ISTATUS=ACTIVE

```

```

* ***** *
* SWLOCA01 - SWITCHED MAJOR NODE FOR 3276 DIAL *
* ***** *
SWLOCA01 VBUILD TYPE=SWNET,MAXGRP=1,MAXNO=1
SWPU31  PU  ADDR=C1,PUTYPE=2,MAXOUT=7,MAXDATA=262, *
        IDBLK=017,IDNUM=70933,MAXPATH=1
        PATH DIALNO=(33333333),GRPNM=GROUP2
SW32762 LU  LOCADDR=2,DLOGMOD=D4C32762,LOGAPPL=CICS, *
        PACING=1,VPACING=2

* ***** *
* APLOCA01 - VTAM APPLICATIONS USED ON 4361 AT LOCATION A *
*           (VTAM APPLICATIONS ON LOCAL DOMAIN) *
* ***** *
        VBUILD TYPE=APPL
PWRPNET APPL AUTH=(PASS,ACQ),VPACING=3,MODETAB=PNETTAB, *
        DLOGMOD=PNETMOD
CICS    APPL AUTH=(PASS,ACQ)
* ***** *
* PALOCA01 - VTAM PATH DEFINITIONS USED TO OTHER SUBAREAS *
* ***** *
PATOLOCB PATH DESTSA=2,ER0=(2,1),VR0=0

```

VM VSE Network Description at Location B in an SDLC-Based Configuration

```

* *****
* ATCSTRBB - VTAM START UP OPTIONS ON 4361 AT LOCATION B      *
* *****
VFBUF=52000,
CONFIG=BB,
SSCPID=2,
HOSTSA=2,
MAXAPPL=7,
MAXSUBA=15,
TRACE,TYPE=VTAM,OPT=ALL,SIZE=32,MODE=INT

* *****
* ATCCONBB - VTAM CONFIG LIST FOR 4361 AT LOCATION B        *
* *****
CALOCB01,
PALOCB01,
CMLOCB01,
CRLOCB01,
APLOCB01

* *****
* CALOCB01 - NONSWITCHED ICA LINE FOR 4361 AT LOCATION B    *
* *****
CALOCB01 VBUILD TYPE=CA
GROUP1  GROUP LNCTL=SDLC,DIAL=NO,ISTATUS=INACTIVE
LINE30  LINE  ADDRESS=030
PU30    PU    PUTYPE=5,SUBAREA=1

* *****
* CMLOCB01 - VTAM CROSS-DOMAIN RESOURCE MANAGERS DEFINITION *
*                FOR ALL DOMAINS IN USE                      *
* *****
CMLOCB01 VBUILD TYPE=CDRM
LOCACDRM CDRM  SUBAREA=1,ISTATUS=INACTIVE,VPACING=0
LOCBCDRM CDRM  SUBAREA=2,ISTATUS=ACTIVE,VPACING=0

* *****
* CRLOCB01 - VTAM CROSS-DOMAIN RESOURCES DEFINITION         *
* *****
CRLOCB01 VBUILD TYPE=CDRSC
LOCA     CDRSC CDRM=LOCACDRM,ISTATUS=ACTIVE

```

```

* *****
* APLOCB01 - VTAM APPLICATIONS LIST USED ON 4361-LOCB      *
*               (VTAM APPLICATIONS ON LOCAL DOMAIN)      *
* *****
          VBUILD TYPE=APPL
LOCBPNET APPL AUTH=(PASS,ACQ),VPACING=3,MODETAB=PNETTAB,  *
          DLOGMOD=PNETMOD

* *****
* PALOCB01 - VTAM PATH DEFINITIONS USED TO OTHER SUBAREAS *
* *****
PATOLOCA PATH DESTSA=1,ER0=(1,1),VR0=0

```

VM VSE **How to Convert to an X.25-Based Configuration**

When converting to an x.25-based configuration, you must:

- Modify your start list to include changes in storage estimates and in the configuration list. VM IOBUF must be at least 128.
- Modify the configuration list to contain the packet major nodes or code a new configuration list with packet major nodes.
- Code a VBUILD TYPE=PACKET for the x.25 ports and group all lines, which were under different CA major nodes and which you want to be under the same x.25 port, into one packet major node.
- Change the operands on the LINE definition statement change as follows:
 - Modify the nonswitched LINE definition statements to reflect the permanent virtual circuits they are associated with.
 - Modify the switched LINE definition statements to include the AUTO operand.
- Change the switched major node to include the called address of the 3276 Control Unit Display Station in the PATH statement.

The configuration and network definitions after conversion should match the configuration and definitions under “VM VSE Coding an X.25 Configuration” on page 441.

Bibliography

VTAM Publications

The following paragraphs briefly describe the library of manuals for VTAM V3R2. Several of these manuals also contain information about VTAM V3R1.2 for VM and VSE, V3R1.1 for MVS and VM, and V3R1 for VSE.

VTAM Installation and Resource Definition (SC23-0111)

This manual enables a system programmer to install VTAM, define the resources in the network to VTAM, code start options, and test VTAM definitions. The appendixes in this manual enable system programmers to quickly locate the detailed syntax of the macroinstructions and definition statements used to define a network to VTAM, as well as VTAM start options.

VTAM Customization (LY30-5614)

The objective of this manual is to enable a system programmer to customize VTAM and tune it for better performance. It discusses modifying VTAM messages; modifying VTAM USS commands, installation exit routines, and replaceable modules; and tuning VTAM.

VTAM Directory of Programming Interfaces for Customers (GC31-6403)

This publication provides a directory of all programming interfaces provided by VTAM for use by customers. It also identifies and specifies limitations on the use of certain "product-sensitive" interfaces, which are dependent on the detailed design and implementation of VTAM.

VTAM Operation (SC23-0113)

This is a reference manual for VTAM network operators. It is also a guide for system programmers who must supply operators with the detailed information that they need to run the VTAM network.

This manual includes an introduction to operating VTAM, a description of VTAM commands, and a description of how to use VTAM commands to perform network control functions.

VTAM Messages and Codes (SC23-0114)

This manual contains, in alphanumerical order, all messages and codes issued by VTAM. These messages include VTAM messages for network operators, TSO/VTAM messages for network operators, TSO/VTAM messages

for terminal users, USS messages for terminal users, and VSCS messages.

This manual can be inserted into the operating system messages manual, if desired, or used as a stand-alone manual.

VTAM Programming (SC23-0115)

This manual describes how to use VTAM macroinstructions to send data to and receive data from (1) a terminal in either the same or a different domain, or (2) another application program in either the same or a different domain. Also included is a dictionary of VTAM macroinstructions. This manual assumes that the reader is familiar with assembler language and the programming facilities of the operating system.

VTAM Programming for LU 6.2 (SC30-3400)

This manual describes VTAM's LU 6.2 programming interface for host application programs. This manual pertains to programs that use only LU 6.2 sessions or that use LU 6.2 sessions along with other session types. (Only LU 6.2 sessions are covered in this manual, however.)

VTAM Diagnosis (LY30-5601)

This manual assists system programmers in identifying a VTAM problem, classifying it, and collecting information about the problem in preparation for calling the IBM Support Center. The information collected includes traces, dumps, and other problem documentation.

VTAM Data Areas for MVS (LY30-5592)

VTAM Data Areas for VM (LY30-5593)

VTAM Data Areas for VSE (LY30-5594)

These manuals describe VTAM data areas and can be used to read a VTAM dump. They are intended for IBM programming service representatives and customer personnel who are diagnosing problems with VTAM.

VTAM Reference Summary (LY30-5600)

This manual is designed as a quick reference for system programmers and network programmers. This manual contains selected reference information that includes VTAM and VSCS commands, VTAM definition statements, VTAM start options, VTAM macroinstructions, VTAM and VSCS trace formats, and selected SNA reference data.

VTAM V3R1.2 Publications

VTAM Expanded Network Capabilities Support
(LD21-0019)

This supplement is available as a stand-alone manual for v3r1.2; the information has also been included in the v3r2 manuals.

VTAM Directory of Programming Interfaces for Customers (GC31-6402)

This publication provides a directory of all programming interfaces provided by VTAM for use by customers. It also identifies and specifies limitations on the use of certain "product-sensitive" interfaces, which are dependent on the detailed design and implementation of VTAM.

VTAM V3R1.1 Publications

You may order additional copies of the VTAM v3r1.1 publications by the following order numbers:

VTAM Installation and Resource Definition (SC23-0111)

VTAM Customization (SC23-0112)

VTAM Operation (SC23-0113)

VTAM Message and Codes (ST23-0114)

VTAM Programming (SC23-0115)

VTAM Diagnosis Guide (SC23-0116)

VTAM Diagnosis Reference (LY30-5582)

VTAM Data Areas for MVS (LY30-5584)

VTAM Data Areas for VM (LY30-5583)

VTAM Reference Summary (SC23-0135)

VTAM V3R1 Publications

You may order additional copies of the VTAM v3r1 publications by using the following pseudonumbers:

VTAM Installation and Resource Definition (ST23-0110)

VTAM Customization (ST23-0112)

VTAM Operation (ST23-0113)

VTAM Programming (ST23-0115)

VTAM Diagnosis Reference (LT70-5582)

VTAM Message and Codes (ST23-0114)

The following VTAM v3r1 publications are still orderable by their original order numbers:

VTAM Messages and Codes for VM (SC30-3275)

VTAM Data Areas for MVS (LY30-5581)

VTAM Data Areas for VM (LY30-5580)

VTAM Data Areas for VSE (LY30-5579)

VTAM Library Supplement for X.21 SHMIMPS
(SD21-0010)

Other Network Program Products Publications

For more information about the manuals listed in this section, see the *Network Program Products Bibliography and Master Index*.

The following list shows the cross-product manuals for VTAM, NetView, NCP, SSP, and NetView/PC.

Network Program Products General Information
(GC30-3350)

Network Program Products Planning (SC30-3351)

Network Program Products Samples (SC30-3352)

Network Program Products Bibliography and Master Index (GC30-3353)

Network Program Products Storage Estimates
(SC30-3403)

NetView Publications

The following list shows the publications associated with Release 2 of the NetView program.

Learning about NetView (SK2T-0292)

NetView Installation and Administration Guide
(SC30-3476)

NetView Administration Reference (SC30-3361)

NetView Customization (SC30-3462)

NetView Directory of Programming Interfaces for Customers (GC31-6005)

NetView Command Lists (SC30-3423)

NetView Operation Primer (SC30-3363)

NetView Operation (SC30-3364)

NetView Messages (SC30-3365)

NetView Operation Scenarios (SC30-3376)

NetView Command Summary (SX27-3620)

NetView Diagnosis (LY30-5587)

NetView Hardware Problem Determination Reference
(SC30-3366)

*NetView Problem Determination Supplement for Man-
agement Services Major Vectors 0001 and 0025*
(LD21-0023)

NetView 5822 Supplement (SD21-0016)

Automated Operations Publications

Automated Operations Planning Guide (SC30-3474)

Automated Operations Using NetView Command Lists
(SC30-3477)

NetView/PC Publications

The following list shows the publications for the
NetView/PC program.

NetView/PC Planning and Operation Guide (SC30-3408)

NetView/PC Installation Guide (SC30-3482)

*NetView/PC Application Program
Interface/Communications Services Reference*
(SC30-3313)

NCP V4R2 Publications

The following list shows the publications for NCP V4R2
and SSP V3R2.

NCP and SSP Generation and Loading Guide
(SC30-3348)

NCP and SSP Migration (SC30-3252)

NCP and SSP Resource Definition Guide (SC30-3349)

NCP and SSP Resource Definition Reference
(SC30-3254)

NCP and EP Reference Summary and Data Areas
(LY30-5570)

NCP and SSP Customization (LY30-5571)

NCP and SSP Messages and Codes (SC30-3169)

NCP and SSP Diagnosis Guide (LY30-5591)

NCP Reference (LY30-5569)

SSP Diagnosis Reference (LY30-5564)

EP Installation, Resource Definition, and Diagnosis
(SC30-3338)

NCP V4R3 Publications

The following list shows the publications for NCP V4R3
and SSP V3R3.

NCP, SSP, and EP Generation and Loading Guide
(SC30-3348)

NCP Migration Guide (SC30-3252)

NCP, SSP, and EP Resource Definition Guide
(SC30-3349)

NCP, SSP, and EP Resource Definition Reference
(SC30-3254)

NCP and EP Reference Summary and Data Areas
(LY30-5570)

NCP Customization Guide (LY30-5571)

NCP Customization Reference (LY30-5612)

SSP Customization (LY43-0021)

*NCP and Related Products Directory of Programming
Interfaces for Customers* (GC31-6202)

NCP, SSP, and EP Messages and Codes (SC30-3169)

NCP, SSP, and EP Diagnosis Guide (LY30-5591)

NCP and EP Reference (LY30-5569)

NCP Version 5 Publications

The following list shows the publications for NCP
Version 5 and SSP V3R3.

NCP, SSP, and EP Generation and Loading Guide
(SC30-3348)

NCP Migration Guide (SC30-3440)

NCP, SSP, and EP Resource Definition Guide
(SC30-3447)

NCP, SSP, and EP Resource Definition Reference
(SC30-3448)

NCP and EP Reference Summary and Data Areas (LY30-5603)

NCP Customization Guide (LY30-5606)

NCP Customization Reference (LY30-5607)

SSP Customization (LY43-0021)

NCP and Related Products Directory of Programming Interfaces for Customers (GC31-6202)

NCP, SSP, and EP Messages and Codes (SC30-3169)

NCP, SSP, and EP Diagnosis Guide (LY30-5591)

NCP and EP Reference (LY30-5605)

Other Related Publications

MVS/370 Publications

Principles of Operation (GA22-7000)

OS/VS2 MVS Utilities (GC26-3902)

OS/VS2 Access Method Services (GC26-3841)

OS/VS2 System Programming Library: Service Aids (GC28-0674)

OS/VS2 System Programming Library: Initialization and Tuning Guide (MVS/SP) (GC28-1029)

OS/VS2 System Programming Library: System Generation Reference (GC26-3792)

OS/VS2 System Programming Library: System Management Facilities (SMF) (GC28-1030)

OS/VS2 System Programming Library: TSO (GC28-0629)

OS/VS2 TSO Guide to Writing a Terminal Monitor Program or a Control Program (GC28-0648)

MVS/XA Publications

Principles of Operation (GA22-7000)

MVS/XA Utilities (GC26-4018)

MVS/XA Access Method Services (GC26-4019)

MVS/XA Service Aids (GC28-1159)

MVS/XA System Programming Library: Initialization and Tuning (GC28-1149)

MVS/XA System Programming Library: System Generation Reference (GC26-4009)

MVS/XA System Programming Library: System Management Facilities (SMF) (GC28-1153)

MVS/XA System Programming Library: TSO (GC28-1173)

MVS/XA TSO Guide to Writing a Terminal Monitor Program or a Command Processor (GC28-1295)

VM/SP Publications

VM/SP General Information (GC20-1838)

VM/SP Programmer's Guide (Not available for Release 5. The Release 4 version can be obtained by ordering ST00-1578.)

VM/SP Installation Guide (SC24-5237)

VM/SP Group Control System Guide (SC24-5249) (for Release 4)

VM/SP Group Control System Command and Macro Reference (SC24-5250)

VM/SP Planning Guide and Reference (SC19-6201)

VM/SP Distributed Data Processing Guide (SC24-5241)

VM/SP Terminal Reference (GC19-6206)

VM/SP CP for System Programming (SC24-5285)

VSE/Advanced Functions Publications

VSE/Advanced Functions System Management Guide (SC33-6191)

VSE/Advanced Functions System Control Statements (SC33-6198)

VSE/Advanced Functions System Planning and Installation (SC33-6096)

VSE/Advanced Functions Diagnosis: Service Aids (SC33-6195)

VSE/Advanced Functions System Utilities (SC33-6100)

VSE/Advanced Functions Maintain System History Program, Reference (SC33-6199)

VSE/System Package (SP) Publications

VSE/SP General Information (GC33-6176)

VSE/SP Installation Planning (SC33-6303)

VSE/SP System Planning (SC33-6304)

VSE/SP Installation (SC33-6305)

VSE/SP System Use (SC33-6174)

VSE/SP Migration (SC33-6179)

VSE/SP Networking (SC33-6180)

VSE/SP Diagnosis (SC33-6182)

Network Terminal Option (NTO) Publications

NTO General Information (GC38-0297)

NTO Installation (GC38-0298)

X.25 NCP Packet Switching Interface (NPSI) Publications

General Information: X.21 Interface Features
(GA27-3287)

*IBM X.25 NCP Packet Switching Interface: General
Information* (GC30-3189)

TCAM Publications

TCAM Version 3: General Information (SC30-3235)

TCAM Version 3: Planning Guide (SC30-3240)

TCAM Version 3: Migration (SC30-3251)

*TCAM Version 3: Installation, Resource Definition,
and Customization Guide* (SC30-3237)

*TCAM Version 3: Installation, Resource Definition,
and Customization Reference* (SC30-3236)

TCAM Version 3: Diagnosis Guide (SC30-3234)

Systems Network Architecture (SNA) Publications

SNA Overview, (GC30-3073)

SNA Concepts and Products, (GC30-3072)

SNA Sessions between Logical Units, (GC20-1868)

*SNA Format and Protocol Reference Manual:
Architectural Logic* (SC30-3112)

SNA Formats (GA27-3136)

VM/VCNA Publications

*VM/VCNA Installation, Operation and Terminal Use
Guide* (SC27-0502)

VM/HPO Publications

VM/ISP HPO Installation Guide (SC38-0107)

VM/ISP HPO Group Control System Guide
(ST24-5249)

*VM/ISP HPO Group Control System Macro Refer-
ence* (ST24-5250)

VM/ISP HPO Planning Guide and Reference
(SC19-6223)

VM/ISP HPO Distributed Data Processing Guide
(SQ24-5241)

*VM/ISP HPO Interactive Problem Control System
Guide* (ST24-5260)

MVS TSO and TSO/VTAM Publications

Each of the following books is referred to as *TSO
Terminal User's Guide*. Use the one that applies to
your operating system.

OS/VS2 TSO Terminal User's Guide
(GC28-0645)

MVS/XA TSO Terminal User's Guide
(GC28-1274)

Each of the following books is referred to as *TSO
Guide to Writing a Terminal Monitor Program*. Use
the one that applies to your operating system.

*OS/VS2 TSO Guide to Writing a Terminal
Monitor Program or a Command Processor*
(GC28-0648)

*MVS/XA TSO Guide to Writing a Terminal
Monitor Program or a Command Processor*
(supplement GD23-0261 to GC28-0648)

*MVS/XA TSO Extensions TSO Guide to Writing
a Terminal Monitor Program or a Command
Processor* (SC28-1136)

Each of the following books is referred to as *SPL:
TSO*. Use the one that applies to your operating
system.

OS/VS2 System Programming Library: TSO
(GC28-0629)

*MVS/Extended Architecture System Program-
ming Library: TSO* (GC28-1173)

*MVS/Extended Architecture System Program-
ming Library: Information* (GC30-3189)

MVS Cryptographic Publications

*IBM Cryptographic Subsystem Concepts and Facili-
ties* (GC22-9063)

*OS/VS1 and OS/VS2 MVS Programmed
Cryptographic Facility General Information*
(GC28-0942)

*OS/VS1 and OS/VS2 MVS Programmed
Cryptographic Facility Installation Reference
Manual* (GC28-0965)

*OS/VS1 and OS/VS2 MVS Cryptographic Unit
Support General Information* (GC28-1015)

Other Publications

*IBM 3270 Information Display System: 3274
Control Unit Description and Programmer's Guide
(GA23-0061)*

*IBM 3270 Information Display System: 3276
Control Unit Display Station Description and
Programmer's Guide (GA18-2081)*

*IBM 3767 Models 1, 2, and 3 Communication Terminal
Component Description (GA27-3096)*

*Component Description for the IBM 3776 and 3777
Communication Terminals (GA27-3145)*

*IBM 8775 Display Terminal Component Description
(GA33-3044)*

Glossary

This glossary defines important NCP, NetView, NetView/PC, 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:

Deprecated term for. Indicates that the term should not be used. It refers to a preferred term, which is defined.

Synonymous with. Appears in the commentary of a preferred term and identifies less desirable or less specific terms that have the same meaning.

Synonym for. Appears in the commentary of a less desirable or less specific term and identifies the preferred term that has the same meaning.

Contrast with. Refers to a term that has an opposed or substantively different meaning.

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.

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. (1) In VTAM, application control block. (2) In NCP, adapter control block.

ACB name. (1) The name of an ACB macroinstruction. (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 macroinstruction, 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.

ACF/NCP. Advanced Communications Function for the Network Control Program. Synonym for *NCP*.

ACF/SSP. Advanced Communications Function for the System Support Programs. Synonym for *SSP*.

ACF/TAP. Advanced Communications Function for the Trace Analysis Program. Synonym for *TAP*.

ACF/TCAM. Advanced Communications Function for the Telecommunications Access Method. Synonym for *TCAM*.

ACF/VTAM. Advanced Communications Function for the Virtual Telecommunications Access Method. Synonym for *VTAM*.

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 macroinstruction. 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.

active application. The application subsystem currently in an extended recovery facility (XRF) session with a terminal user. See *alternate application*.

adapter. Hardware card that allows a device, such as a PC, to communicate with another device, such as a monitor, a printer, or other I/O device.

adapter control block (ACB). In NCP, a control block that contains line control information and the states of I/O operations for BSC lines, SS lines, or SDLC links.

adaptive session pacing. Synonym for *adaptive session-level pacing*.

adaptive session-level pacing. A form of session-level pacing in which session components exchange pacing windows that may vary in size during the course of a session. This allows transmission to adapt dynamically to variations in availability and demand of buffers on a session by session basis. Session pacing occurs within independent stages along the session path according to local congestion at the intermediate nodes. Synonymous with *adaptive session pacing*. See *pacing*, *session-level pacing*, and *virtual route pacing*.

adjacent SSCP table. A table containing lists of the system services control points (SSCPs) that VTAM can be in session with or can use to reach destination SSCP in the same network or in other networks. The table is filed in the VTAM definition library.

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 licensed programs (principally VTAM, TCAM, NCP, and SSP) that use the concepts of Systems Network Architecture (SNA), including distribution of function and resource sharing.

Advanced Program-to-Program Communication (APPC). A synonym for logical unit (LU) 6.2 and its implementations.

alert. (1) In SNA, a record sent to a system problem management focal point to communicate the existence of an alert condition. (2) In the NetView program, a high priority event that warrants immediate attention. This data base record is generated for certain event types that are defined by user-constructed filters.

alias address. An address used by a gateway NCP and a gateway system services control point (SSCP) in one network to represent a logical unit (LU) or SSCP in another network.

alias name. A name defined in a host used to represent a logical unit name, logon mode table name, or class-of-service name in another network. This name is defined to a name translation program when the alias name does not match the real name. The alias name translation program is used to associate the real and alias names.

alias name translation facility. A function for converting logical unit names, logon mode table names, and class-of-service names used in one network into equivalent names to be used in another network. Available with NetView or NCCF licensed programs.

allocate. A logical unit (LU) 6.2 application program interface (API) verb used to assign a session to a conversation for the conversation's use. Contrast with *deallocate*.

alternate application. The subsystem that is prepared to take over a particular active application's extended recovery facility (XRF) sessions with terminal users in case the application fails. See *active application*.

any-mode. In VTAM: (1) The form of a RECEIVE request that obtains input from any one (unspecified) session. (2) The form of an ACCEPT request that completes the establishment of a session by accepting any one (unspecified) queued CINIT request. Contrast with *specific-mode*. See *continue-any mode*. See also *accept*.

API. Application program interface.

APPC. Advanced Program-to-Program Communication.

application control block (ACB). A control block that links an application program to VSAM or VTAM.

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.

application program interface (API). (1) The formally defined programming language interface between an IBM system control program or licensed program and its user. (2) The interface through which an application program interacts with an access method. In VTAM, it is the language structure used in control blocks so that application programs can reference them and be identified to VTAM.

application program major node. A group of application program minor nodes. In the VTAM definition library, it is a member, book, or file that contains one

or more APPL statements, which represent application programs. In MVS, it is a member of the library; in VSE, it is a book; and in VM, it is a CMS file of filetype VTAMLST.

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.

authorized path. In VTAM for MVS, a facility that enables an application program to specify that a data transfer or related operation be carried out in a privileged and more efficient manner.

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.

back-level. Pertaining to an earlier release of an IBM product, which may not support a particular, current function.

BASE disk. The virtual disk that contains the text decks and macroinstructions for VTAM and VM SNA console support (VSCS). It also contains control files and sample files used when running VTAM on the VM operating system. See *DELTA disk*, *MERGE disk*, *RUN disk*, and *ZAP disk*.

bidder. In SNA, the LU-LU half-session defined at session activation as having to request and receive permission from the other LU-LU half-session to begin a bracket. Contrast with *first speaker*. See also *bracket protocol* and *contention*.

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).

boundary function. (1) A capability of a subarea node to provide protocol support for attached peripheral nodes, such as: (a) interconnecting subarea path control and peripheral path control elements, (b) performing session sequence numbering for low-function peripheral nodes, and (c) providing session-level pacing support. (2) The component that provides these capabilities. See also *boundary node*, *network addressable unit (NAU)*, *peripheral path control*, *subarea node*, and *subarea path control*.

boundary node. (1) A subarea node with boundary function. See *subarea node* (including illustration). See also *boundary function*. (2) The programming component that performs FID2 (format identification type 2) conversion, channel data link control, pacing, and channel or device error recovery procedures for a locally attached station. These functions are similar to those performed by a network control program for an NCP-attached station.

bracket protocol. In SNA, a data flow control protocol in which exchanges between the two LU-LU half-sessions are achieved through the use of brackets, with one LU designated at session activation as the first speaker and the other as the bidder. The bracket protocol involves bracket initiation and termination rules. See also *bidder* and *first speaker*.

BSC. Binary synchronous communication.

buffer. A portion of storage for temporarily holding input or output data.

CCS. Console communication services.

CDRM. Cross-domain resource manager.

CDRSC. Cross-domain resource.

chain. See *RU chain*.

channel. * A path along which signals can be sent, for example, data channel, output channel. See *data channel* and *input/output channel*. See also *link*.

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 System 370 input-output channels to a host processor.

channel-attachment major node. (1) A major node that includes an NCP that is channel-attached to a data host. (2) A major node that may include minor nodes that are the line groups and lines that represent a channel attachment to an adjacent (channel-attached) host. (3) In VM or VSE operating systems, a major node that may include minor nodes that are resources (host processors, NCPs, line groups, lines, SNA physical units and logical units, cluster controllers, and terminals) attached through a communication adapter.

channel link. A System/370 I/O channel to control unit interface that has an SNA network address. A channel link can be either a subarea link or a peripheral link. See also *link* and *subarea link*.

character-coded. Synonym for *unformatted*.

CICS. Customer Information Control System.

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.

cleanup. A network services request, sent by a system services control unit (SSCP) to a logical unit (LU), that causes a particular LU-LU session with that LU to be ended immediately and without the participation of either the other LU or its SSCP.

clear session. A session in which only clear data is transmitted or received. Contrast with *cryptographic session*.

CLIST. Command list.

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.

CMC. Communication management configuration.

CMS. Conversational Monitor System.

CNM. Communication network management.

CNOS. Change number of sessions.

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*.

command facility. The component of the NetView program that is a base for command processors that can monitor, control, automate, and improve the operation of a network.

command list (CLIST). In the NetView program, a sequential list of commands and control statements that is assigned a name. When the name is invoked (as a command) the commands in the list are executed.

command processor. A program that performs an operation specified by a command.

communication adapter. An optional hardware feature, available on certain processors, that permits communication lines to be attached to the processors.

communication control unit. A communication device that controls the transmission of data over lines in a network. Communication control units include transmission control units (such as the 2702 Transmission Control Unit) and communication controllers (such as the 3720 or 3725).

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 management configuration (CMC). (1) In VTAM, a technique for configuring a network that allows for the consolidation of many network management functions for the entire network in a single host processor. (2) A multiple-domain network configuration in which one of the hosts, called the communication management configuration host, performs most of the controlling functions for the network, thus allowing the other hosts, called data hosts, to process applications. This is accomplished by configuring the network so that the communication management host owns most of the resources in the network that are not

application programs. The resources that are not owned by the communication management host are the resources that are channel-attached stations of data hosts.

communication management configuration host node.

The type 5 host processor in a communication management configuration that does all network-control functions in the network except for the control of devices channel-attached to data hosts. Synonymous with *communication management host*. Contrast with *data host node*.

communication management host. Synonym for *communication management configuration host node*. Contrast with *data host*.

communication network management (CNM). The process of designing, installing, operating, and managing the distribution of information and controls among end users of communication systems.

communication network management (CNM) application program. A VTAM application program that issues and receives formatted management services request units for physical units. For example, NetView.

communication network management (CNM) interface. The interface that the access method provides to an application program for handling data and commands associated with communication system management. CNM data and commands are handled across this interface.

communication network management (CNM) processor. A program that manages one of the functions of a communications system. A CNM processor is executed under control of NetView.

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.

composite end node (CEN). A group of nodes made up of a single type 5 node and its subordinate type 4 nodes that together support type 2.1 protocols. To a type 2.1 node, a CEN appears as one end node. For example, NCP and VTAM act as a composite end node.

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 restart. In VTAM, the recovery facility that can be used after a failure or deactivation of a major node, VTAM, or the host processor to restore the domain to its status at the time of the failure or deactivation.

configuration services. In SNA, one of the types of network services in the control point (CP) and in the physical unit (PU); configuration services activate, deactivate, and maintain the status of physical units, links, and link stations. Configuration services also shut down and restart network elements and modify path control routing tables and address-translation tables. See also *maintenance services*, *management services*, *network services*, and *session services*.

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*.

console communications services (CCS). The SNA facility that acts as an interface between the control program and the VSCS component of VTAM for VM.

contention. A situation in which two logical units (LUs) that are connected by an LU 6.2 session both attempt to allocate the session for a conversation at the same time. The control operator assigns "winner" and "loser" status to the LUs so that processing may continue on an orderly basis. The contention loser requests permission from the contention winner to allocate a conversation on the session, and the contention winner either grants or rejects the request. See also *bidder*.

continue-any mode. In VTAM, the state of a session or conversation that allows its input to satisfy a RECEIVE request issued in any-mode. While this state exists, input on the session or conversation can also satisfy RECEIVE requests issued in specific-mode. For conversations, continue-any mode is further qualified as either *buffer continue-any* or *logical record continue-any*. This specifies whether VTAM is to receive the data in terms of logical records or buffers. Contrast with *continue-specific mode*.

continue-specific mode. In VTAM, the state of a session or conversation that allows its input to satisfy only RECEIVE requests issued in specific-mode. Contrast with *continue-any mode*.

control block. (ISO) A storage area used by a computer program to hold control information.

control point (CP). (1) A system services control point (SSCP) that provides hierarchical control of a group of nodes in a network. (2) A control point (CP) local to a specific node that provides control of that node, either in the absence of SSCP control (for type 2.1 nodes

engaged in peer to peer communication) or to supplement SSCP control.

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*.

conversation. In SNA, a logical connection between two transaction programs using an LU 6.2 session. Conversations are delimited by brackets to gain exclusive use of a session.

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*.

COS. Class of service.

coupler. A hardware device that connects a modem to a public phone system in much the same way that a telephone does.

CP. (1) Control program. (2) Control point.

cross keys. Synonym for *cross-domain keys*.

cross-domain. In SNA, pertaining to control of resources involving more than one domain.

cross-domain keys. In SNA, a pair of cryptographic keys used by a system services control point (SSCP) to encipher the session cryptography key that is sent to another SSCP and to decipher the session cryptography key that is received from the other SSCP during initiation of cross-domain LU-LU sessions that use session-level cryptography. Synonymous with *cross keys*.

cross-domain link. (1) A subarea link connecting two subareas that are in different domains. (2) A link physically connecting two domains.

cross-domain resource (CDRSC). A resource owned by a cross-domain resource manager (CDRM) in another domain but known by the CDRM in this domain by network name and associated CDRM.

cross-domain resource manager (CDRM). In VTAM, the function in the system services control point (SSCP) that controls initiation and termination of cross-domain sessions.

cross-network. In SNA, pertaining to control of resources involving more than one SNA network.

cross-network LU-LU session. In SNA, a session between logical units (LUs) in different networks.

cross-network session. An LU-LU or SSCP-SSCP session whose path traverses more than one SNA network.

cryptographic. Pertaining to the transformation of data to conceal its meaning. See also *encipher* and *decipher*.

cryptographic key. In systems using the Data Encryption Standard (DES), a 64-bit value (containing 56 independent bits and 8 parity bits) provided as input to the algorithm in determining the output of the algorithm. See *cross-domain keys*, *session cryptography key*, *host master key*, and *secondary logical unit key*.

cryptographic session. In SNA products, an LU-LU session in which a function management data (FMD) request may be enciphered before it is transmitted and deciphered after it is received. Contrast with *clear session*. See *required cryptographic session* and *selective cryptographic session*.

CSP. Communication scanner processor.

Customer Information Control System (CICS). A licensed program that enables transactions entered at remote terminals to be processed concurrently by user-written application programs. It also includes facilities for building, using, and maintaining data bases.

data channel. Synonym for *input/output channel*. See *channel*.

data host. Synonym for *data host node*. Contrast with *communication management configuration host*.

data host node. In a communication management configuration, a type 5 host node that is dedicated to processing applications and does not control network resources, except for its channel-attached or communication adapter-attached devices. Synonymous with

data host. Contrast with *communication management configuration host node*.

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 transmission medium connecting two nodes and perform error control for the link connection. 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.

DBCS. Double-byte character set.

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*.

deallocate. A logical unit (LU) 6.2 application program interface (API) verb that terminates a conversation, thereby freeing the session for a future conversation. Contrast with *allocate*.

decipher. To convert enciphered data into clear data. Contrast with *encipher*. Synonymous with *decrypt*.

decrypt. To convert encrypted data into clear data. Contrast with *encrypt*. Synonym for *decipher*.

decryption. The unscrambling of data using an algorithm which works under the control of a key. The key allows data to be protected even when the algorithm is unknown. Data is unscrambled after transmission. Contrast with *encryption*.

default SSCP list. A list of system services control points (SSCPs), either in VTAM's network or another network, that can be used when no predefined cross-domain resource (CDRSC) or name translation function is provided specifying an LU's owning cross-domain resource manager (CDRM). This list is filed as a part of an adjacent SSCP table in the VTAM definition library.

default SSCP selection. A VTAM function that selects a set of one or more system services control points (SSCPs) to which a session request can be routed when there is no predefined cross-domain resource (CDRSC) or name translation function provided that specifies an LU's owning cross-domain resource manager (CDRM). See also *default SSCP list*.

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 Figure 65, Figure 66, and Figure 67. See also *macroinstruction*.

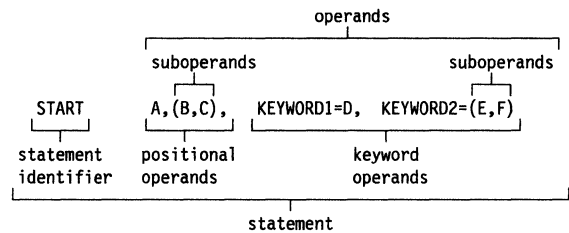


Figure 65. Example of a Language Statement

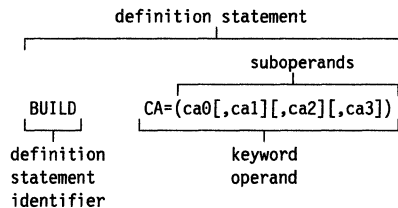


Figure 66. NCP Examples

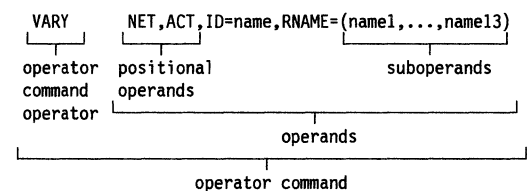
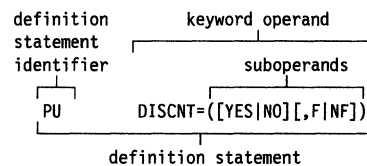


Figure 67. VTAM Examples

DELTA disk. The virtual disk in a VM operating system that contains program temporary fixes (PTFs) that have

been installed but not merged. See *BASE disk*, *MERGE disk*, *RUN disk*, and *ZAP disk*.

dependent LU. Any logical unit (LU) that receives an ACTLU over a link. Such LUs can act only as secondary logical units (SLUs) and can have only one LU-LU session at a time. Contrast with *independent LU*.

destination logical unit (DLU). The logical unit to which data is to be sent. Contrast with *origin logical unit (OLU)*.

dial-in. Refers to the direction in which a switched connection is requested by any node or terminal other than the receiving host or an NCP.

dial-out. Refers to the direction in which a switched connection is requested by a host or an NCP.

direct 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*.

directory. In VM, a control program (CP) disk that defines each virtual machine's normal configuration.

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*.

disconnection. The termination of a physical connection.

discontiguous shared segment. An area of virtual storage outside the address range of a virtual machine. It can contain read-only data or reentrant code. It connects discontiguous segments to a virtual machine's address space so programs can be fetched.

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*.

DLU. Destination logical unit.

domain. (1) An access method, its application programs, communication controllers, connecting lines, modems, and attached terminals. (2) In SNA, a system services control point (SSCP) and the physical units (PUs), logical units (LUs), links, link stations, and all the

associated resources that the SSCP has the ability to control by means of activation requests and deactivation requests. See *system services control point domain* and *type 2.1 node control point domain*. See also *single-domain network* and *multiple-domain network*.

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).

double-byte character set (DBCS). A set of graphic characters where two bytes are used to represent the character set of such languages as Chinese and Japanese. The shift-in (SI) and shift-out (SO) control codes are used when DBCS is mixed with standard one-byte character sets.

DR. (1) In NCP and CCP, dynamic reconfiguration. (2) In SNA, definite response.

draining. For logical unit (LU) 6.2, the process of honoring pending allocation requests before deactivating sessions with a partner LU.

DRDS. Dynamic reconfiguration data set.

DTE. Data terminal equipment.

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 path update. The process of changing the network path for sending information without regenerating complete configuration tables.

dynamic reconfiguration (DR). The process of changing the network configuration (peripheral PUs and LUs) without regenerating complete configuration tables.

dynamic reconfiguration data set (DRDS). In VTAM, a data set used for storing definition data that can be applied to a generated communication controller configuration at the operator's request. A dynamic reconfiguration data set can be used to dynamically add PUs and LUs, delete PUs and LUs, and move PUs. It is activated with the VARY DRDS operator command. See also *dynamic reconfiguration*.

EBCDIC. * Extended binary-coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

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*.

encipher. (1) To scramble data or convert it, before transmission, to a secret code that masks the meaning of the data to any unauthorized recipient. (2) In VTAM, to convert clear data into enciphered data. Contrast with *decipher*. Synonymous with *encrypt*.

encrypt. Synonym for *encipher*.

encryption. The scrambling or encoding of data using an algorithm which works under the control of a key. The key allows data to be protected even when the algorithm is unknown. Data is scrambled prior to transmission. Contrast with *decryption*.

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.

end node. A type 2.1 node that does not provide any intermediate routing or session services to any other node. For example, APPC/PC is an end node. See *composite end node*, *node*, and *type 2.1 node*.

end user. In SNA, the ultimate source or destination of application data flowing through an SNA network. An end user may be an application program or a terminal operator.

entry point. An SNA node that provides distributed network management support. It may be a type 2, type

2.1, type 4, or type 5 node. It sends SNA-formatted network management data about itself and the resources it controls to a focal point for centralized processing, and it receives and executes focal point initiated commands to manage and control its resources.

EOT. End-of-transmission.

EP. Emulation Program.

ER. (1) Explicit route. (2) Exception response.

ESTAE. Extended specify task abnormal exit.

event. (1) In the NetView program, a record indicating irregularities of operation in physical elements of a network. (2) An occurrence of significance to a task; typically, the completion of an asynchronous operation, such as an input/output operation.

exception request (EXR). In SNA, a request that replaces another message unit in which an error has been detected.

exception response (ER). In SNA, a value in the form-of-response-requested field of a request header (RH). An exception response is sent only if a request is unacceptable as received or cannot be processed. Contrast with *definite response* and *no response*. See also *negative response*.

exchange identification (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.

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*.

expedited flow. In SNA, a data flow designated in the transmission header (TH) that is used to carry network control, session control, and various data flow control request/response units (RUs); the expedited flow is

separate from the normal flow (which carries primarily end-user data) and can be used for commands that affect the normal flow. Contrast with *normal flow*.

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.

extended specify task abnormal exit (ESTAE). An MVS macroinstruction that provides recovery capability and gives control to the user-specified exit routine for processing, diagnosing an abend, or specifying a retry address.

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*.

first speaker. In SNA, the LU-LU half-session defined at session activation as: (1) able to begin a bracket without requesting permission from the other LU-LU half-session to do so, and (2) winning contention if both half-sessions attempt to begin a bracket simultaneously. Contrast with *bidder*. See also *bracket protocol*.

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 *adaptive session-level pacing*, *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*.

full-screen mode. A form of panel presentation in NetView where the contents of an entire terminal screen can be displayed at once. Full-screen mode can be used for fill-in-the-blanks prompting. Contrast with *line mode*.

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 control functions. Functions performed by a gateway system services control point (SSCP) in conjunction with the gateway NCP to assign alias network address pairs for LU-LU sessions, assign virtual routes for the LU-LU sessions in adjacent networks, and translate network names within BIND RUs.

gateway host. A host node that contains a gateway system services control point (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. Synonymous with *gateway node*.

gateway node. Synonym for *gateway NCP*.

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.

GCS. Group control system.

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 unbind. Synonym for *session deactivation request*.

group. In the NetView/PC program, to identify a set of application programs that are to run concurrently.

group control system (GCS). A component of VM that provides multi-programming and shared memory support to virtual machines. It is a saved system intended for use with SNA products.

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 function management data (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*.

hard copy. A printed copy of machine output in a visually readable form; for example, printed reports, listings, documents, summaries, or network logs.

help panel. An online display that tells you how to use a command or another aspect of a product. See *task panel*.

High Performance Option (HPO). A licensed program that is an extension of VM/SP. It provides performance and operation enhancements for large system environments.

hierarchy. In the NetView program, the resource types, display types, and data types that make up the organization, or levels, in a network.

host master key. In SNA, deprecated term for *master cryptography key*.

host node. A node providing an application program interface (API) and a common application interface. See *boundary node*, *node*, *peripheral node*, *subarea host node*, and *subarea node*. See also *boundary function* and *node type*.

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.

HPO. High Performance Option.

IMR. Intensive mode recording.

inactive. 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*.

independent LU. A logical unit (LU) that does not receive an ACTLU over a link. Such LUs can act as primary logical units (PLUs) or secondary logical units (SLUs) and can have one or more LU-LU sessions at a time. Contrast with *dependent LU*.

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*.

input/output channel. (1) (ISO). In a data processing system, a functional unit that handles the transfer of data between internal and peripheral equipment. (2) In a computing system, a functional unit, controlled by a processor, that handles the transfer of data between processor storage and local peripheral devices. Synonymous with *data channel*. See *channel*. See also *link*.

intensive mode recording (IMR). An NCP function that forces recording of temporary errors for a specified resource.

interactive problem control system (IPCS). A VM facility for diagnosing problems, and managing problem information and status. IPCS is the principal means for diagnosing virtual machine dumps.

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.

intermediate routing node (IRN). In SNA, a subarea node with intermediate routing function.

intermediate SSCP. An SSCP along a session initiation path that owns neither of the LUs involved in a cross-network LU-LU session.

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.

inter-user communication vehicle (IUCV). A VM facility for passing data between virtual machines and VM components.

IRN. Intermediate routing node.

ISTATUS. In VTAM and NCP, a definition specification method for indicating the initial status of resources. See also *indirect activation*.

item. In CCP, any of the components, such as communication controllers, lines, cluster controllers, and terminals, that comprise an IBM 3710 Network Controller configuration.

IUCV. Inter-user communication vehicle.

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) **(TC97)** A lexical unit that, in certain contexts, characterizes some language construction. (2) * One of the predefined words of an artificial language. (3) One of the significant and informative words in a title or document that describes the content of that document. (4) A name or symbol that identifies a parameter. (5) A part of a command operand that consists of a specific character string (such as DSNAME=). See also *definition statement* and *keyword operand*. Contrast with *positional operand*.

keyword operand. An operand that consists of a keyword followed by one or more values (such as DSNAME = HELLO). See also *definition statement*. Contrast with *positional operand*.

keyword parameter. (1) A parameter that consists of a keyword followed by one or more values.

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. (1) Last-in-chain. (2) In NCP, line interface card.

line. See *communication line*.

line mode. A form of screen presentation in which the information is presented a line at a time in the message area of the terminal screen. Contrast with *full-screen mode*.

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*. See Figure 68 on page 469.

link connection segment. A portion of the configuration that is located between two resources listed consecutively in the service point command service (SPCS) query link configuration request list.

link level 2 test. See *link test*.

Link Problem Determination Aid (LPDA). A series of testing procedures initiated by NetView 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 subarea link. In the resource hierarchy, the link station is subordinate to the subarea link.

link test. In SNA, a test in which one link station returns data received from another link station without changing the data in order to test the operation of the link. Three tests can be made; they differ in the resources that are dedicated during the test.

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 area network (LAN). (1) A network in which a set of devices are connected to one another for communication and that can be connected to a larger network. See also *token ring*. (2) A network in which communications are limited to a moderately sized geographic area such as a single office building, warehouse, or

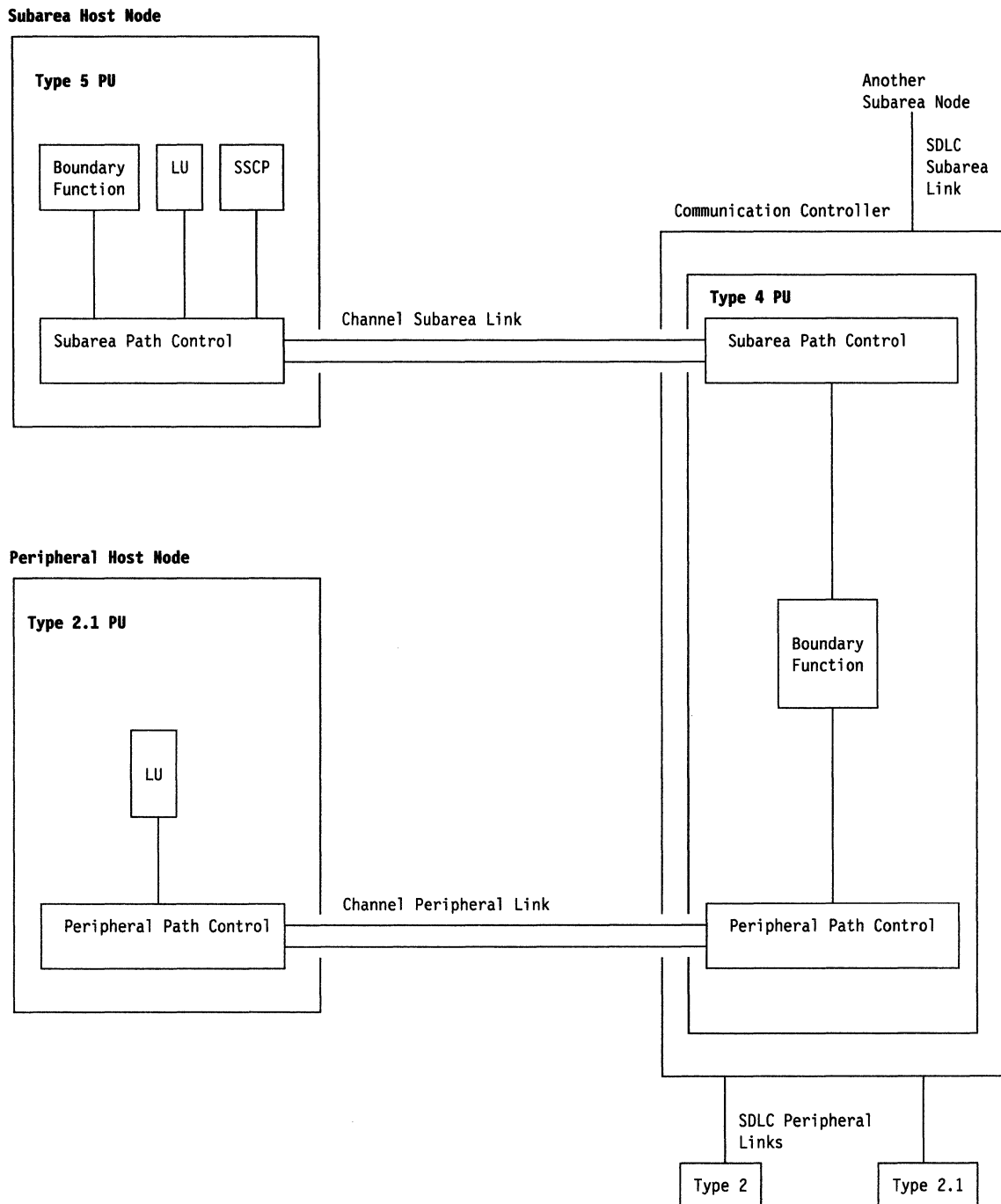


Figure 68. Links and Path Controls

campus, and which do not generally extend across public rights-of-way. Contrast with *wide area network*.

local non-SNA major node. In VTAM, a major node whose minor nodes are channel-attached non-SNA terminals.

local SNA major node. In VTAM, a major node whose minor nodes are channel-attached peripheral nodes.

logical channel. The path that data travels between the origin data terminal equipment (DTE) and an X.25 network, or between the network and the destination DTE. One physical circuit may have many logical channels assigned to it.

logical unit (LU). In SNA, a port through which an end user accesses the SNA network and the functions provided by system services control points (SSCPs). An LU can support at least two sessions—one with an SSCP and one with another LU—and may be capable of supporting many sessions with other LUs. See also *network addressable unit (NAU)*, *peripheral LU*, *physical unit (PU)*, *system services control point (SSCP)*, *primary logical unit (PLU)*, and *secondary logical unit (SLU)*.

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*.

logical unit (LU) 6.2. A type of logical unit that supports general communication between programs in a distributed processing environment. LU 6.2 is characterized by (1) a peer relationship between session partners, (2) efficient utilization of a session for multiple transactions, (3) comprehensive end-to-end error processing, and (4) a generic application program interface (API) consisting of structured verbs that are mapped into a product implementation.

logmode table. Synonym for *logon mode table*.

logoff. In VTAM, an unformatted session termination request.

log on. To initiate a session.

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. Synonymous with *logmode table*.

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.

loop adapter. A feature of the IBM 4300 Processor family that allows the attachment of a variety of SNA and non-SNA devices. To VTAM, these devices appear as channel-attached type 2 physical units (PUs).

LPDA. Link Problem Determination Aid.

LU. Logical unit.

LU connection test. In SNA products, a diagnostic aid that permits a terminal operator to check whether the path between a system services control point (SSCP) and a logical unit (LU) is operational.

LU 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, function management headers (FMHs), request unit (RU) parameters, and sense codes.

Presentation services protocols such as those associated with FMH usage.

LU types 0, 1, 2, 3, 4, 6.1, 6.2, and 7 are defined.

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. A deprecated term for *LU type*.

LU 6.2. Logical unit 6.2.

macroinstruction. (1) An instruction that when executed causes the execution of a predefined sequence of instructions in the same source language. (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 macroinstruction in the program. See also *definition statement*.

maintain system history program (MSHP). A program that facilitates the process of installing and servicing a VSE system.

maintenance and operator subsystem (MOSS). A subsystem of an IBM communication controller, such as the 3725 or the 3720, that contains a processor and operates independently of the rest of the controller. It loads and supervises the controller, runs problem determination procedures, and assists in maintaining both hardware and software.

maintenance services. In SNA, one of the types of network services in system services control points (SSCPs) and physical units (PUs). Maintenance services provide facilities for testing links and nodes and for collecting and recording error information. See also *configuration services*, *management services*, *network services*, and *session services*.

major node. In VTAM, a set of resources that can be activated and deactivated as a group. See *node* and *minor node*.

management services. In SNA, one of the types of network services in control points (CPs) and physical units (PUs). Management services are the services provided to assist in the management of SNA networks, such as problem management, performance and accounting management, configuration management and change management. See also *configuration services*, *maintenance services*, *network services*, and *session services*.

mandatory cryptographic session. Synonym for *required cryptographic session*.

master cryptography key. In SNA, a cryptographic key used to encipher operational keys that will be used at a node.

maximum SSCP rerouting count. The maximum number of times a session initiation request will be rerouted to intermediate system services control points (SSCPs) before the request reaches the destination SSCP. This count is used to prevent endless rerouting of session initiation requests.

MERGE disk. The virtual disk in the VM operating system that contains program temporary fixes (PTFs) after the VMFMERGE EXEC is invoked. See *BASE disk*, *DELTA disk*, *RUN disk*, and *ZAP disk*.

message. (1) (TC97) A group of characters and control bit sequences transferred as an entity. (2) In VTAM, the amount of function management data (FMD) 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.

minidisk. Synonym for *virtual disk*.

minor node. In VTAM, a uniquely-defined resource within a major node. See *node* and *major node*.

modem. A device that modulates and demodulates signals transmitted over data communication facilities. The term is a contraction for modulator-demodulator.

mode name. A symbolic name for a set of session characteristics. For LU 6.2, a mode name and a partner LU name together define a group of parallel sessions having the same characteristics.

MOSS. Maintenance and operator subsystem.

MSHP. Maintain system history program.

multiple-domain network. In SNA, a network with more than one system services control point (SSCP). Contrast with *single-domain network*.

Multiple Virtual Storage (MVS). An IBM licensed program whose full name is the Operating System/Virtual Storage (OS/VS) with Multiple Virtual Storage/System Product for System/370. It is a software operating system controlling the execution of programs.

Multiple Virtual Storage for Extended Architecture (MVS/XA). An IBM licensed program whose full name is the Operating System/Virtual Storage (OS/VS) with Multiple Virtual Storage/System Product for Extended Architecture. Extended architecture allows 31-bit storage addressing. MVS/XA is a software operating system controlling the execution of programs.

MVS. Multiple Virtual Storage operating system.

MVS/XA. Multiple Virtual Storage for Extended Architecture operating system.

name translation. In SNA network interconnection, converting logical unit names, logon mode table names, and class-of-service names used in one network into equivalent names to be used in another network. This function can be provided through NetView and invoked by a gateway system services control point (SSCP) when necessary. See also *alias name*.

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 licensed program). Its full name is Advanced Communications Function for the Network Control Program. Synonymous with *ACF/NCP*. (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 program (PEP) load module or a load module for a Network Control Program (NCP) or for an Emulation Program (EP).

NCP major node. In VTAM, a set of minor nodes representing resources, such as lines and peripheral nodes, controlled by a network control program. See *major node*.

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.

negative response (NR). 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*.

negotiation. The process of deciding what packet size to transmit between a network and a 3710.

NetView. A system 370-based IBM licensed program used to monitor a network, manage it, and diagnose its problems.

NetView/PC. A PC-based IBM licensed program through which application programs can be used to monitor, manage, and diagnose problems in IBM Token-Ring networks, non-SNA communication devices, and voice networks.

network. (1) (TC97) An interconnected group of nodes. (2) In data processing, a user application network. See *path control network*, *public network*, *SNA network*, *subarea network*, *type 2.1 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). An IBM licensed program that is a base for command processors that can monitor, control, automate, and improve the operations of a network. Its function is included and enhanced in NetView's command facility.

network control (NC). In SNA, an RU category used for requests and responses exchanged 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 licensed program that provides communication controller

support for single-domain, multiple-domain, and interconnected network capability. Its full name is Advanced Communications Function for the Network Control Program.

network control program. A program, generated by the user from a library of IBM-supplied modules, that controls the operation of a communication controller.

network controller. A concentrator and protocol converter used with SDLC links. By converting protocols, which manage the way data is sent and received, the IBM 3710 Network Controller allows the use of non-SNA devices with an SNA host processor.

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. communication among domains.

Network Logical Data Manager (NLDM). An IBM licensed program that collects and correlates session-related data and provides online access to this information. It runs as an NCCF communication network management (CNM) application program. Its function is included and enhanced in NetView's session monitor.

network management vector transport (NMVT). A management services request/response unit (RU) that flows over an active session between physical unit management services and control point management services (SSCP-PU session).

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 Problem Determination Application (NPDA). An IBM licensed program that helps you identify network problems, such as hardware, software, and microcode, from a central control point using interactive display techniques. It runs as an NCCF communication network management (CNM) application program. Its function is included and enhanced in NetView's hardware monitor.

Network Routing Facility (NRF). An IBM licensed program that resides in the NCP, which provides a path for messages between terminals, and routes messages

over this path without going through the host processor.

network services (NS). In SNA, the services within network addressable units (NAUs) that control network operation through SSCP-SSCP, SSCP-PU, and SSCP-LU sessions. See *configuration services, maintenance services, management services, and session services*.

Network Terminal Option (NTO). An IBM licensed program used in conjunction with NCP that allows certain non-SNA devices to participate in sessions with SNA application programs in the host processor. NTO converts non-SNA protocol to SNA protocol when data is sent to the host from a non-SNA device and reconverts SNA protocol to non-SNA protocol when data is sent back to the device.

NIB. Node initialization block.

NLDM. Network Logical Data Manager.

NMVT. Network management vector transport.

node. (1) In SNA, an endpoint of a link or junction common to two or more links in a network. Nodes can be distributed to host processors, communication controllers, cluster controllers, or terminals. Nodes can vary in routing and other functional capabilities. See *boundary node, host node, peripheral node, and subarea node* (including illustration). (2) In VTAM, a point in a network defined by a symbolic name. See *major node* and *minor node*.

node initialization block (NIB). In VTAM, a control block associated with a particular node or session that contains information used by the application program to identify the node or session and to indicate how communication requests on a session are to be handled by VTAM.

node name. In VTAM, the symbolic name assigned to a specific major or minor node during network definition.

node type. In SNA, a designation of a node according to the protocols it supports and the network addressable units (NAUs) that it can contain. Five types are defined: 1, 2.0, 2.1, 4, and 5. Type 1, type 2.0, and type 2.1 nodes are peripheral nodes; type 4 and type 5 nodes are subarea nodes. See also *type 2.1 node*.

non-native network. Any network attached to a gateway NCP that does not contain that NCP's resources.

nonswitched line. A telecommunication line on which connections do not have to be established by dialing. Contrast with *switched line*.

no response. In SNA, a value in the form-of-response-requested field of the request header (RH) indicating that no response is to be returned to the request,

whether or not the request is received and processed successfully. Contrast with *definite response* and *exception response*.

normal flow. In SNA, a data flow designated in the transmission header (TH) that is used primarily to carry end-user data. The rate at which requests flow on the normal flow can be regulated by session-level pacing. Normal and expedited flows move in both the primary-to-secondary and secondary-to-primary directions. Contrast with *expedited flow*.

NPDA. Network Problem Determination Application.

NPSI. X.25 NCP Packet Switching Interface.

NRF. Network Routing Facility.

NTO. Network Terminal Option.

NTRI. NCP/Token-Ring interconnection.

OLU. Origin logical unit.

operand. (1) **(ISO)** An entity on which an operation is performed. (2) * That which is operated upon. An operand is usually identified by an address part of an instruction. (3) Information entered with a command name to define the data on which a command processor operates and to control the execution of the command processor. (4) An expression to whose value an operator is applied. See also *definition statement, keyword, keyword parameter, and parameter*.

operator. (1) In a language statement, the lexical entity that indicates the action to be performed on operands. (2) A person who operates a machine. See *network operator*. See also *definition statement*.

operator profile. In the NetView program, the resources and activities a network operator has control over. The statements defining these resources and activities are stored in a file that is activated when the operator logs on.

origin logical unit (OLU). The logical unit from which data is sent. Contrast with *destination logical unit (DLU)*.

pacing. In SNA, a technique by which a receiving component controls the rate of transmission of a sending component to prevent overrun or congestion. See *session-level pacing, send pacing, and virtual route (VR) pacing*. See also *flow control*.

pacing group. In SNA, (1) The path information units (PIUs) that can be transmitted on a virtual route before a virtual-route pacing 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

pacing response is received, indicating that the receiver is ready to accept the next group of requests.

pacing group size. In SNA, (1) The number of path information units (PIUs) in a virtual route pacing group. The pacing group size varies according to traffic congestion along the virtual route. Synonymous with *window size*. (2) The number of requests in a session-level pacing group.

pacing response. In SNA, an indicator that signifies a receiving component's readiness to accept another pacing 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.

parameter. (1) (ISO) A variable that is given a constant value for a specified application and that may denote the application. (2) An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed to a program or procedure by a user or another program, namely as an operand in a language statement, as an item in a menu, or as a shared data structure. See also *keyword*, *keyword parameter*, and *operand*.

parallel sessions. In SNA, two or more concurrently active sessions between the same two logical units (LUs) using different pairs of network addresses. Each session can have independent session parameters.

partitioned emulation program (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). See also *explicit route (ER)*, *route extension*, and *virtual route (VR)*. (2) In VTAM when defining a switched major node, a potential dial-out port that can be used to reach that node. (3) In the NetView/PC program, a complete line in a configuration that contains all of the resources in the service point command service (SPCS) query link configuration request list.

path control (PC). The function that 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. Path control differs for peripheral nodes, which use local addresses for routing, and subarea nodes, which use network addresses for routing. See *peripheral path control* and *subarea path control*. See also *link*, *peripheral node*, and *subarea node*.

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. 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. (1) Path control. (2) Personal Computer. Its full name is the IBM Personal Computer.

PCID. Procedure-correlation identifier.

PEP. Partitioned emulation program.

peripheral host node. A node that provides an application program interface (API) for running application programs but does not provide SSCP functions and is not aware of the network configuration. The peripheral host node does not provide subarea node services. It has boundary function provided by its adjacent subarea. See *boundary node*, *host node*, *node*, *peripheral node*, *subarea host node*, and *subarea node*. See also *boundary function* and *node type*.

peripheral LU. In SNA, a logical unit representing a peripheral node.

peripheral node. In SNA, a node that uses local addresses for routing and therefore is not affected by changes in network addresses. A peripheral node requires boundary-function assistance from an adjacent subarea node. A peripheral node is a physical unit (PU) type 1, 2.0, or 2.1 node connected to a subarea node with boundary function within a subarea. See *boundary node*, *host node*, *node*, *peripheral host node*, *subarea host node*, and *subarea node*. See also *boundary function* and *node type*.

peripheral path control. The function in a peripheral node that routes message units between units with local addresses and provides the paths between them. See *path control* and *subarea path control*. See also *boundary function*, *peripheral node*, and *subarea node*.

peripheral PU. In SNA, a physical unit representing a peripheral node.

Personal Computer (PC). The IBM Personal Computer line of products including the 5150 and subsequent models.

physical connection. In VTAM, a point-to-point connection or multipoint connection. Synonymous with *connection*.

physical unit (PU). In SNA, a type of network addressable unit (NAU). A physical unit (PU) manages and monitors the resources (such as attached links) of a node, as requested by a system services control point (SSCP) through an SSCP-PU session. An SSCP activates a session with the physical unit in order to indirectly manage, through the PU, resources of the node such as attached links. See also *peripheral PU* 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*.

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.

positional operand. An operand in a language statement that has a fixed position. See also *definition statement*. Contrast with *keyword operand*.

positive response. A response indicating that a request was received and processed. Contrast with *negative response*.

PPO. Primary program operator application program.

primary end of a session. The end of a session that uses primary protocols. The primary end establishes the session. For an LU-LU session, the primary end of the session is the primary logical unit. Contrast with *secondary end of a session*. See *half-session*.

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)*.

primary program operator application program (PPO). A program operator application program that is authorized to receive unsolicited messages. When the PPO is active, all unsolicited messages will go to the PPO. Conversely, when the PPO is inactive, unsolicited messages will go to the system console. There can be only one PPO in any domain.

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.

procedure-correlation identifier (PCID). In SNA, a value used by a control point to correlate requests and replies.

profile. In the Conversational Monitor System (CMS) or the group control system (GCS), the characteristics defined by a PROFILE EXEC file that executes automatically after the system is loaded into a virtual machine. See also *operator profile*.

programmed operator. A VTAM application program that is authorized to issue VTAM operator commands and receive VTAM operator awareness messages. See also *solicited messages* and *unsolicited messages*.

program temporary fix (PTF). A temporary solution or bypass of a problem diagnosed by IBM in a current unaltered release of the program.

protocol. (1) (CCITT/ITU) A specification for the format and relative timing of information exchanged between communicating parties. (2) (TC97) The set of rules governing the operation of functional units of a communication system that must be followed if communication is to be achieved. (3) In SNA, the meanings of, and the sequencing rules for, requests and responses used for managing the network, transferring data, and synchro-

nizing the states of network components. See also *bracket protocol*. Synonymous with *line control discipline* and *line discipline*. See also *link protocol*.

PTF. Program temporary fix.

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.

real name. The name by which a logical unit (LU), logon mode table, or class-of-service (COS) table is known within the SNA network in which it resides.

receive pacing. In SNA, the pacing of message units that the component is receiving. See also *send pacing*.

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*.

release. For VTAM, to relinquish control of resources (communication controllers or physical units). See also *resource takeover*. Contrast with *acquire (2)*.

remote. Concerning the peripheral parts of a network not centrally linked to the host processor and generally using telecommunication lines with public right-of-way.

remote spooling communications subsystem (RSCS). A VM networking component that provides telecommunication facilities for the transmission of bulk files between VM users and remote stations.

request header (RH). In SNA, control information preceding a request unit (RU). See also *request/response header (RH)*.

request parameter list (RPL). In VTAM, a control block that contains the parameters necessary for processing a request for data transfer, for establishing or terminating a session, or for some other operation.

request unit (RU). In SNA, a message unit that contains control information, end-user data, or both.

request/response header (RH). In SNA, control information, preceding a request/response unit (RU), that specifies the type of RU (request unit or response unit) and contains control information associated with that RU.

request/response unit (RU). In SNA, a generic term for a request unit or a response unit. See also *request unit (RU)* and *response unit*.

required cryptographic session. A cryptographic session in which all outbound data is enciphered and all inbound data is deciphered. Synonymous with *mandatory cryptographic session*. Contrast with *selective cryptographic session* and *clear session*.

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 the NetView program, 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.

response unit (RU). In SNA, a message unit that acknowledges a request unit; it may contain prefix information received in a request unit. If positive, the response unit may contain additional information (such as session parameters in response to Bind Session), or if negative, contains sense data defining the exception condition.

return code. * A code [returned from a program] used to influence the execution of succeeding instructions.

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)*, and *virtual route (VR)*.

RPL. Request parameter list.

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*.

RSCS. Remote spooling communications subsystem.

RU. Request/response unit.

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 by means of 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.

RUN disk. The virtual disk that contains the VTAM and VM SNA console support (VSCS) load libraries, program temporary fixes (PTFs) and user-written modifications from the ZAP disk. See *BASE disk*, *DELTA disk*, *MERGE disk*, and *ZAP disk*.

scanner. (1) A device capable of electronically reviewing amounts of data and translating the data into a machine readable form. (2) For the 3725 communication controller, a processor dedicated to controlling a small number of telecommunication lines. It provides the connection between the line interface coupler hardware and the central control unit.

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.

SCIP exit. Session control in-bound processing exit.

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 end of a session. That end of a session that uses secondary protocols. For an LU-LU session, the secondary end of the session is the secondary logical unit (SLU). Contrast with *primary end of a session*. See also *secondary logical unit (SLU)* and *half-session*.

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.

secondary program operator application program (SPO). A program operator application program that is not authorized to receive unsolicited messages. An SPO can receive only the messages generated by commands it issued. There can be more than one SPO in a domain in addition to a primary program operator application program (PPO). Contrast with *primary program operator application program*.

segment. See *link connection segment*.

selective cryptographic session. A cryptographic session in which an application program is allowed to specify the request units to be enciphered. Contrast with *required cryptographic session* and *clear session*.

send pacing. In SNA, pacing of message units that a component is sending. See also *receive pacing*.

service point (SP). An entry point that supports applications that provide network management for resources not under the direct control of itself as an entry point. Each resource is either under the direct control of another entry point or not under the direct control of any entry point. A service point accessing these resources is not required to use SNA sessions (unlike a focal point). A service point is needed when entry point support is not yet available for some network management function.

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. 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 control in-bound processing exit (SCIP). A user exit that receives control when certain request units (RUs) are received by VTAM.

session cryptography key. In SNA, a data encrypting key used to encipher and decipher function management data (FMD) requests transmitted in an LU-LU session that uses cryptography.

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-initiation request. In SNA, an Initiate or logon request from a logical unit (LU) to a control point (CP) that an LU-LU session be activated.

session-level pacing. In SNA, a flow control technique that permits a receiver 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*.

session limit. (1) In SNA, (a) the maximum number of concurrently active LU-LU sessions a particular logical unit can support; (b) the limit that determines how many sessions may be active between two logical units (LUs) that are using LU 6.2 protocols and a given mode name. Each partner LU is allocated a minimum share of contention-winner sessions within this limit. (2) In the network control program, the maximum number of concurrent line-scheduling sessions on a non-SDLC, multipoint line.

session management exit routine. An installation-supplied VTAM exit routine that performs authorization, accounting, and gateway path selection functions.

session monitor. The component of NetView that collects and correlates session-related data and provides online access to this information.

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 partner. In SNA, one of the two network addressable units (NAUs) having an active session.

session services. In SNA, one of the types of network services in the control point (CP) and in the logical unit (LU). These services provide facilities for an LU or a network operator to request that the SSCP initiate or terminate sessions between logical units. See *configuration services*, *maintenance services*, and *management services*.

shadow resource. In VTAM, an alternate representation of a network resource that is retained as a definition for possible future use.

shared. Pertaining to the availability of a resource to more than one use at the same time.

shutdown. To stop or quiesce a NetView/PC or a NetView/PC application program.

sift-down effect. The copying of a value from a higher-level resource to a lower-level resource. The sift-down effect applies to many of the keywords and operands in NCP and VTAM definition statements. If an operand is coded on a macroinstruction or generation statement for a higher-level resource, it need not be coded for lower-level resources for which the same value is desired. The value "sifts down," that is, becomes the default for all lower-level resources.

simulated logon. A session-initiation request generated when a VTAM application program issues a SIMLOGON macroinstruction. 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).

single-domain network. In SNA, a network with one system services control point (SSCP). Contrast with *multiple-domain network*.

SIT. Scanner interface trace.

SLU. Secondary logical unit.

SMF. System management facility.

SMP. System Modification Program.

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.

SNA terminal. A terminal that supports Systems Network Architecture protocols.

SP. Service point.

span. In the NetView program, 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.

specific-mode. In VTAM: (1) The form of a RECEIVE request that obtains input from one specific session. (2) The form of an accept request that completes the establishment of a session by accepting a specific queued CINIT request. Contrast with *any-mode*. See *continue-specific mode*.

SPO. Secondary program operator application program.

SS. Start-stop.

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 rerouting. In SNA network interconnection, the technique used by the gateway system services control point (SSCP) to send session-initiation request units (RUs), by way of a series of SSCP-SSCP sessions, from one SSCP to another, until the owning SSCP is reached.

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 licensed program). Its full name is Advanced Communications Function for System Support Programs. Synonymous with *ACF/SSP*.

ST. Session configuration screen abbreviation.

start option. In VTAM, a user-specified or IBM-supplied option that determines certain conditions that are to exist during the time a VTAM system is operating. Start options can be predefined or specified when VTAM is started.

statement. A language syntactic unit consisting of an operator, or other statement identifier, followed by one or more operands. See *definition statement*.

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. 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 host node. A host node that provides both subarea function and an application program interface (API) for running application programs. It provides system services control point (SSCP) functions, subarea node services, and is aware of the network configuration. See *boundary node*, *communication management configuration host node*, *data host node*, *host node*, *node*, *peripheral node*, and *subarea node*. See also *boundary function* and *node type*.

subarea link. In SNA, a link that connects two subarea nodes. See *channel link* and *link*.

subarea node. In SNA, a node that uses network addresses for routing and whose routing tables are therefore affected by changes in the configuration of the network. Subarea nodes can provide gateway function, and boundary function support for peripheral nodes. Type 4 and type 5 nodes are subarea nodes. See *boundary node*, *host node*, *node*, *peripheral node*, and *subarea host node*. See also *boundary function* and *node type*.

subarea path control. The function in a subarea node that routes message units between network addressable units (NAUs) and provides the paths between them. See *path control* and *peripheral path control*. See also *boundary function*, *peripheral node*, and *subarea node*.

subarea PU. In SNA, a physical unit (PU) in a subarea node.

subsystem. A secondary or subordinate system, usually capable of operating independent of, or asynchronously with, a controlling system.

supervisor. The part of a control program that coordinates the use of resources and maintains the flow of processing unit operations.

supervisor call (SVC). A request that serves as the interface into operating system functions, such as allocating storage. The SVC protects the operating system from inappropriate user entry. All operating system requests must be handled by SVCs.

supervisor call (SVC) instruction. An instruction that interrupts the program being executed and passes control to the supervisor so that it can perform a specific service indicated by the instruction.

SVC. (1) Supervisor call. (2) Switched virtual circuit.

switched line. A communication line in which the connection between the communication controller and a remote link station is established by dialing.

switched major node. In VTAM, a major node whose minor nodes are physical units and logical units attached by switched SDLC links.

switched network backup (SNBU). 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.

switched virtual circuit (SVC). An X.25 circuit that is dynamically established when needed. The X.25 equivalent of a switched line.

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 management facility (SMF). A standard feature of MVS that collects and records a variety of system and job-related information.

System Modification Program (SMP). An operating system component that facilitates the process of installing and servicing an MVS system. See also *System Modification Program Extended*.

System Modification Program Extended (SMP/E). An IBM licensed program that facilitates the process of installing and servicing an MVS system. See also *System Modification Program*.

system services control point (SSCP). In SNA, a central location 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.

system services control point (SSCP) domain. The system services control point and the physical units (PUs), logical units (LUs), links, link stations and all the resources that the SSCP has the ability to control by means of activation requests and deactivation requests.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

System Support Programs (SSP). An IBM licensed program, made up of a collection of utilities and small programs, that supports the operation of the NCP.

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. Synonymous with *ACF/TAP*.

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. Synonymous with *ACF/TCAM*. (2) The IBM licensed program 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.

TCAS. Terminal control address space.

telecommunication line. Any physical medium such as a wire or microwave beam, that is used to transmit data. Synonymous with *transmission line*.

teletypewriter exchange service (TWX). Teletypewriter service in which suitably arranged teletypewriter stations are provided with lines to a central office for access to other such stations throughout the U.S. and Canada. Both baudot and ASCII-coded machines are used. Business machines may also be used with certain restrictions.

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 control address space (TCAS). The part of TSO/VTAM that provides logon services for TSO/VTAM users.

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.

TERMINATE. In SNA, a request unit that is sent by a logical unit (LU) to its system services control point (SSCP) to cause the SSCP to start a procedure to end one or more designated LU-LU sessions.

TG. Transmission group.

TH. Transmission header.

threshold. In the NetView program, 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.

time sharing option for VTAM (TSO/VTAM). An optional configuration of the operating system that provides conversational time sharing from remote stations in a network using VTAM.

token. A sequence of bits passed from one device to another along the token ring. When the token has data appended to it, it becomes a frame.

token ring. A network with 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 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*.

transmission priority. In SNA, a rank assigned to a path information unit (PIU) that determines its precedence for being selected by the transmission group control component of path control for forwarding to the next subarea node of the route used by the PIU.

TSO. Time sharing option.

TSO/VTAM. Time sharing option for VTAM.

TWX. Teletypewriter exchange service.

type 2.1 node (T2.1 node). A node that can attach to an SNA network as a peripheral node using the same protocols as type 2.0 nodes. Type 2.1 nodes can be directly attached to one another using peer-to-peer pro-

tocols. See *end node*, *node*, and *subarea node*. See also *node type*.

type 2.1 node (T2.1 node) control point domain. The CP, its logical units (LUs), links, link stations, and all resources that it activates and deactivates.

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 exit. A point in an IBM-supplied program at which a user routine may be given control.

USERVAR. Contains an application name used to route a session-establishment request to the currently active application subsystem.

USS. Unformatted system services.

value. (1) (TC97) A specific occurrence of an attribute, for example, "blue" for the attribute "color." (2) A quantity assigned to a constant, a variable, a parameter, or a symbol.

variable. In the NetView program, a character string beginning with & that is coded in a command list and is assigned a value during execution of the command list.

virtual disk. (1) A logical subdivision (or all) of a physical disk pack in the VM operating system that has its own virtual device address, consecutive virtual cylinders, and a volume table of contents (VTOC) or disk label identifier. (2) Synonymous with *minidisk*.

virtual machine. A functional simulation of a computer and its associated devices.

Virtual Machine (VM). A licensed program 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 intranode 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. (ISO) The notion of storage space that may be regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into real addresses. The size of virtual storage is limited by the addressing scheme of the computer system and by the amount of auxiliary storage available, not by the actual number of main storage locations.

Virtual Storage Access Method (VSAM). An access method for direct or sequential processing of fixed and variable-length records on direct access devices. The records in a VSAM data set or file can be organized in logical sequence by a key field (key sequence), in the

physical sequence in which they are written on the data set or file (entry-sequence), or by relative-record number.

Virtual Storage Extended (VSE). An IBM licensed program 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 licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability.

VIT. VTAM internal trace.

VM. Virtual Machine operating system. Its full name is Virtual Machine/System Product. Synonymous with *VM/SP*.

VM SNA console support (VSCS). A VTAM component for the VM environment that provides Systems Network Architecture (SNA) support. It allows SNA terminals to be virtual machine consoles.

VM/SP. Virtual Machine/System Product operating system. Synonym for *VM*.

VM/VCNA. VM/VTAM Communications Network Application.

VM/VTAM Communications Network Application (VM/VCNA). An IBM licensed program that provides SNA support for VM. It allows SNA terminals to be used as virtual machine consoles. See also *VM SNA console support*.

VR. Virtual route.

VSAM. Virtual Storage Access Method.

VSCS. VM SNA console support.

VSE. Virtual Storage Extended operating system. Synonymous with *VSE/AF*.

VSE/AF. Virtual Storage Extended/Advanced Function operating system. Synonym for *VSE*.

VTAM. Virtual Telecommunications Access Method (IBM licensed program). Its full name is Advanced Communications Function for the Virtual Telecommunications Access Method. Synonymous with *ACF/VTAM*.

VTAM application program. A program that has opened an ACB to identify itself to VTAM and can now issue VTAM macroinstructions.

VTAM definition. The process of defining the user application network to VTAM and modifying

IBM-defined characteristics to suit the needs of the user.

VTAM definition library. The operating system files or data sets that contain the definition statements and start options filed during VTAM definition.

VTAM internal trace (VIT). A trace used in VTAM to collect data on channel I/O, use of locks, and storage management services.

VTAM operator. A person or program authorized to issue VTAM operator commands. See *domain operator*, *program operator*, and *network operator (2)*.

VTAM operator command. A command used to monitor or control a VTAM domain. See also *definition statement*.

VTAM Terminal I/O Coordinator (VTIOC). The part of TSO/VTAM that converts TSO TGET, TPUT, TPG, and terminal control macroinstructions into SNA request units.

VTIOC. VTAM Terminal I/O Coordinator.

wide area network. A network that provides data communication capability in geographic areas larger than those serviced by local area networks. Wide area networks may extend across public rights-of-way. Contrast with *local area network*.

window. (1) In SNA, synonym for *spacing group*. (2) On a visual display terminal, 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 *spacing group size*.

XID. Exchange identification.

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 licensed program 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)*.

ZAP disk. The virtual disk in the VM operating system that contains the user-written modifications to VTAM

code. See *BASE disk*, *DELTA disk*, *MERGE disk*, and *RUN disk*.

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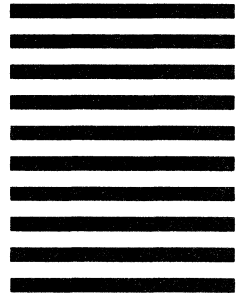


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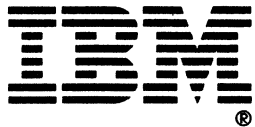
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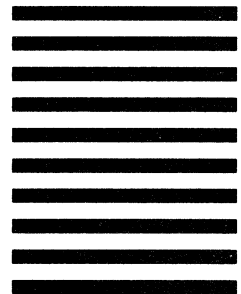


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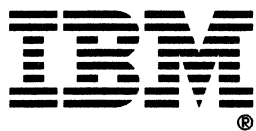
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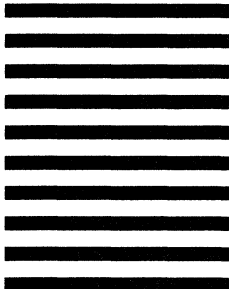


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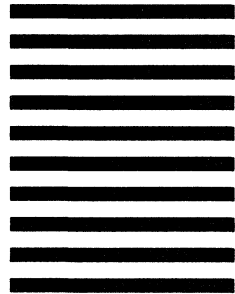


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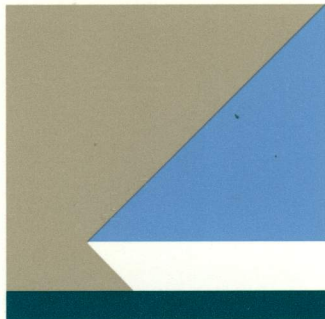


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